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Paradoxes of Leadership: Examining the Effects of Ambidextrous Leader Behaviours on Follower Innovation and Work Attitudes

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Abstract

This thesis tests the Ambidexterity Theory of Leadership for Innovation (Rosing, Frese, & Bausch, 2011), which suggests that leaders who use two sets of contradictory behaviours at appropriate times (temporal flexibility), can facilitate their followers' innovation. Although it is argued to be the most effective leadership style for innovation, studies so far have shown mixed results. This thesis tries to answer important questions about its theoretical assumptions and components, some of which have been neglected so far. By following a positivist philosophical approach, and a quantitative methodology, I conducted two studies to examine a theoretical model that I developed, which is based on the ambidextrous leadership model, but takes into consideration further intrapersonal and situational factors. The first study (experiment) examined whether the interplay between leaders' opening and closing behaviours at the right time, predicts follower innovative behaviours, and whether follower ambidexterity (exploration and exploitation) and motivation mediate the effect of ambidextrous leadership on innovation. This study followed an experimental design, which focused on the temporal flexibility aspect of the theory. A sample of 122 individuals took part in the experiment. Data were analysed on SPSS, using regressions, ANOVA, and mediation analysis, as well as through the Consensual Assessment Technique (CAT). Results were mixed and indicated that temporal flexibility, as well as the main assumptions of the theory were not significant. The second study (daily diary) aimed to replicate the findings from the first study in a natural setting and extend them by investigating the moderating effect of leader-member exchange and trust. This study followed a longitudinal design and focused on the portrayal of leaders' opening and closing behaviours in a natural context. It employed an experience sampling method approach (daily diary study) to examine daily fluctuations of leaders' behaviours over a week. A sample of 124 individuals took part in this study. Using linear mixed modelling and SPSS macros for longitudinal models to analyse the data, results were also mixed, with some supporting parts of the theory, while others did not. This study also found no support of the main theoretical assumption that leaders who engaged in contradictory behaviours would facilitate follower innovation. Implications, limitations, and future research suggestions are discussed for both studies.

Keywords: ambidextrous leadership, creativity, innovation, motivation, LMX, trust, experiment, ESM.

Research Output

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"There is nowhere you can be that isn't where you're meant to be."

\- ***John Lennon***

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Chapter 1: Introduction

1.1. Research Background

Innovation is considered a valuable aspect that can keep organizations in the game, by providing them a competitive advantage (Dess & Picken, 2000; Rademakers, 2005). Although innovation can have a different meaning across industries (Audretsch, 1995; Baregheh, Rowley & Sambrook, 2009), scholars of organisational research argue that innovation may have two primary definitions; one that sees innovation as an outcome or a product, while the other one sees it as a process (King, 1990; West & Farr, 1990). For example, while Zaltman, Duncan and Holbek (1973, p.10) claim that innovation could be " […] any idea, practice or material artifact perceived to be new […]", Anderson (1990, p.3) claims that innovation "[…] is the emergence, import or imposition of new ideas which are pushed towards implementation […]" and they are being developed over time. Even though definitional arguments exist in practice, scholars agree that innovation as an outcome could be considered a new process (way of working), product, or service (Janssen, 2000). Yet, innovation can also be considered as a process where individuals, work teams, or organisations, go through two primary phases to make innovation happen: generating new ideas and executing them (Janssen, 2000).

The first stage of innovation, idea generation, is also known simply as creativity. There is a common misconception in our society that the terms creativity and innovation have the same meaning, and thus have been used interchangeably in society. However, academics posit that the two constructs are not the same (Janssen, 2000). While creativity refers to the generation of new and novel ideas (Amabile, 1983), innovation refers to the entire process which includes idea generation, as well as the successful implementation of those ideas. Hence, it can be said that an innovative individual is also creative, but a creative individual is not necessarily innovative. Innovation involves more than just coming up with new ideas. For one to innovate,

people need to possess the necessary skillset, have the necessary background knowledge, and have the required resources. For example, any person can come up with a novel idea for a new mobile phone, but that does not mean that they have a solid background in engineering, designing, programming, or coding to turn this idea into reality.

One of the things that researchers have found most difficult however, is not the definitional distinction between creativity and innovation, but rather their measures (Adams, Bessant & Phelps, 2006; Kline & Rosenberg, 2010). Outcomes such as job productivity or performance are easier to measure as they can be quantifiable, however as innovation is a long process, it would be more difficult capture as one outcome. Moreover, while some argue that innovation is a linear process (Daft, 1978), others believe that the process has a more dynamic nature which uses feedback and feed-forward loops to identify innovation activities (Schroeder et al., 1989). Acs, Anselin and Varga (2002) claim that measures of innovation usually focus on either the inputs into the process of innovation, the number of patents, or measuring innovation output directly. For some, innovation can be measured by the success of a new product development (Ernst, 2002). New inventions, products, artifacts or even services, are results of innovation indeed, yet some argue that patents are not a good measurement of innovation as they depend on multiple contextual factors and details (Gittelman, 2008). Other scholars claim that firms that do not patent their new products observe better outcomes than the ones who patent them (Reeb & Zhao, 2020). Other measurement methods that exist focus on more tangible outcomes such as novelty or practicality of new ideas (Amabile, 1996; Oman et al., 2013). For instance, a popular way of measuring individual outcomes of creativity in an objective way is to use a group of independent raters to judge ideas or prototypes of individuals, thus determining in a non-biased way whether the individual is creative or not (*Consensual Assessment Technique*; Amabile, 1996). Nonetheless, there are multiple scholars who posit that the best way to capture innovation at the individual level is to measure one's engagement with

behaviours and activities that relate to creativity or implementation (De Jong & Den Hartog, 2010; Ramamoorthy et al., 2005). Innovative Work Behaviours were defined as the intentional engagement with behaviours that aim to introduce new ideas, products, or processes (Farr & Ford, 1990). As innovation covers a broader range of behaviours than creativity, innovative work behaviours try to capture those by categorizing them into specific groups. For example, Janssen (2000) argues that the best way to measure one's innovation is to measure the extent to which they engaged in behaviours that relate to idea generation, idea promotion (or championing), and idea realization (or implementation) (De Jong & Den Hartog, 2010).

Anderson and King (1993) claim that the individual is the most important innovator, as both the work team and the organisation are comprised of numerous individuals. When the employees are innovative, then so will be the teams and the organisation overall. For the individual to be innovative, scholars found some antecedents that need to be in place, as well as some drivers that can promote innovation. Examining external drivers of innovation is important as it eliminates the implicit assumption that being creative or innovative is inherent (Forgeard & Kaufman, 2016).

Starting with the bigger picture, scholars argue that the size of the firm can have an effect in its innovation outcomes (Kijkasiwat & Phuensane, 2020; Kimberly & Evanisko, 1981; Pavitt, 1991; Vaona & Pianta, 2008). While small and large firms have different innovation goals and assess their innovation outcomes in different ways (Cosh, Fu & Hughes, 2012), a larger firm can provide the employees with all the necessary resources to make change happen. Early scholars in innovation research argued that resources can be not only be in a monetary form, but a psychological form as well (Rogers & Agarwala-Rogers, 1976). When employees feel like they work in a supportive climate, that embraces innovation and encourages them to think and act as they see fit, they are more likely to achieve their innovative goals (Khalili, 2016; Shanker et al., 2017; West & Farr, 1989). Individual factors have also been suggested to

influence individual innovation. For instance, Amabile's componential theory of creativity (1983) suggests that when individuals are intrinsically motivated to complete a task, have the necessary skillset and knowledge of their domain, and have the tendency to take risks and think outside of the box, then they are more likely to be creative. Other studies show that creative self-efficacy (Jaiswal & Dhar, 2015; Nisula & Kianto, 2016) or openness to new experiences (George & Zhou, 2001; Zuraik, Kelly & Dyck, 2020) are also key antecedents to individual innovation.

Last but not least, it is important to consider how other people can be a driver of individual innovation. Many scholars agree that leadership is one of the key drivers of innovation (Anderson & King, 1993; Jung, Wu & Chow, 2008; Li, Mitchell & Boyle, 2016; Yoshida et al., 2014). Different leader characteristics and behaviours can have a different effect on innovation (Deschamps, 2005). For instance, a leader who has a clear vision and is focused on the mission is highly likely to be successful in overall innovation (West, 1990). Various leadership styles are also beneficial for facilitating the followers to innovate such as participative leadership (Farr & Ford, 1990; Fatima, Majeed & Saeed, 2017), transformational leadership (Gumusluoglu & Ilsev, 2009; Reuvers et al., 2008), authentic leadership (Bai et al., 2022; Černe, Jaklič, & Škerlavaj, 2013) or charismatic leadership (Paulsen et al., 2009). It is clear, therefore, that some leaders' behaviours are detrimental in facilitating the innovative behaviours of their followers.

Anderson and King (1991) argued however, that effective leaders also should act contingently. The different stages of innovation, require different behavioural approaches. For instance, when individuals have to work on tasks that require them to generate new and novel ideas, then they would need to engage with behaviours such as experimentation, risk taking and thinking outside the box (March, 1991; Rosing et al., 2011). On the other hand, when individuals have to work on implementation tasks, then they need to focus on application of knowledge and

skills without experimenting any further (March, 1991; Rosing et al., 2011). The contradiction between key stages of innovation urged scholars to design a leadership style that targets such contradictions and focuses on responding to the paradoxical nature of innovation. The case of ambidextrous leadership, although recent, has received great attention, as it is the only leadership style in existence, that was designed specifically to achieve innovation (Rosing, Frese & Bausch, 2011).

Ambidextrous leadership is a dynamic leadership style, which is contingent on the nature of the task. It suggests that during creativity tasks, leaders should engage in opening behaviours, which aim to increase the variance in followers' behaviours and make them engage in behaviours and activities that they are not familiar with. On the contrary, during implementation tasks, ambidextrous leaders should engage in closing behaviours, which aim to decrease the variance in their followers' behaviours, thus making them focus only on a limited set of behaviours. Rosing and her colleagues (2011) proposed that opening behaviours are encouraging, motivational and provide the followers with autonomy and flexibility. On the other hand, closing behaviours focus on control and monitoring of the process, as well as routines, plans and sanctions for mistakes and errors. Their ambidexterity theory of leadership for innovation suggests that the interplay between the two behaviours during the right timing, also known as temporal flexibility, will facilitate the highest follower innovation. By engaging in both opening and closing behaviours, the leaders will facilitate the ambidexterity of their followers, thus making them engage in explorative and exploitative behaviours, which is what will make them more innovative (March, 1991).

In conclusion, the production and execution of new ideas is not an easy process (Mumford et al., 1991). Many firms struggle to determine what is useful, feasible, profitable as well as beneficial for them (Senior, 2013). The reason why innovation is difficult to achieve is that it is complex by nature and full of paradoxes and contradictory demands. It is essential for

organisations, that aim to innovate, to be efficient not only in coming up with new ideas but having the skills and knowledge to execute them properly and on time (Baer, 2012; Axtell et al., 2000; Urbach, Fay & Goral, 2010; Birdi, Leach & Magadley, 2014). Ambidextrous leadership therefore is considered an ideal style that organisational leaders should embrace if their aim is to facilitate their followers' innovation.

1.2. Research Aims and Objectives

The aim of this research is to assess the effectiveness of ambidextrous leadership. Currently, studies on ambidextrous leadership, have shown mixed results. After examining the interplay between leaders' opening and closing behaviours, multiple researchers found that it is effective in promoting followers' innovation (e.g., Alghamdi, 2018; Oluwafemi, Mitchelmore & Nikolopoulos, 2020; Zacher & Rosing, 2015; Zacher & Wilden, 2014). Yet, most recent studies, disprove that assumption, as they found no significant effects of ambidextrous leadership on follower innovation (e.g., Klonek, Gerpott & Parker, 2020; Gerlach, Hundeling & Rosing, 2020; Gerlach, Rosing & Zacher, 2021).

Moreover, while most studies examine the interplay between the leaders' opening and closing behaviours, they neglect a crucial part of the theory. The ambidextrous theory of leadership for innovation posits that temporal flexibility is a critical part and that it is not enough that leaders need to portray high levels of opening and closing behaviours, but they need to know the right timing for each set (Rosing, Frese & Bausch, 2011). The nature of the task is the key determinant for the portrayal of each set of behaviours, however only one study so far has examined its role in ambidextrous leadership (Gerlach, Heinigk, Rosing & Zacher, 2020). Yet, that study only assesses the impact of the nature of the task, and not temporal flexibility, which is the ability of the leader to switch flexibly from one set to another. There is, therefore, a

serious lack in literature about the role of temporal flexibility. Researchers suggest that more research on the flexible interplay of the leaders' behaviours needs to be conducted, in order to understand better the full effect of the theory (Gerlach et al., 2020a; 2020b).

It is important to examine the ambidextrous leadership style not only because it is a relatively new style but because of its meaning and its value for innovation. Most leadership styles focus primarily on performance and well-being outcomes of the employee (Wang et al., 2011), however, the ambidextrous leadership style focuses specifically on their innovative behaviour. Examining this style may provide knowledge that researchers were unaware of. For instance, some behaviours found in other leadership styles, may promote employee performance, but at the same time may inhibit creativity (Jung, 2001). While existing leadership styles are quite effective at their role (e.g., charismatic, or transformational leadership), they are not entirely fit for the purposes of this study, as our focus is the employees' innovative behaviour. Past studies have found evidence to support the ambidextrous style's effectiveness (Zacher & Wilden, 2014), yet we are still unsure as to why these behaviours predict the innovative behaviours of followers, as there is a gap in literature about possible mechanisms. Zacher and Rosing (2015, p.64) suggested, that *"*an important direction for future research is to examine the mediating mechanisms" of the ambidextrous leadership theory. Zacher and Wilden (2014, p.819) also call for further research that "examines mediators […] and moderators […] of the association between ambidextrous leadership and employee innovation". Wang, Eva, Newman and Zhou (2021) also make a strong case about the literature needing further positive mechanisms that can explain why ambidextrous leadership facilitates follower innovation. While examining the full theory, as well as further mediators and moderators, further scholars suggest that future studies need to examine antecedent behaviours and personalities that could play a role in facilitating ambidextrous leadership (e.g., Oluwafemi et al., 2020).

Therefore, the overarching research question that this thesis aims to answer is "How do ambidextrous leaders facilitate the followers' innovative work behaviours ?". There are a few reasons why this an important area and question to answer. First of all, the field of ambidextrous leadership is new and, and although it builds on robust theoretical premises, further research is needed to fully understand whether it is an effective leadership style for innovation or not. Moreover, as innovation is a critical skill needed currently in many organisations, then organisations should not only look for employees who are inherently innovative but find ways to develop their leaders into facilitating innovation too. Thirdly, it is not morally responsible to make recommendations about a leadership approach without fully understanding its process and its effects on other outcomes. While some studies show that this approach is beneficial for followers' innovation, it is unknown whether it is beneficial at the expense of another important outcome. For example, the study by Wang et al (2021) found that ambidextrous leaders increase the stress of their followers, as the followers are required to switch priorities swiftly. Last but not least, by examining the theory in full, and going even further to address the issue of temporal flexibility, multiple important theoretical contributions can be made, which may enhance not only the leadership and innovation literature, but the organisational field as a whole.

Through this thesis, I intend on achieving the following research objectives:

1) Test the theoretical premises of the ambidextrous leadership framework (Rosing et al., 2011). As no prior research has tested all the components of the theory, this will be the first one to do so. Moreover, this thesis is the first to test the separate effects of opening and closing behaviours on outcomes of idea generation and idea implementation respectively.

2) Test the temporal flexibility component of the theory. Special attention will be given to temporal flexibility, as this theoretical component, although argued to be important, no studies have examined it so far, which raises questions about the validity of the theory.
3) Identify and test potential mediators that can explain the positive relationship between ambidextrous leadership and followers' innovation. No studies so far have examined any further positive mediators that explain why ambidextrous leaders are effective for innovation, apart from the ones that the theory suggests (exploration and exploitation).
4) Examine moderators that may show how situational factors play a role in the theory. More specifically, this is the first study that examines how leader-follower relationship quality can affect the impact of ambidextrous leadership on follower innovation.
5) This thesis also aims to further the theoretical development and refinement of ambidextrous leadership, as well as creativity and innovation, based on the findings of the research that entails.
6) The last objective of this thesis is to suggest robust practices for managers on how to make their employees more innovative. These suggestions will be driven by the findings of this thesis.

Although there is only one overarching research questions, this thesis aims to address three important questions about ambidextrous leadership:

1) Does temporal flexibility play a significant role in this theory?
2) What mechanisms can explain better how the relationship between ambidextrous leaders and followers' innovation works?
3) Are there any situational factors that may impact the effectiveness of ambidextrous leadership?

While the literature on ambidextrous leadership is recent, the debates are still ongoing about its effectiveness. It is crucial to understand this theory further, as it is not just the only leadership style designed specifically for innovation, but the only style that urges leaders to use opposing behaviours if they want to see benefits, which is different, than other leadership styles that portray stable behaviours over time. A dynamic leadership style, such as the ambidextrous style, may emanate mixed signals to the followers, thus potentially hindering multiple follower outcomes, without intending to (e.g., see Wang et al., 2021). In short, the three research questions I am examining are: 1) Does temporal flexibility play a significant role in this theory? 2) What mechanisms can explain better how the relationship between ambidextrous leaders and followers' innovation works? 3) Are there any situational factors that may impact the effectiveness of ambidextrous leadership?

1.3. Thesis Methodology

A number of research philosophies exist which have different ontological, epistemological and axiological positions. Saunders, Lewis and Thornhill (2009) explain they key differences between the different positions. Ontology regards the nature of reality, and can have two dimensions, either objective or subjective. An objective ontological perspective implies that one objective reality exists, while a subjective ontological position suggests that no reality actually exists or is universal, but instead realities are created by the subjects and each person may have a different understanding or view of the world. Epistemology refers to stance of the scientist and what they perceive as acceptable knowledge. For the "natural scientist" the best way to create new knowledge is to collect large amounts of data which can be classed as facts. Such researchers reflect the positivism school of thought. Positivist researchers work within an observable reality which can provide them with enough data to analyse and thus find some

facts about that reality. Research strategies that positivist researchers tend to follow are of a deductive nature, where they use an existing theory to develop hypotheses, and then collect and analyse data to confirm or reject those hypotheses, thus creating new facts about reality. On the other end of the spectrum, one may find the "feelings researcher". This researcher is more concerned about the feelings and attitudes of specific subjects, thus examining phenomena which do not reflect an objective reality. Researchers of this nature can be classed as interpretivists, as they use subjective reality to examine their phenomena and give their own interpretation and meaning to them. They use inductive approaches to develop new knowledge, by observing subjects and understanding them before developing possible theories. Lastly, axiology refers to the researcher's role in the research. Positivist researchers remain objective and take an independent stance from their data, while interpretivist researchers play a critical role in the process as the researcher is part of the research and cannot be separated from their data.

Organizational studies so far have followed approaches such as, but not limited to, positivist, interpretivist, pragmatist, or constructivist (Bryman, 2012). The research philosophy constitutes the over-arching term that provides explanation and justification for the development and nature of the knowledge. The philosophical approach is not necessarily something one chooses, as it comes naturally based on their way of thinking and viewing the world, as well as the research questions they are trying to answer (Saunders et al., 2009). Assumptions for each philosophy underpin the research strategy as well as the methods one chooses for their research project (Lee & Lings, 2008). While positivist researchers choose primarily quantitative methods to conduct their studies, interpretivist researchers choose qualitative (Saunders et al., 2009). Positivist research in management uses highly structured methods and collects data through large samples. Data are mainly of quantitative nature so they can be classified and thus deductions can be made, yet qualitative approaches may also be used

(Bryman, 2012). Interpretivist research use smaller samples, and they tend to focus on experiences through in-depth investigations or observations. Interpretivists use qualitative methods to collect their data which can be in various forms such as text, lyrics, art, documents, or other modes, and are interpreted based on the perceptions of the researcher, thus giving meaning to them (Bryman, 2012).

Quantitative methods are beneficial for positivist researchers as they can provide them with large quantities of data in a relatively fast manner. Such data can be then analysed through statistical techniques which may provide answers to causal hypotheses. The most common quantitative methods include surveys and experiments (Saunders et al., 2009). On the contrary, qualitative methods can benefit interpretivist researchers as they allow them to dig deeper into the subjects and examine more thorough but subjective phenomena. Their data could be in any form and may be analysed through various methods such as content analysis or thematic analysis, thus helping them answer their research questions. One may collect qualitative data from interviews, focus-groups, observations, documents, or archives (Saunders et al., 2009).

Studies published in top leadership journals (i.e., Leadership Quarterly), primarily focus on quantitative research, with surveys, field studies, and experiments being the preferred method of leadership scholars, while the next most prevalent research strategy is of qualitative nature (case studies, content analysis etc.) (Gardner et al., 2010, 2020; Parry, Mumford, Bower & Watts, 2014). Over a span of 30 years (1990-2020) the Leadership Quarterly (LQ) journal has published a great amount of research on trait, behaviour, and contingency theories of leadership. Regarding preferred methods, the review by Gardner et al., (2020) showed for example that in the past 10 years, LQ has published approximately 200 experiments which averages to 30% of all studies published in the journal during that period. Experiments on leadership behaviours seem to be on the rise, as Banks, Woznyj and Mansfield (2021) reported that out of all their reviewed studies, 44% of those that used experiments, also measured

behaviours. Kelemen, Matthews and Breevaart (2020) also report a trend on examining daily leadership and the use of daily diary studies to examine leadership from a different perspective, while Hemshorn de Sanchez, Gerpott and Lehmann-Willenbrock (2021) posit that future studies should look at leader behaviours and leader-follower relationships in more natural settings.

The present thesis follows the research philosophy of positivism. It assumes that an external and objective reality exists, which is independent of the social actors, and the only way to accurately obtain knowledge for that reality is to collect data from observable phenomena (Lee & Lings, 2008). Doing this, hypotheses assuming causality can be tested, and the results from this thesis may be generalised to comparable populations across settings. The aim and objectives of a research project may dictate its philosophical direction (Hasan, 2016). The main reason why this philosophical stance was chosen therefore was my main research question. The research question stated implies that a causal effect of ambidextrous leadership on followers' innovation exists. Moreover, the theory of ambidextrous leadership assumes that such leaders are real and can have a consistent influence on the followers. Hence, quantitative methodology was followed throughout the entire research project presented in this thesis. While some might argue that a mixed methods approach can have benefits of understanding a phenomenon from various points of view (Tashakkori & Teddlie, 2003), the best way forward is for one to know what outcome they aim to achieve from their research. This thesis utilises two different quantitative methods to explore the phenomenon of ambidextrous leadership. While the two methods measure primarily different factors, they also share hypotheses, thus complementing each other. The first study follows an experimental design. Through an online experiment, participants were entered into randomised experimental conditions and undertaken innovation tasks, after being instructed by ambidextrous leaders. The primary aim of this study is to test the theoretical component of temporal flexibility. The second study followed a longitudinal

field approach. Through an experience sampling method, participants answered daily surveys which aimed to assess the effect of leaders' behaviours and their daily fluctuations. Moreover, this study tests potential moderators that can strengthen or weaken the relationship between ambidextrous leaders and followers' innovation.

Despite both studies have a different research aim, they also complemented each other. Their complementarity stems from the different time horizons that the two studies are conducted in. While the experiment is of a cross-sectional nature, the experience sampling method follows a longitudinal approach, using multi-level data, which can produce more robust results, as data are collected over multiple time points and cross-examined. Moreover, the two studies share some of the hypotheses, as they both test the main effects of leaders' behaviours on followers' innovative work behaviours, as well as potential mediators that might explain their relationship. This research strategy forms a triangulation, as the data collected for the two studies are from two independent samples, and thus the findings for shared hypotheses can be more valid. While the two research designs are opposite, their use in this research project is also based on past evidence. Recent studies on ambidextrous leadership that utilised experimental designs urged future researchers to do the same, as the results produced from them are mixed (i.e., Klonek, Gerpott & Parkerr, 2020; Gerlach, Rosing & Zacher, 2021). Moreover, the longitudinal examination of ambidextrous leadership, also requires further assessment as only a limited number of studies were conducted using diary studies, and they also show mixed results (Gerlach, Hundeling & Rosing, 2020; Zacher & Wilden, 2014).

1.4. Potential Contributions

This thesis aims to provide three major novel contributions. First of all, this is the first study that examines temporal flexibility. According to theory, ambidextrous leaders should switch

flexibly between behaviours according to situations. Currently, there are no studies that examine that switch from opening behaviours during idea generation tasks to closing behaviours during idea implementation tasks. Findings from examining this theoretical component could be crucial for theory and practice. Shall the findings support the theory, then this thesis will have the first study that fully confirms the ambidextrous theory of leadership for innovation (Rosing et al., 2011), over a decade after its publication. If, however, the study does not find support for this theoretical component, then it challenges the theory and raises further questions about its validity, as well as use in practice. Examining this component is not only a contribution to the ambidextrous leadership theory. Literature regarding the role of time in leadership has established how different behaviours are sometimes necessary to correspond to different work needs (Bluedorn & Jaussi, 2008; Day, 2014). Leaders need to be aware of the time and be able to adapt their approaches accordingly, thus portraying a dimension of dynamism (Castillo & Trinh, 2018).

The second major novel contribution that this study makes, is the use of potential mediators to further explain the relationship between ambidextrous leadership and followers' innovative behaviours. Although, recent studies found that ambidextrous leadership may also lead to an overall innovative climate (Kung, Uen & Lin, 2020), processes of knowledge sharing (Haider et al., 2021), as well as to some negative outcomes, such as job stress and ambiguity (Wang et al., 2021), the present thesis is the first to examine another positive proximal follower outcome of ambidextrous leadership, apart from innovation. In particularly, the intrapersonal characteristic of motivation is examined in this research as a key mechanism between ambidextrous leadership and followers' innovative work behaviours, as well as an outcome of the leaders' opening and closing behaviours. Both studies of this thesis examine leaders' behaviours as predictors of the followers' intrinsic and extrinsic motivation, as well as

motivation as mediator in the proposed relationships between ambidextrous leadership and followers' innovative work behaviours.

The last novel contribution that this thesis can make is the examination of possible moderators. Currently, only one study exists that tests a moderator between ambidextrous leaders' behaviours and follower innovation. The study by Zuraik, Kelly and Perkins (2020) investigated the role of the team leader's gender on team innovation. However, the present study does not examine the team level, but the dyadic level from the followers' perspective. Moreover, as relationship characteristics between leaders and followers (i.e., exchange quality and trust) have been found in the past to play a role in innovation outcomes (Bak, 2020; Basu & Green, 1997) it is also expected that they would play a role in this research. But, most importantly, this is the first time a study tests such factors alongside ambidextrous leadership, hence any findings can be classed as novel contributions to the field.

1.5. Thesis Outline

This thesis is structured in five chapters and follows a publication format. A thesis using publication format means that the main studies are structured and presented in the way of conventional empirical quantitative papers. The present chapter constitutes the first one, which is the introduction and provided a background of the research, the aims, and objectives as well as the methodological approach and the potential contributions of this thesis. The second chapter presents a detailed review of the leadership literature, as well as the creativity and innovation literature. It further discusses the case of ambidextrous organisations and how ambidextrous leadership derived from the same theoretical frameworks and models. Moreover, this chapter discussed the three main theories that underline this thesis and proposed a conceptual model that is being tested through the two studies. Chapter 3 will present the first

study that was conducted as part of this research, which is the online experiment. The chapter explains relevant literature and develops hypotheses related to the experimental nature of the study. It explains the process and procedures this study has undergone, before exhibiting the analysis and the results. The chapter ends with a discussion on the findings, theoretical and practical contributions, as well as limitations and recommendations for future research. Chapter 4 is the second study of this research. As this chapter explains the daily diary study (experience sampling method) it begins with a literature review on daily and dynamic leadership, before explaining how ambidextrous leadership can be considered dynamic and thus capable of fluctuating over time. It is followed by hypotheses development and the arguments made are based on the nature of the study. A discussion on the method then takes place, where one may find the procedures that were followed for this study. The chapter continues with a discussion on the analytical approach that was followed as well as the statistical analysis for hypotheses testing. The next section discusses the results and findings of this study and related them with literature and past research. Lastly, theoretical as well as practical implications are being discussed, followed by key limitations of the study and directions for future research. Chapter 5 is the last chapter of this thesis. This chapter is a general discussion of the findings from both studies. It discusses not only which hypotheses were supported in both studies, but which hypotheses were not supported and why. It is followed by contributions to theory and practice, limitations, and suggestions for future research. The last chapter continues with a personal reflection on the whole research experience where I discuss what went well and what did not, while also making suggestions on what I would do differently if I was to do this research project again. Chapter 5 ends with a concluding paragraph summarising the present thesis.

Chapter 2: Literature Review

Management research has been around for decades (see Fayol, 1916; Taylor, 1947). Early research in the field focused mainly on management practices of great leaders, their behaviours and way of thinking (Stogdill, 1948). With the passing of time, a wave of scholars concentrated their efforts on leadership studies while looking not only from the leaders' perspective but providing emphasis on the perceptions of the followers too (Haslam & Platow, 2001), as well as further extrinsic factors, such as the culture (Krapfl & Kruja, 2015) or the environment (Danielsson, Wulff & Westerlund, 2013). Leadership is now considered a multifaceted, dynamic process where it can be looked at from various lenses and complex models, such as dyadic, strategic, shared, or relational (Avolio, 2007; Yukl, 2006).

This chapter captures the essence of leadership and its importance but only discusses in depth the theories and concepts that are most relevant with this thesis and its studies. In particular, the following section (2.1) will include a brief introduction to leadership, and will look at leadership theories and styles, as well as the outcomes of effective (and ineffective) leadership. Next, this chapter takes a look at the main outcome of interest, which is creativity and innovation (2.2), their common antecedents, as well as the ways multiple scholars have measured these concepts. Then, the chapter provides a review of the main concept and theory used in this thesis; ambidextrous leadership (2.3) and explains in depth how it was developed and what research so far has shown. The review of ambidextrous leadership highlights problematic issues and identifies important research gaps in this area. Finally, this chapter ends with descriptions of the theoretical frameworks (2.4) that guided this research project and its two studies, and demonstrates the conceptual model that is being tested in this thesis.

2.1. Leadership

It has been known for decades that leadership is a key driver to organisational success (Katzell & Guzzo, 1983; Maccoby, 1979). Organisations experience constant change due to increasing competition, increasing customer demand, technological advances, new policies and regulations as well as new trends. In order for them to not only survive, but thrive, during these challenges, a great level of leadership is required to guide them successfully towards their goal (Maccoby, 1979).

Leadership has attracted research interest from various fields and is considered amongst the most discussed topics in social sciences (Avolio et al., 2003; Bennis, 2007), and thus defining this concept with a single sentence is considered difficult (Winston & Patterson, 2006). Leadership, as a concept, obtained many definitions, as it is not static, but dynamic and contextual. Its meaning varies depending on the context that it occurs, and definition may change due to the field or sector, level of seniority, type of task or any other situational parameters, to the point that it is safe to say that the "one-size-fits-all" approach to effective leadership, that many people are looking for, simply does not exist (Dess & Picken, 2000).

Leadership has had multiple definitions over time. To quote Stogdill (1974): "there are almost as many definitions of leadership as there are people who tried to define it" (p.7). Numerous authors attempted to define leadership. For example, Katz and Kahn (1978, p.528) said that leadership is "the influential increment over and above mechanical compliance with the routine directives of the organization". House et al. (1999, p.184) defined it as "the ability of an individual to influence, motivate, and enable others to contribute toward the effectiveness and success of the organizations."

One of the most common definitions is by Northouse (2021), who claims that leadership is a process, where an individual (the leader) influences another individual (or a group of

individuals) to achieve a common goal. Most scholars agree that leadership is in fact a process. Antonakis and Day (2019), two of the most prominent scholars in leadership research, defined it as a "[…] goal-influencing process that occurs between a leader and a follower, groups of followers or institutions" (p.5), whereas the science of leadership was defined as the "[…] study of this process and its outcomes, as well as how this process depends on the leaders' traits and behaviours […]" (p.5). For the purposes of this study, I also employ a similar definition as I argue that leadership is a process where an individual (the leader) motivates their followers through their behaviours and actions, towards a common goal.

2.1.1. Leadership Theories

Multiple leadership theories have been developed over the years that can explain how leaders act and what behaviours they use in order to motivate and direct their followers towards that common goal. One of the first theories developed is called the "Great Man" Theory and assumes that great leaders are born, not made (Borgatta, Bales & Couch, 1954). The theory dates back to when leadership was assumed to be a male quality and portrays the leader as a hero who is destined to rise to power during a difficult situation (Hoffman, Woehr, Maldagen-Youngjohn, & Lyons, 2011). Trait theories assume that leadership is a set of specific traits, and individuals who possess those are more likely to emerge as leaders. These include shared attributes such as personality, skills, or values which have been found to predict leadership effectiveness (Eagly, Karau, & Makhijani, 1995; Judge, Bono, Ilies, & Gerhardt, 2002; Judge, Colbert, & Ilies, 2004). Although trait theories usually fail to take into account behavioural variance that occurs in different situations (Jenkins, 1947; Stogdill, 1948), Antonakis and Day (2019) posit that they are still amongst the most studied in leadership research.

Participative theory posits that the ideal leadership approach is when leaders take their subordinates' opinions and input into account. This method encourages followers to participate with the processes which makes them feel heard and increases collaboration and satisfaction (Chan, 2019). Participative leadership is considered an antecedent of psychological empowerment and intrinsic motivation of the followers, as it gives them voice and a sense of belonging and respect (Lee &Koh, 2001; Quinn & Spreitzer, 1997).

Another group of theories that have received lots of praise are the relationship theories (e.g., transformational leadership theory). Leaders try to create connections with their followers, increase their motivation and improve their morale. Leaders who use relationship-based behaviours and approaches aim not only to achieve the best performance for the followers, but reaching their full personal potential as well (Bass, 1999). On the other end of the spectrum, one may find the management theories (e.g., Transactional leadership). Theories of this nature focus on organization, supervision, and monitoring. Leaders assess the performance of the followers and use contingent rewards or take corrective action (*management by exception*) (Bass, 1985). The role of the leader according to such theories is to create structures which will make followers very aware of what is expected of them and as well as the consequences of their actions (both rewards and punishments) (Bono & Judge, 2004).

One may also find behavioural theories, which are amongst the primary theories that drive leadership research (Robbins, 1998). The fundamental principle of this theory is that leaders are made, not born. In essence, it is not about what traits or skills a leader has, but the actions that leaders take and the behaviours they portray (Bass, 1990b). This suggests that anyone can learn to become an effective leader through proper training, observation, and experience. Multiple meta-analytical papers have shown that leaders' behaviours are a predictor of leadership and followership effectiveness (e.g., Judge, Colbert & Ilies, 2004; Judge, Piccolo, & Ilies, 2004). Under the behavioural theory lens, leaders can be classified in two broad

categories: relationship-oriented behaviours and task-oriented behaviours, which were introduced by multiple scholars from universities in the United States more than half a decade ago (Fleishman, 1953; Hemphill & Coons, 1957; Kahn & Katz, 1952; Katz, Maccoby, Gurin & Floor, 1951; Likert, 1961; Stogdill, 1950). When talking about relationship-oriented leadership ("*consideration*"), one refers to leadership behaviours which show support, respect, and equal treatment for all followers. This group of behaviours also aims to motivate the followers, develop them both professionally and personally, encourage them to collaborate and work in teams and build strong positive relationships which focus on communication and recognition (Derue, 2011; Yukl, 2006). On the other hand, task-oriented behaviours ("*initiating structure"*) focuses on the performance outcomes of the followers, goal achievement, and the establishment of patterns for execution and communication in regard to the task (Bass, 1990a, 1990b). Task-oriented leadership may also use contingent rewards to influence the motivation and commitment of the followers. Sets of specific behaviours grouped together have also been termed as "leadership styles". Multiple leadership styles have been developed thus far, which correspond to specific behaviours and usually have different aims (e.g., transformational, transactional, authentic, ethical, servant, autocratic, etc.).

Another school of thought is the contingency-based, where one may find contingency theories and situational theories. Contingency theories explore specific environmental-related variables which can help a leader choose which style is more appropriate. This theory suggests that situational features need to be considered at all times and that "one size fits all" leadership approach is not effective (Greenleaf, 1977). Situational theory is very similar to the contingency theory and suggests that different styles of leadership are required for each situation. Leaders can be more democratic when employees are very skilled and competent, or authoritarian when there is an imminent deadline. This type of theories addresses the key limitation of behavioural theories which assume that behaviours are the sole influencing factor

of employee outcomes. Fiedler (1964) and further researchers (i.e., Strube & Garcia, 1981) have established the importance of contingency theories and argue that there is no ideal leadership style that all leaders can use, as multiple factors can play a role, such as the relationships between leaders and followers, the context, or even individual differences. In essence, according to these theories, a leader should be able to assess the situation, and decide which approach might be the most effective and appropriate one. Nonetheless, contingency theories are not without their limitations, as there is minimal empirical support for their effectiveness (Avolio et al., 2003; Vroom & Jago, 2007).

The leadership style that this thesis is interested in; ambidextrous leadership, borrows aspects from both the behavioural theories, as well as the situational theories. As briefly described before (see 1.1), ambidextrous leadership has two components: the two sets of opposing behaviours, and the ability to switch depending on the situation. Hence it can be argued that ambidextrous leadership may be classed as both a behavioural theory as well as a situational theory (see 2.3.1).

2.1.2. Outcomes of Leadership

Research shows that leadership is a factor that is responsible for many organisational, group and individual outcomes. Since leadership is a process that involves two parties, many argue that the relationship quality between leaders and followers is one of the main predictors of follower outcomes. For example, the meta-analysis by Dulebohn et al. (2012) shows that Leader-Member Exchange, the quality of the relationship between leaders and followers (LMX) can predict various employee outcomes. Followers in high quality relationships receive more support, access to information, feedback, autonomy and increased responsibilities therefore can experience higher psychological empowerment than followers in low quality relationships. Moreover, LMX also predicts overall employee job performance (Dulbohn et al.,

2012; Gerstner & Day, 1997). Followers who believe their relationship with their supervisor is of high quality, they will also portray better performance.

Leadership behaviours also show that they can lead to multiple outcomes. For instance, leaders who employ a transformational leadership style are effective in improving their followers' performance (Buil, Martinez & Matute, 2019; Miao, Newman & Lamb, 2012). Transformational leaders may also promote further individual outcomes such as work engagement and organizational citizenship behaviours. When followers feel heard and valued due to the leaders' individualized consideration, they are more likely to reciprocate by demonstrating higher engagement and commitment to the organisation (Bass, 1990b). Positive leader behaviours that focuses on employee development improve employee work attitudes such as engagement and job satisfaction (Atwater & Brett, 2006). Leadership behaviours and actions may also be responsible for employee productivity. For instance, Silverthorne and Wang (2001) found that leaders who can adapt to the situation are more likely to improve employee productivity. The way leaders' behaviours are perceived by their followers is crucial to what outcomes employees will demonstrate. For example, transformational leaders, which are more positive and motivational, are more likely to be perceived as effective compared to transactional leaders (Deluga, 1988). Moreover, followers under transformational leaders have higher job satisfaction than those under than transactional leaders (Deluga, 1988). Transformational leaders are also effective in enhancing follower intrinsic motivation. (Charbonneau, Barling, & Kelloway 2001). Due to the inspirational motivation dimension of this leadership style, employees can perceive their leaders as open and supportive thus increasing their intrinsic motivation to undertake a task. Emotional intelligence is also another outcome of leadership, as the meta-analysis of Mia, Humphrey and Qian (2018) shows that authentic leaders in this case are effective in promoting the emotional intelligence of the

followers. Authentic leaders may also promote employee trust, which can then lead to higher engagement (Joo, Kim & Kim, 2016).

The outcomes that this thesis is particularly interested however, is creativity and innovation, and leadership is considered one of the key antecedents of them (Hammond et al., 2011; Rosing et al., 2011). Multiple leadership styles have been found to be beneficial for creative outcomes. Transformational leadership is considered amongst the most well-known and has been found multiple times to improve creativity of the followers, as it is positive and empowering (Koh, Lee & Joshi, 2019). For example, Bass and Avolio (1997) argue that when leaders stimulate their followers intellectually, may help them think outside the box and use with new behaviours which facilitate their creative thinking, thus encouraging them to combat unusual problems through novel methods and techniques (Srivastava, Bartol & Locke, 2006). Gumusluoglou (2009) found that transformational leadership can promote employee creativity as well as organisational creativity. Shin and Zhou (2003) found that Korean companies may also benefit from transformational leadership if their aim is to enhance follower creativity. The study by Henker, Sonnentag and Unger (2014) further demonstrates that transformational leadership may lead to employee creativity directly, as well as indirectly through promotion focus.

On the other hand, the competing style of transformational leadership, which is transactional leadership, is said to not be very effective for creativity and innovation, as it focuses on extrinsic motivation and the effects of contingent rewards or punishment, instead of intrinsic motivation which is considered a key component of creativity and innovation (Amabile et al., 2018). Nonetheless, there have been studies that found transactional leadership to actually be beneficial for creativity (Rickards, Chen & Moger, 2001) as well as innovation (Chang, Bai & Li, 2015). Leaders may be effective in facilitating follower creativity if they reward creative outcomes instead of task completion (Byron & Khazanchi, 2012), but some scholars argue that they will most likely hinder it if they focus on negative process such as non-constructive

feedback or punishments (Moss & Ritossa, 2007; Rank et al., 2009). In general, most studies show that transactional leadership is negatively related with follower creativity and innovation (e.g., Lee, 2008; Pieterse et al., 2010), yet a study by McMurray et al. (2013) showed that contingent punishments were surprisingly beneficial for innovation.

The leader-member exchange quality (LMX) was also found to play a role in follower creativity and innovation. Lee (2008) found that LMX can predict follower innovativeness directly, whereas Liao et al. (2010) found an indirect effect. Other studies have also found that it can have a moderating (Van Dyne, Jehn & Cummings, 2002) or a mediating effect (Gu et al., 2015) on creativity on innovation. It is therefore evident that when followers have good relationships with their leaders, are more likely to produce more ideas and be more innovative. Various studies have in fact showed that high levels of LMX have stronger associations with follower creative and innovative outcomes than transformational leadership (Pundt, 2015; Turunc et al., 2010). Trust in leadership is also a very important factor, not only in relationships, but in creativity outcomes too. Suggesting new ideas and exploring new and bold methods is risky. When employees trust their leader, they are more likely to engage with creative behaviours due to the perceived psychological safety (Zhang & Zhou, 2014).

Other styles have also shown signs of being beneficial for follower creativity and innovation. Being an authentic leader means knowing, accepting and be true to oneself (Avolio & Mhatre, 2012). Authentic leaders are characterised by self-awareness, morals, and transparency (Walumbwa et al, 2008). Rego et al. (2012) for example found that authentic leadership can promote employees' creativity, through increasing their psychological capital. Müceldili, Turan and Erdil (2013) also found that authentic leadership may directly promote employee creativity as well as employee innovativeness. Rego et al. (2014) also found that authentic leadership can lead to follower creativity directly, as well as indirectly through employee hope and positive affect. Servant leadership, which is another famous leadership style, also shows

positive associations with employee creativity. Servant leaders are altruistic and put the greater good and the good of their follower over their own self-interest, which can help them develop and grow (Van Dierendonck, 2011). Servant leaders promote prototypicality, which is the extent to which they portray characteristics of the team, which can lead to higher team innovation (Yoshida, Sendjaya & Cooper, 2013). Yoshida and her colleagues (2013) also found that servant leadership may promote individual creativity through leader identification. The study by Yang, Liu, and Gu (2017), found that servant leadership can promote team creativity through team efficacy at the team level, and individual creativity through creative self-efficacy at the individual level. Trust in leadership was found to mediate the relationship between servant leadership and follower creativity (Jaiswal & Dhar, 2015). It can be argued therefore that to enhance employee creativity, an empowering leader is crucial. The study by Zhang and Bartol (2010) found that empowering leadership can lead to follower creativity indirectly through psychological empowerment which can enhance their creative process engagement as well as their intrinsic motivation. Zhang et al. (2018) also found that empowering leadership can lead to employee creativity indirectly through access to resources, information, as well as organisational-based self-esteem. Empowering leadership may also lead to employee creativity through creative self-efficacy and may be moderated by further factors such as trust and uncertainty avoidance (Zhang & Zhou, 2014). Since the main outcome of interest of this thesis is creativity and innovation, then a more thorough examination of these constructs can be seen in the following section (2.2).

2.2. Creativity and Innovation

Creativity and innovation are key aspects that help organisations maintain their competitive advantages (Zhou & Shalley, 2003). Amabile (1997) argues that innovation is vital for

organizational success and sustainability in the long run. According to LinkedIn, the two are also considered key skills that are currently in high demand by employers and are believed to be amongst the top 10 soft skills of 2025 (Pretorius, 2022).

Creativity and innovation are concepts that often used interchangeably in real life; however, they hold a distinct difference in organizational research. Although scholars agree that the two are different processes (Anderson, Potočnik & Zhou, 2014) they also claim that they share many related characteristics as well as outcomes. Creativity refers to the generation of novel and useful ideas (Amabile, 1988), whereas innovation involves the implementation of those ideas (Janssen, Van de Vliert & West, 2004). Some definitions (e.g., West & Farr, 1990) use innovation as an umbrella term that involves both idea generation and idea implementation. Anderson et al. (2014) have created a shared definition of workplace creativity and innovation in which they state that the two are work processes which focus on introducing new ideas and implementing them, regarding procedures, products or practices. They also state that the distinction between the two is that creativity focuses entirely on the generation of ideas, whereas innovation focuses on the following stages of implementation and application of ideas. Hughes et al. (2018) reviewed numerous of definitions and resulted that workplace creativity "concerns the cognitive and behaviours processes" that are being applied during one's attempt in generating new ideas, but innovation focuses on the processes that are being applied when one tries to implement new ideas (p. 551). This thesis agrees with the definitional distinction between creativity and innovation. Throughout this thesis, the term creativity is used as the process where individuals engage with idea generation, whereas innovation is used as the process where individuals also engage with idea implementation. To avoid any possible confusion however, in this thesis I will be using the terms "idea generation" and "idea implementation" to refer to the behavioural outcomes of the studies' subjects.

Moreover, it is important to acknowledge that the innovation process is not linear (Allataifeh, Moghavvemi, & Peerally, 2021; Van de Ven, 1999). Employees may go back and forth between generation of ideas, evaluation, promotion, testing, championing and implementation, and each stage's duration may vary (Docter, Van Der Horst, & Stokman, 1989; Perry-Smith, & Mannucci, 2017). The idea implementation stage for example, may require a longer amount of time, than idea generation, due to all the necessary procedures and policies employees must follow before implementing an idea (Doctor et al., 1989; Perry-Smith, & Mannucci, 2017).

2.2.1. Antecedents of Creativity and Innovation

There have been various studies so far to determine what are the drivers and antecedents of creativity and innovation. One of the most famous theoretical frameworks on creativity (*Componential Theory of Creativity*) suggests that the three most important components of individual creativity are intrinsic task motivation, domain-relevant skills, and creativity-relevant processes (Amabile et al., 1998). When employees are passionate about their work, find it interesting and enjoy intrinsically what they are doing, they are more likely to come up with novel ideas to the problems and challenges they face. Domain-relevant skills refers to the knowledge, skills, and expertise that one possesses. These elements will give the individual the best chances to tackle a challenge and find new solutions to the problem. Lastly, the creativity relevant processes refer to the individual's personality and thinking style. Individuals who are not afraid to take risks, have a cognitive ability to synthesize information from various sources and are tolerant of ambiguity, are more likely to succeed in their pursuit of creativity. Moreover, the theory of Amabile also discusses the importance of a supportive climate which can include effective leadership. Woodman, Sawyer, and Griffin (1993) argue that their framework of the *interactionist perspective of organisational creativity* is in fact a more appropriate theoretical

framework as it states that since creativity is a complex process, the only way to understand it is through various interactions at the individual, team, and organisational level. The interactions between various antecedents, such as cognitive ability, skills, knowledge, motivation, physical environment, organisational culture, climate, group composition etc., are important in understanding how creativity is enhanced or inhibited (Shalley, Gilson, & Blum, 2009; Zhou & Shalley, 2010). Further models include the *model of individual creative action* by Ford (1996), which suggests that in order for an individual to take a creative action, three factors have to be in place: sensemaking processes, knowledge and skills, and motivation. Motivation further depends on other factors such as goals, emotions, perceived competence etc. Due to the complexity of this model however it has not received as much praise as the other two (Unsworth & Clegg, 2010). West (1990) developed the *four-factor theory of team climate for innovation*, through which he argues that for a team to succeed in innovation it has to ensure that the vision is clear and understandable amongst all members, that team members have the freedom to suggest ideas without repercussions, that they will focus on the task and engage in careful examination of possible solutions, and that they believe the company or organisation supports them in their pursuit of innovation (Anderson & West, 1998).

In general, antecedents of creativity and innovation may be clustered into groups. The most common five categories of antecedents include personality (e.g., Anderson & Gasteiger, 2008), rewards (e.g., Eisenberger & Rhoades, 2001), team characteristics (e.g., West, 2002), resources (e.g., Shalley, Zhou & Oldham, 2004) and last but not least, leadership (e.g., Byrne et al., 2009).

Probably the most popular antecedent of creativity is personality. Multiple studies throughout the years have shown that individuals who score high in openness to new experiences tend to also be creative than those with lower scores (Anderson & Gasteiger, 2008; McCrae, 1987; Mumford & Hunter, 2005; Schilpzand, Herold, & Shalley, 2011; Tan et al., 2019). Intrapersonal characteristics such as flexibility, self-confidence and intuitiveness also seem to

be correlated with individual creativity (Shalley & Zhou, 2008). Some studies also found that extroverted individuals may also produce creative outcomes as such individuals are more confident in their abilities (Chiang, Hsu, & Shih, 2017; Kaspi-Baruch, 2019; Taggar, 2002).

Contrary to the arguments of Amabile (2007; 2011) that only intrinsic motivation can improve individual creativity, there are studies that show that extrinsic motivation, such as contingent rewards can in fact help in some situations. For example, the study by Im, Montoya, and Workman Jr. (2013) shows that a market-based reward system is beneficial for novelty of new product development amongst teams that work on product innovations. Eisenberger and Armeli (1997) have also found through their experiments that when individuals are offered reward for the creative performance, it will make them intrinsically interested in the task, as well as more creative. Eisenberger and Rhoades (2001) conducted five studies and found in all of them that extrinsic rewards do play a beneficial role in individual creative performance.

Regarding team characteristics, Barczak, Lassk and Mulki (2010) found that when teams have emotional intelligence, then team members are more likely to trust each other, thus developing a collaborative culture which fosters and encourages creativity. Moreover, the composition of the team can help the team's creative performance. A diverse team with members from different backgrounds, personalities and skills can be more creative than teams low in diversity (King & Anderson, 1990). When group members have skills and knowledge that complements each other, then the team is likely to benefit from them at all stages of the innovation process (Caniëls, et al., 2014; Uzzi & Spiro, 2005)

In section 2.1.3. I discussed how different leadership styles can promote creativity and innovation of the followers. Styles such as transformational (Gumusluoglou, 2009; Shin & Zhou, 2003), empowering (Zhang and Bartol, 2010; Zhang et al., 2010), authentic (Joo, Kim & Kim, 2016; Rego et al., 2014), servant (Yang et al., 2017l; Yoshida et al., 2013), may be

very beneficial for improving the creative outcomes of the followers, as well as the relationship between leaders and followers (LMX; Pundt, 2015; Turunc et al., 2010). It can be argued therefore that a supportive, positive, and motivational leader, as well as a good relationship between leader-follower, may facilitate the creative behaviours of the employees.

The study by Caniëls, De Stobbeleir and De Clippeleer (2014) shows some interesting results, as they explain that due to the complex nature of the process of innovation, each antecedent may have an opposite effect. For example, regarding personalities, individuals are more effective during idea generation when they are more open-minded and keener on trying out new experiences. However, during idea implementation, a more task and result-oriented mindset is required. Rewards as an antecedent of creativity and innovation has shown mixed results (Amabile, 1997; Eisenberger & Armeli, 1997; Eisenberger & Rhoades, 2001). When extrinsic rewards are introduced during the idea generation stage, they might hinder creativity, but when they are introduced during the idea implementation stage, they might help employees focus and go through with the idea. Resources could be another factor that has different effect depending on the innovation stage. During idea generation employees may require support and access to information, whereas during the implementation, they are more likely to require time and funding. Finally, Caniëls et al. claim that leadership also should be tailored according to the situation. They argue that during the idea generation stage, a leader should be more open, supportive and be simply a facilitator who does not have authority or hierarchical power over the team (Madjar, Oldham, & Pratt, 2002). However, they claim that a hierarchical leader is imperative during idea implementation, as this stage requires a person to take control, make decisions, monitor the process and be responsible for the end result. It can be understood therefore that when it comes to innovation, a one-size-fits-all approach to leadership might not be effective due to the different stages of innovation, which although related, are not the same.

2.2.2. Measures of Creativity and Innovation

Various measurement scales have been developed over the years that capture the concepts of workplace creativity and innovation. The most common methods include self-reported measurements as well as supervisory ratings (Anderson et al., 2014). Amongst the most used scales for creativity, one may find Zhou and George's (2001) instrument which uses thirteen items to measure the concept. The instrument was developed with the aim to be used by supervisors to assess their subordinates' creativity. Sample items from this scale include "Suggests new ways to achieve goals or objectives", "Is a good source of creative ideas" and "Comes up with creative solutions to problems". Although most of the items focus on idea generation, some of them focus on idea promotion such as "Promotes and champions ideas to others" as well as idea implementation such as "Develops adequate plans and schedules for the implementation of new ideas". The instrument by Oldham and Cummings (1996) is also widely used and measures creative performance of an individual through three items, which include "How original and practical is this person's work?", "How adaptive and practical is this person's work?" and "How creative is this person's work?". The three items focus on idea generation, adaptability, and novelty respectively. Tierney, Farmer and Graen (1999) also developed a scale that measured employee creativity. Their tool consisted of nine items that supervisors could use to assess their employee. Sample items include "[…] demonstrated originality in his/her work", "[…] generated novel, but operable work-related ideas" and "[…] tried out new ideas and approaches to problems".

Innovative work behaviour is a concept that scholars have used to capture the different stages of innovation. One of the most significant works in creativity and innovation is the one by Scott and Bruce (1994), as they did not only identify key drivers of innovative behaviour such as leadership, and individual problem solving, but they also developed one of the most widely

used scales. The original instrument was intended to be used by supervisors to rate their followers' innovation. It includes six items such as "(he/she) searchers out new technologies, processes, techniques and/or product ideas", "(he/she) generates creative ideas", "(he/she) promotes and champions ideas to others" and "(he/she) develops adequate plans and schedules for the implementation of new ideas". Scott and Bruce (1994) were the first to develop a scale that captures the three main stages of innovation: idea generation, idea promotion and idea implementation.

Burpitt and Bigoness (1997) also developed a scale that captures team innovation. Their instrument focused on two dimensions: market orientation and problem orientation. Market orientation is captured by four items and a sample item includes "The team identifies and develops skills that can improve their ability to serve existing business needs". Problem orientation is measured using five items and a sample item is "The team seeks out and acquires information that may be useful in developing multiple solutions to problems".

Janssen (2000) drew on the work of Kanter (1988) and Scott and Bruce (1994) and developed a scale, that focused on the three main stages of innovation: idea generation, idea promotion and idea realisation. His Innovative Work Behaviour (IWB) scale consists of nine items, three for each innovation stage. The scale has been widely used as it can be applied to multiple workplace situations and can be used by either supervisors to assess their employees work, or as a self-reporting instrument for employees. Idea generation includes items such as "Creating new ideas for difficult issues" and "Generating original solutions to problems". Idea promotion includes items such as "Acquiring approval for innovative ideas" and "Making important organisational members enthusiastic for innovative ideas". The idea realisation stage, also known as idea implementation, includes items such as "Transforming innovative ideas into useful applications" and "Evaluating the utility of innovative ideas".

Another popular method that studies have used to measure individual creativity is the Consensual Assessment Technique (*CAT*; Amabile, 1982). Specifying objective criteria that can identify products as creative can be difficult. One person's idea of a "creative product" might not be the same as the next one's. However, if multiple individuals agree that a product is deemed creative, then it is likely that it classed as creative. Moreover, if those individuals are experts on the specific subject, then their opinions are more credible. The CAT therefore is considered a robust tool in creativity research as it allows a group of experts (judges) to rate the creativity of an outcome, either a product, a piece of work, or an artifact. This technique is not based on any theories of creativity, thus is not dependent on their validity. Unlike other measures of creativity, the CAT is not concerned with the thinking behind the process, the behaviours portrayed, the motivation or even the personality of the individual. It is a pure judgement of the result, which can be argued that it is a valid measure of creative performance and is considered as the "gold standard" for assessing creativity (Baer & McKool, 2009). Although one might argue that the experts may have different taste and expectations which might lead them to disagree, multiple studies show that they tend to agree in a consistent manner (Baer & McKool, 2009). Commonly using inter-rater reliability to analyse the data, studies tend to find values that range from good to excellent. For example, experts who rated numerous artistic designs and writings have shown inter-rater reliability values that ranged from 0.72 to 0.93 (Amabile, 1983). It has been suggested that the greater the number of judges, the higher the inter-rater reliability correlations. Multiple studies have used the CAT successfully and found high inter-rater reliability values, usually ranging from 0.70 to 0.90 (e.g., Amabile, 1996; Baer, 1997, Baer, Kaufman, & Gentile, 2004; Conti, Coon & Amabile, 1996).

The following section introduces organisational ambidexterity and explains how an organisational level construct helped create an individual level theory (i.e., ambidextrous

leadership theory). In this section, I explain how organisations may achieve innovation through ambidexterity, and lastly introduce the concept of ambidextrous leadership and review the studies conducted around it.

2.3. Organisational Ambidexterity

Ambidexterity is described and commonly known as the ability to do two things simultaneously (Gibson & Birkinshaw, 2004; He & Wong, 2004; Lubatkin, Simsek, Ling & Veiga, 2006). In organisational contexts, ambidexterity refers to the ability of a firm to pursue two dissimilar goals at the same time. Depending on the situation, sector, or goal, scholars have named those two things differently, such as differentiation and low-cost strategy positioning (Porter, 1996), efficiency and flexibility (Adler et al., 1999), global integration and local responsiveness (Bartlett & Ghoshal, 1989), or exploration and exploitation (March, 1991). In essence, it is the ability of the organisation to balance two conflicting demands (Duncan, 1976). O'Reilly and Tushman (2013) claim that organisational ambidexterity is vital for the long-term survival of a company. Scholars from various fields have studied this concept from an operations management perspective (Adler et al., 2009) to strategic management (Lubatkin et al., 2006; Voelpel et al., 2006) and innovation (Ambos et al., 2008; He & Wong, 2004; Tushman & O'Reilly, 1996).

Ambidexterity has received multiple definitions over the years. From an organisational theory perspective, it was defined by Achrol (1991) as simultaneous efficiency, innovation, and flexibility, by Lin et al. (2007) as a balanced existence of established and new partners in a firm's alliance network, by Gibson and Birkinshaw (2004) as adaptability and alignment and by Schreyögg and Sydow (2010) as simultaneous fluidity and stability. From an innovation perspective, scholars have defined it as the "ability to simultaneously pursue both incremental

and discontinuous innovation and change" (Tushman & O'Reilly, 1996, p.24). Benner and Tushman (2003) suggested that it is about simultaneous exploration and exploitation. Danneels (2006) posits that ambidexterity is about developing current as well as disruptive innovations. Lee et al. (2006) agreed with others and defined it as a balance between flexibility and rigour.

March (1991) claims that the best way a company may gain a competitive advantage and sustain a long-term performance is when organisations use and maintain an appropriate balance between exploration and exploitation. Further researchers agreed that for companies to succeed they need to engage with exploratory and exploitative activities at the same time, which can benefit their innovative outcomes, thus providing them with the desired competitive advantage (Gibson & Birkinshaw, 2004; Lubatkin et al., 2006).

Explorative activities, or exploration, focus on goals that are risky, complex, challenging, uncertain and ambiguous and are being implemented when change is needed, hence leading to radical innovation. These activities are often characterized by experimentation and can lead to new knowledge (Tabeau et al., 2017). On the other hand, exploitative activities, or exploitation, are implemented when stability is required. Activities as such focus on refinement, efficiency, certainty, simplicity, intransigence and are being used when incremental innovation and slight improvement are needed (March, 1991). As many organisations are in a constant dilemma between focusing on sustainment or engaging in radical innovation, researchers suggest that they can in fact have both, if they balance explorative and exploitative activities correctly, thus ensuring current as well as future viability and persistent success (Lubatkin et al., 2006; March, 1991; O'Reilly & Tushman, 2011). One of the main reasons why organizations choose to pursue ambidexterity is the potential of improving their performance or sustaining a competitive advantage, through radical or incremental innovation outcomes (Gibson & Birkinshaw, 2004; He & Wong, 2004). Some, however, argue that

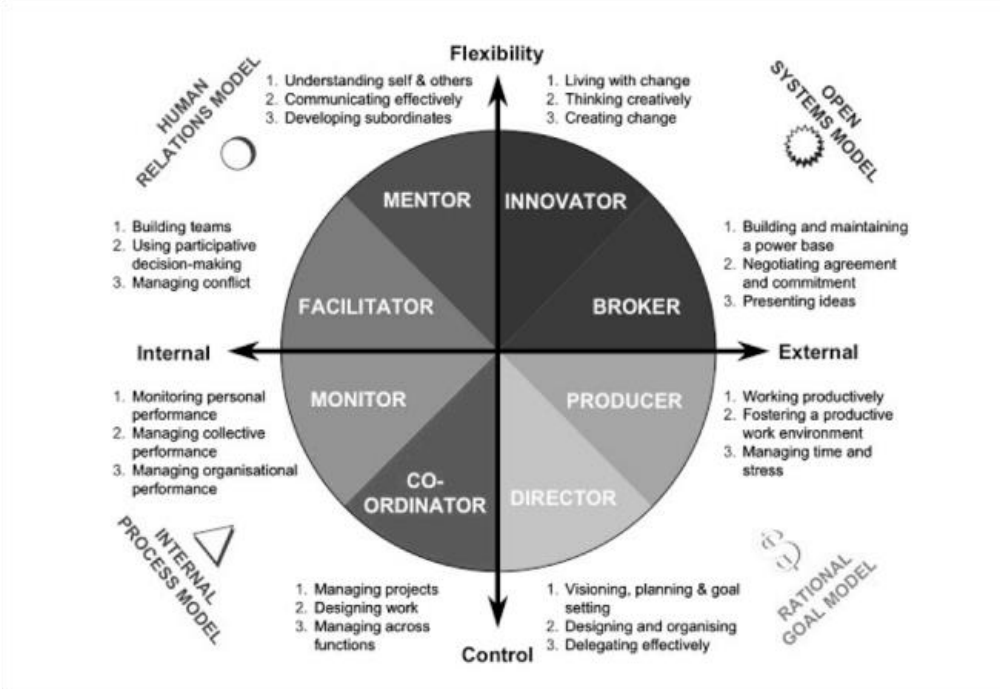
organisations might face some difficulties in their pursuit to attempt both. March (1991) argues that it might be impossible for organizations to have a balance between the two, hence running the risk of not being very successful at either one, while others claim that organizations usually make a choice of one at the expense of the other (Barney, 1991; Ghemawat & Ricart Costa, 1993), which can lead to an imbalanced consistency hence underperformance. Nevertheless, Tushman and O'Reilly (1996) claim that firms, which are capable of running both explorative and exploitative activities, are performing better than firms which choose to sacrifice one in favour of the other. Many scholars assert that ambidexterity can be a driver of organizational performance in the long run (Gupta, Smith & Shalley, 2006; Floyd & Lane, 2000). The interplay therefore between exploration and exploitation can have a significant effect on innovation (Gupta, Smith & Shalley, 2006). Various scholars agree and found evidence that ambidextrous organisations can have a positive influence on innovation (Bresciani, Ferraris, & Del Giudice, 2018)

Leadership has been considered a key antecedent of organisational ambidexterity (Baškarada, Watson, & Cromarty, 2016; Bartlett & Ghoshal, 1989; Birkinshaw & Gibson, 2004; Rosing et al., 2011; Tushman & O'Reilly, 1997) and employees are the main mechanisms of ambidexterity outcomes. In order, therefore, for an organisation to be ambidextrous, the leaders should be ambidextrous. It has been suggested that organisations need to focus on four attributes in order to achieve ambidexterity, which include stretch, discipline, support and trust (Ghoshal & Bartlett, 1994; Gibson & Birkinshaw, 2004). These four attributes would allow an organization to be ambidextrous as through discipline and stretch, they are likely to encourage their employees to pursue bold goals, but at the same time, they need to be supportive and create a positive climate of trust and belonging. Scholars argue that despite the existence of numerous different leadership styles, the most effective leaders are in fact those who display a wide repertoire of different behaviours, which are often contradictory (Denison et al., 1995),

whereas Lewis (2000) states that the tensions that the managers experience on their pursuit to become ambidextrous are normal, as they should not compromise on one path, but instead realise that all of their different pursuits and goals can co-exist simultaneously. He argues for example that democratic leadership may co-exist with authoritarian leadership and disciplinary approaches can co-exist with empowerment approaches (Lewis, 2000). It is therefore the job of leaders if they want to build an ambidextrous organisation, as their actions will shape employee behaviour (Ghoshal & Bartlett, 1994).

The theoretical framework that drives behavioural complexity is rooted on Quinn's model of leadership roles (Quinn, 1984, 1988). The model, also known as the Competing Values Framework (Denison et al., 1995), portrays the roles that leaders should play in order to be effective (see Figure 1). The model shows eight managerial roles based on the dimensions of flexibility versus stability and internal focus versus external focus. It is divided in four quadrants which have different focuses and goals. The leadership roles suggested, appear in a way that they are opposite of their contradictory role. For instance, "innovator" leaders are creative and encourage creativity and embrace change, however, on the opposite quadrant, one may find the role of "coordinator" which focuses on structure, coordination and monitoring of rules and processes. Quinn (1984, 1988) urged managers to understand that in order to be effective, then a multi-style approach is the most appropriate. According to him, the most effective leaders are those who are able to use a wide repertoire of complex behaviours.

Figure 2.1. Competing Values Framework (CVF; Denison et al., 1995, p. 527)



Bass and Stogdill (1990) also made a case about effective leadership. They believe that a "more of everything" approach to behaviour is important for effective leadership. Behavioural complexity was thus defined by Denison et al. (1995, p. 526) as "the ability of one to portray contrary or opposing behaviours". Consistent with Quinn's (1984, 1988) views, they believe that the leaders should be aware of the situations they are dealing with and use behaviours appropriate for that situation. A wide repertoire of opposing or contradictory behaviours is therefore needed (see CVF) in order for the leaders to be effective and deal with various situations.

2.3.1 The Ambidexterity Theory of Leadership for Innovation

In essence, it can be argued that since innovation is a multi-phased process that includes different process, often contradictory, then a leader who uses opposing behaviours might be more effective in facilitating it. For example, the idea generation stage is characterised by autonomy, flexibility, encouragement, and intrinsic motivation, however, the idea

implementation stage requires focus, quick decision-making, efficiency, and execution (Baer, 2012). As the two activities are distinct, and related to different behaviours and cognitive processes, then one leadership style may be effective for one but damaging for the other (Baer, 2012; Somech & Drach-Zahavy, 2013). It can be said therefore that since the two main innovation stages are opposite in nature, then a leader who uses contradictory leadership styles might be more effective.

Rosing, Frese and Bausch (2011) proposed that a single leadership style may not foster innovation, but rather be a part of it, as more factors may play a role. They argued that leaders can only promote innovation through a combination of different behaviours, and only when they can flexibly change between those depending on the situation, hence matching the complexity and idiosyncratic pace of innovation (Ancona, Goodman, Lawrence and Tushman, 2001). This ability therefore to demonstrate flexibility in employing some leadership behaviours has been described as ambidextrous leadership.

Rosing, Frese and Bausch (2011, p.957) have defined ambidextrous leadership as the ability of the person in charge to *"foster both explorative and exploitative behaviours in followers by increasing or reducing variance in their behaviour and flexibly switching between those behaviours"*. However, similar to other definitions (e.g., transformational leadership) the definition of ambidextrous leadership is problematic, as it confounds the leaders' behaviours with the outcome of the behaviours. The definition provided should describe the leaders' behaviours, and not its expected outcomes.

The paper by Rosing and her colleagues (2011) was the first that kickstarted a series of studies on ambidextrous leadership and employee innovation. They argued that this style is the most appropriate and effective if the aim is innovation. *The Ambidexterity Theory of Leadership for*

Innovation (Rosing *et al*., 2011) suggests that if leaders use *opening* and *closing* behaviours in a balanced way and when appropriate, then their followers' innovation will be at its highest.

Their model (see Figure 2) suggests that there are two aspects to it. Firstly, the leaders need to know about the exact type of behaviours that they need to portray. Opening leader behaviours are encouraging, motivational, allow free and independent thinking and support the generation of new approaches to problems. Rosing and her colleagues (2011) named this set of behaviours "opening" to indicate that leaders need to show they are open to new ideas and provide the platform for them. They claim that behaviours such as providing them with autonomy, encouraging them to experiment, and allowing them to make mistakes and errors are core characteristics of opening behaviours. The aim of these behaviours is to increase the variance in followers' behaviours, thus facilitating their explorative behaviours (Rosing et al., 2011) Conversely, closing leader behaviours involve taking corrective action, setting specific guidelines, monitoring the achievement of goals and objectives, and ensuring that everyone sticks to the overall plans. These behaviours ensure the reduction of variance in follower behaviours, as they push them to stick to their limits and use their current skills and knowledge to complete a goal (Rosing et al., 2011), hence why they named this set of behaviours as "closing". When leaders use closing behaviours, they try to influence their followers towards exploitation of their current skills and knowledge and make them focus on efficiency and execution based on the established routines and processes of the firm. Both opening and closing behaviours need to coexist in a balanced and cohesive way for the innovation outcomes to be high (Rosing et al., 2011).

The second aspect of the theory, which is very important but often overlooked is what Rosing and her colleagues (2011) named *temporal flexibility.* Temporal flexibility is the ability to know when to switch between the two sets of behaviours. The authors suggest that a leader

should act ad-hoc, meaning that each set of behaviours corresponds to a different situation. Leaders should be constantly aware at what stage of innovation their subordinates are and be ready to swiftly change their behaviours to match that stage. The authors make a case for the two biggest and most contradictory stages of innovation: idea generation and idea implementation. They argue that when followers work on idea generation tasks, leaders should portray opening behaviours. By portraying opening behaviours, leaders allow followers to think outside the box, and encourage them to experiment with new ideas without any fear of judgement or criticism, thus generating more and higher quality ideas. As opening behaviours are motivational and inspiring, followers are likely to perceive them as positive, hence welcome them. However, during the implementation stage, followers should stop exploring new ideas and alternative paths, but instead focus on the chosen idea, and its execution, and turn it into reality. Rosing and her colleagues (2011) claim that closing behaviours are more appropriate during idea implementation tasks. By using closing behaviours, the leaders encourage their followers to take off their "thinking hat" and wear their "doing hat". During implementation, followers need to stick to certain protocols, guidelines, and routines that the company adheres to. They usually have to deal with bureaucratic procedures or technical aspects of the idea, such as logistics, manufacturing, or accounting, which may not sound exciting, yet are necessary for an idea to become reality. The closing behaviours therefore focus on ensuring that followers stick to these established routines and follow the customs and the rules of the company. The leader tries to enforce the rules by monitoring the process to ensure everyone follows the guidelines and even threatens to sanction and penalise any mistakes made. Contrary to opening behaviours, these may be perceived as negative by the followers hence it can be considered risky, if the balance between opening and closing leaders is not right.

Temporal flexibility is not an easily captured concept in the field of ambidextrous leadership, as it is a dynamic process. Temporal flexibility regards the ability of a leader to switch between

styles to facilitate the stage of innovation and motivate the subordinates accordingly. Ideally, a leader should know that a style they are about to portray is appropriate for the said situation, hence, knowing that by switching to it, they can be more effective. In the case of ambidextrous leadership, it was suggested (Rosing et al., 2011) that leaders should assess the stage of the process within the innvation cycle and use either opening or closing behaviours, as recommended. As aforementioned, this process can be classed under situational leadership, where leaders use behaviours they think are effective for each situation. Possessing situational awareness however, is not exclusive to ambidextrous leadership. Nonetheless, the authors suggest that it is a vital component of this theory. Temporal flexibility is not a separate concept, but a component of ambidextrous leadership. Ambidextrous leadership involves the two sets of behaviours as well as temporal flexibility. The key role of temporal flexibility is not about portraying different behaviours, but the ability of the leader to understand the social clues and be aware of the stage of the process and therefore switch quickly from one set of behaviours to the complete opposite. It could be said therefore that its key focus is quick thinking and right timing.

Nevertheless, there are some constructs which one could compare to temporal flexibility. Behavioural flexibility, for example, refers to the ability of a leader to act differently in different situations (Hall, Workman & Marchioro, 1998; Zaccaro, Foti & Kenny, 1991). This construct was also associated with leader emergence (Hogan, Curphy, & Hogan, 1994). Leaders who possess behavioural flexibility are able and willing to portray different behaviours. Such leaders possess the appropriate knowledge to understand the needs of a situation and portray behaviours ideal to those situational demands. While behavioural flexibility does not make a case for intended outcomes, temporal flexibility focuses on innovation processes and only two sets of contradictory behaviours, with the ultimate aim to enhance the subordinates' innovation levels.

Another concept of interest is paradox mindset. Paradox mindset is a recent, but promising concept which holds great significance. It refers to an individual's ability to embrace contradictions (Miron-Spektor et al., 2018). Individuals who possess high levels of paradox mindset, not only embrace work tensions, but feel energised by them. The challenge of having to deal with contradictory demands excites them and they perform better, than having to deal with consistent routine tasks. As the innovation cycle is full of paradoxes and conflicting demands, all individuals involved in the process should benefit from possessing a paradox mindset (Schad, Lewis, Raisch, & Smith, 2016). Studies have also shown that individuals who possess this mindset tend to be more innovative (Lauritzen & Karafyllia, 2019; Liu et al., 2020; Liu & Xu, 2019; Miron-Spektor et al., 2018; Wang, 2022). Unlike the previous concept, paradox mindset does not imply the existence of an ability or a skill to flexibily change behaviours, but an intrinsic motivational driver that allows individuals to be comfortable in challenging situations that are conflicting (e.g., innovation). While temporal flexibility focuses on the ability of the leader to switch quickly between behaviours depending the situation, this concept focuses on the ability of the leader (and followers) to be remain comfortable, excited and be effective about the said situation.

Figure 2.2 Ambidexterity Theory of Leadership for Innovation model (Rosing et al., 2011, p.966).

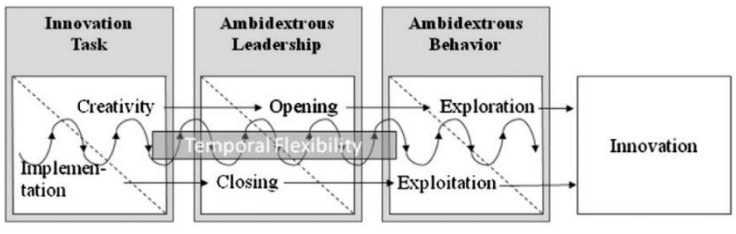


Fig. 3. Overview of the proposed model.

Despite the behaviours' opposite nature, Lewis, Welsh, Dehler and Green (2002) posit that they complement each other, and both are essential for the overall success of a project. Rosing et al.'s theory (2011) also suggests that a leader's opening behaviours act as a moderator in the relationship between closing leader behaviours and followers' innovation, Similarly, a leader's closing behaviours act as a moderator in the relationship between opening leader behaviours and followers' innovation. This means that the effect of a leader's opening behaviours on the followers' innovation depends on the level of closing behaviours demonstrated. According to this theory, high closing behaviours of a leader will strengthen the positive effect that high opening behaviours can have on the follower's innovative work behaviour.

Therefore, according to the theory, leaders who are able to demonstrate high opening behaviours during idea generation tasks and high closing behaviours during idea implementation tasks, they can promote their followers' ambidexterity (exploration and exploitation) which will lead to highest innovation. An interesting observation about the ambidextrous leadership style is that it combines behavioural theories with contingency theories, thus taking into account limitations of each, by considering not only the effect of specific behaviours as vital for innovation, but also their timing and the importance of leaders' situational awareness and quick behavioural shifting.

2.3.2. Ambidextrous Leadership Research

Since the generation of this theory a decade ago, multiple scholars have attempted to test it in various contexts. Schreiner (2017) found that leaders' opening and closing behaviours are related with followers' perception of leader effectiveness and satisfaction, while he also found that opening behaviours positively related with idea generation and implementation. Zacher and Rosing (2015) conducted a multi-source survey study and collected data from leaders and their employees. Their results found that team innovation (rated by supervisors) was predicted

by the leaders' opening behaviours (rated by employees), whereas closing behaviours was not significant for team innovation and did not have a main effect. However, they did find preliminary support for the theory suggesting that the innovation outcomes of the team were at their highest when both opening and closing behaviours were high. Moreover, innovation was lower when only one of the leaders' behaviours was high or when none of them were high. In a more recent study, Alghamdi (2018) tested the theory in an academic setting. The author found that leaders' opening behaviours predicted employee exploration, while leaders' closing behaviours predicted exploitation, as proposed by the theory (Rosing et al., 2011). Moreover, the results of the study also demonstrate that the interaction between leaders' opening and closing behaviours predict followers' innovation, to the extent that followers' innovative performance was highest when both leaders' opening and closing behaviours were high. The findings by Zacher, Robinson and Rosing (2016) were also consistent the ambidextrous leadership theory. The researchers found that leaders' opening behaviours positively predicted follower exploration, while leaders' closing behaviours positively predicted follower exploitation. They also found that the interplay between follower exploration and exploitation predicts employee self-reported innovative performance. They argue that these findings do not only support the theory but amplify its validity as well. In a study that used 98 UK high-tech Small and Medium Enterprises (SMES), Oluwafemi, Mitchelmore and Nikolopoulos (2020) found evidence that aligned with the ambidextrous leadership theory. Their study shows that opening leaders' behaviours predicts followers' explorative innovation behaviours, while closing leaders' behaviours predicts followers' exploitative innovation behaviours. They also found that the interaction between the two leader behaviours (opening and closing) positively predicted the interaction between the two followers' behaviours (exploration and exploitation), indicating that both leaders' behaviours are necessary for innovation to be at its highest. Kung, Uen and Lin (2020) studied ambidextrous leadership by collecting data from public museums

in Taiwan and found that ambidextrous leadership significantly predicts followers' innovative behaviours. Moreover, they found that leaders who portrayed ambidextrous behaviours enable a climate for innovation which can subsequently positively influence the followers' innovative behaviours (Kung, et al., 2020). Duc, Tho, Nakandala and Lan's (2020) study in the retail sector found that leaders' opening behaviours promote the followers' exploratory learning, while closing behaviours promoted exploitative learning. The interaction between the two types of team learning subsequently predicted positively team innovation. In a study conducted in electronics companies in China, Tung (2016) found that ambidextrous leadership promotes employee creativity directly, as well as indirectly through psychological empowerment and promotion focus. Jia, Hu and Shuwen (2021) found that the leaders' opening behaviours have a positive relationship with followers' exploration knowledge search, while leaders' closing behaviours have a positive relationship with followers' exploitation knowledge search. The interaction between the two leaders' behaviours predicted positively knowledge search to the extent that knowledge search was at its highest when both opening and closing leaders' behaviours were high. Usman et al. (2022) found that workplace thriving can act as a mediator between ambidextrous leadership and innovative work behaviours, whereas Hafeez et al. (2019) found that emotional intelligence acts as a mediator between them. A mixed-methods study conducted by Lawrence and her colleagues (2020) showed that senior executives and top management teams tend to flexibly move between explorative and exploitative behaviours, which was then linked with effective performance.

Through a different approach, Zacher and Wilden (2014) conducted a daily diary study and collected self-reported data from employees on their leaders' behaviours and their own innovation. Over a period of five days, employees had to complete the same survey. Their study was the first longitudinal, multi-level design to examine ambidextrous leadership. Consistent with the theory, their findings suggest that daily ambidextrous leadership (interaction between

opening and closing behaviours) positively predicted followers' daily innovative performance. Followers' innovation was highest on days when the leaders portrayed both high levels of opening and closing behaviours. The study by Mascareño, Rietzschel and Wisse (2021) is also of great importance, as they examined the innovation stages separately, instead of innovation as a whole. They found that leaders' opening behaviours predicted followers' idea generation, which is the first stage of the innovation, and subsequently led to follower idea implementation. Closing leaders' behaviours, acted as a moderator between idea generation and implementation, strengthening their relationship. This suggests that opening behaviours are necessary for both idea generation and implementation, but closing behaviours are necessary to enhance the idea implementation levels of the followers.

Nevertheless, some studies on ambidextrous leadership have exhibited mixed results regarding its effectiveness. For example, Wang et al. (2020) found that the interaction effect between leaders' opening behaviours and closing behaviours positively predicts the followers' innovative performance in a way that it is at its highest when both opening and closing leader behaviours are high. However, ambidextrous leadership also influences job stress and role ambiguity (Wang et al., 2020). When employees feel they need to change their behaviours all the time to match the conflicting demands of their work, it increases their job stress. Additionally, when their leader showcases contradictory behaviours at the same time, it can lead to uncertainty and lack of clarity in terms of the role thus not being able to convert the ambidextrous leaders' behaviours to exploration and exploitation. Research has shown that role clarity is positively related to high innovative performance (Tang & Chang, 2000). Another study also found that gender plays a role in ambidextrous leadership as female leaders are perceived as less effective ambidextrous leaders as their male counterparts (Zuraik, Kelly & Perkins, 2020). The study by Li et al. (2020) showed that a punctuated ambidextrous leadership (high opening, low closing) is more beneficial for radical innovation than the theoretical

ambidextrous leadership model by Rosing and her colleagues (2011). Another example of mixed results is the study by Haider et al. (2021). After collecting data from 542 employees working in different constructing companies in Pakistan, they found that although ambidextrous leadership had a positive effect on knowledge sharing, it had a negative effect on followers' IWB. Gerlach, Hundeling and Rosing (2020) conducted a longitudinal study where they collected weekly data from 54 employees in German companies. Their findings indicate that although opening and closing leader behaviours were positively associated with innovation performance, their interaction term (ambidextrous leadership) was not significant. Klonek, Gerpott and Parker (2020) conducted two randomized experiments by manipulating different leadership conditions and measuring follower innovation. Their studies also yielded mixed results. Their first experiment showed no support that opening behaviours predict follower exploration, but closing behaviours did predict exploitation. Their first study also showed no support that ambidextrous leadership predicts follower innovation. Their second experiment which involved actors portraying leadership behaviours through videos, showed that opening leadership predicted exploration, after controlling for contextual factors, but closing leadership was not significant. The researchers also found some support that ambidextrous leadership predicts innovation, however it was no stronger than opening leadership. Gerlach, Rosing and Zacher (2021) conducted a lab experiment using leaders who portrayed three approaches: no leadership, a flexible portrayal of opening and closing behaviours (ambidextrous), or a sequential portrayal of opening and closing behaviours. Their results did not support the theory, as the ambidextrous group did not significantly predict better innovation performance. The authors argue that the theory might not be as effective as previously assumed.

Surprisingly, there are no consistent differences between the studies that supported the theory and those that did not. While some studies that used samples in natural settings found support

(e.g., Alghamdi, 2018; Zacher & Wilden, 2014) others did not (e.g., Gerlach et al., 2020). Regarding the methods used, studies with a survey design found more support (e.g., Alghamdi 2018; Zacher & Rosing, 2015) than those with experimental designs (e.g., Gerlach et al., 2021; Klonek et al., 2020). Yet, all studies used the same measure of ambidextrous leadership, which was adapted from the description of Rosing and her colleagues (2011). Moreover, the worrying lack of evidence regarding the effect of temporal flexibility raises further questions about the validity of the ambidextrous leadership theory. Literature is currently uncertain about the effectiveness of this theory, and many scholars have recently urged for more research to understand ambidextrous leadership (Klonek et al., 2020; Gerlach et al., 2021). As ambidextrous leadership is a relatively new concept and studies so far have shown mixed results, it is necessary to conduct further studies to determine whether it is useful for innovation and a reliable style for practitioners.

2.4. Theoretical Frameworks and Conceptual Model

This thesis considers three key theories that provide a foundation for the assumptions made and the development of the conceptual model that is being tested through the two studies: paradox theory, self-determination theory and leader-member exchange theory. The conceptual model developed draws from the paradox theory, which is the main underlying theory of the ambidextrous leadership theory. I further expand my model to test mediators and moderators. I am drawing from the self-determination theory to examine motivational mechanisms, as well as from the leader-member exchange theory to justify the role of relationships and relational support and trust. In this section, I explain the three theoretical frameworks and how they relate to ambidextrous leadership, and then I present my conceptual model (see 2.4.4).

2.4.1. Paradox Theory

Paradox was defined as “contradictory yet interrelated elements that exists simultaneously and persist over time” (Smith & Lewis, 2011, p.382), and “contradictory, mutually exclusive elements that exist simultaneously and for which no synthesis or choice is possible or necessarily desirable” (Cameron & Quinn, 1988, p.2). These elements or tensions can be perceived as logical on their own but absurd when combined. Organisations face such tensions often and the increase in competition and globalisation made them more intense, thus turning them into crucial element of organisations and their fate (Quinn, 1988). Bledow et al. (2009) argue that learning how to manage these contradictions is central to innovation.

There is a pattern around research on workplace innovation, demonstrating that innovation is full of paradoxes (Miron et al., 2004; Mumford & Hunter, 2005), conflicting demands (Bledow et al., 2009; Rosing, Rosenbusch & Frese, 2010), contradictions (King, Anderson & West, 1991), tensions (Lewis et al., 2002) and dilemmas (Benner & Tushman, 2003). These opposing demands can be found in innovation literature with various names such as exploration versus exploitation (March et al., 1991; Mom et al., 2007), ideation versus implementation (Kimberly & Evanisko, 1981), incremental vs radical innovation (Chandy et al., 1998), alignment versus adaptability (Gibson and Birkinshaw, 2004).

In order for one to lead for innovation successfully, they need to constantly deal with conflicting demands (Hunter et al., 2011). Hunter et al. identified fourteen of these conflicting demands, to showcase the difficulty of being successful in innovation. For example, leaders must provide their followers with enough time and resources to explore new ideas and paths, but they have to set in place constraints and deadlines (Hunter et al., 2011). Leaders are therefore required to respond effectively to such tensions by playing numerous roles and possess a wide repertoire of behaviours (Hooijberg & Quinn, 1992). Behavioural complexity,

the ability of one to portray a wide range of contrasting behaviours (Denison, Hooijberg & Quinn, 1995), has been found to be highly related with leadership effectiveness, as one can take on any role, thus facilitating the best outcomes for each situation (Hooijberg, 1996; Lawrence, Lenk & Quinn, 2009). Researchers state that behavioural complexity is made up of two distinct components: the behavioural repertoire and the behavioural differentiation (Hart & Quinn, 1993; Hooijberg & Hunt, 1997). The former regards the variety of roles that managers can perform while the later focuses on the ability of the managers to perform the roles depending on the situation. It can be argued that the two components of behavioural complexity are very similar to the two components of ambidextrous leadership: the portrayal of opening and closing behaviours, and temporal flexibility. Carmeli and Halevi (2009) proposed that top management teams for example may benefit from behavioural complexity if their aim is ambidexterity (exploration and exploitation).

Paradox theory is based on the Chinese philosophy of yin-yang, which states contradictory forces may be in fact complementary and can naturally co-exist. Although tensions in organisations are natural and inevitable, they could also complement each other (e.g., idea generation and idea implementation). Opposing approaches then might be necessary to deal with such tensions. For example, an ambidextrous leader, using two contradictory behavioural approaches, might be more effective in dealing with the conflicting demands of the innovation process, compared to a leader who uses stable behaviours (e.g., transformational leader). The ambidextrous theory of leadership for innovation (Rosing et al., 2011) has foundations on paradox theory and is based on the ability of managers to use a "Both-And" approach instead of a "Either-Or" approach (Bledow et al., 2009). Hunter, Cushenbery and Jayne (2017) however make a strong case about the effectiveness of dual leadership for innovation. They claim that two leaders would be more effective for innovation as each one could take a different role to deal with the demands. For example, one leader could focus on exploration while the

other leader could focus on exploitation. By doing that, they can help each other when cognitive and emotional resources are needed, and they would also be perceived with less role ambiguity from their followers. However, in practice, not every company can afford to keep two leaders for everything, hence it might be more realistic to have one effective leader who can do everything. Tetclock, Peterson and Berry (1993) posit that paradoxical frames may promote an integrative complexity thinking style. Low levels of integrative complexity means that individuals tend to prefer structure and dislike ambiguity, whereas high levels of integrative complexity means that individuals are more flexible, open-minded and tolerate contradictions and inconsistencies. Miron-Spektor, Gino and Argote (2011) found that individuals who adopted such paradoxical frames were more creative. It is logical to assume that leaders who have high levels of integrative as well as behavioural complexity are more likely to succeed in innovation.

According to the paradox theory therefore, an ambidextrous leader would be successful in managing these contradictory tensions that arise during the innovation process, as they can flexibly switch between different behavioural styles to match its idiosyncratic nature.

2.4.2. Self-Determination Theory

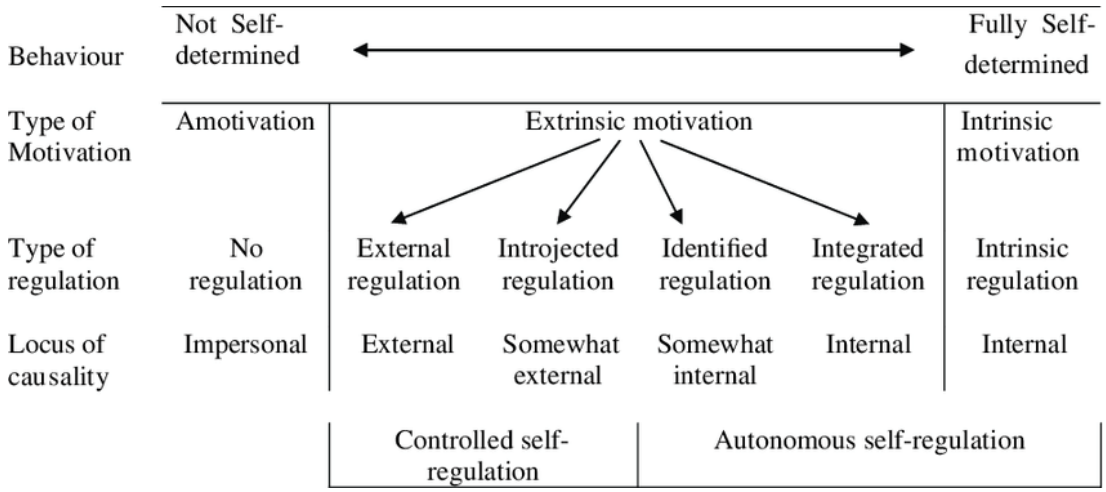
Self-determination theory (SDT) is a theoretical framework focused on human motivation and its differentiation between autonomous and controlled (Deci & Ryan, 2012). Motivation has been defined differently through the years. SDT suggests that the type of motivation that individuals experience plays a big role in their performance, as well as well-being (Ryan and Deci, 2017). Mitchell (1982) however, claims that most definitions of motivation focus on three key characteristics: energy, direction, and persistence.

Although energy may also be studied as a personality trait (Gardner & Cummings, 1988), it is important to take in consideration that it changes over time and across different situations. Most motivational theories also claim that an individual' s affective response is responsible for their energy, hence these responses can play a role when and how an individual might approach a particular task (Cropanzano, James & Citera, 1993). Direction refers to a specific goal or objective that the individual aims to attain. In order for motivation to exist, there has to be an end-point that that the individual will focus on achieving, which is also what the Goal-Setting theory claims for example (Locke & Latham, 1990). Persistence on the other hand can be seen as a contributor to motivation as well as an outcome of motivation. It refers to the amount of time that an individual spends in his or her efforts towards achieving their goal (Sandelands, Brockner & Glynn, 1988). Grant (2008) found that motivation and persistence are highly associated.

Self-determination theory posits that for an individual to achieve motivation, three basic needs should be present: competence, relatedness and autonomy (Ryan & Deci, 2000). From an organisational perspective, competence refers to the need of one being effective by possessing the right skills to deal with the work task. Relatedness refers to the need of one to be accepted and feel a sense of belonging in their team or company. Autonomy refers to the need of an individual to have control over their own work and job tasks. According to Amabile's (2012) Componential Theory of Creativity, the three basic human needs that comprise SDT may also be found as antecedents of individual creativity and innovation, such as the necessary skillset (competence) to carry out the ask, as well as a positive social environment (relatedness). Having autonomy in one's work role is also an aspect that has been found numerous times to be a driver of creativity and innovation (De Spiegelaere et al, 2014; Elkins & Keller, 2003; Volmer, Spurk & Niessen, 2012; Wang & Cheng, 2010).

But motivation is not a binary concept, as Ryan and Deci (2000) argue that it is in fact on a continuum and there are different kinds of motivation. They developed a taxonomy where they identify the three main types of motivation: amotivation, extrinsic and intrinsic (see Figure 2.3) Amotivation refers to a complete lack of intention to act. Amotivation occurs either when individuals do not value the activity, do not feel competent to do it or do not expect it to produce a desirable result (Ryan 1995; Bandura, 1986; Seligman, 1975). Extrinsic motivation refers to the motivation that is achieved by external sources such as gaining rewards, avoiding punishments, or complying by the rules and orders. Individuals who are extrinsically motivated, are more likely to undertake a work task usually because of fear of repercussions (e.g., demotion) or gaining a reward (e.g., bonus). Intrinsic motivation is inherent and characterised by genuine self-interest, enjoyment, and value. Individuals who are intrinsically motivated are likely to undertake their work tasks with enthusiasm and excitement, as it is something the thoroughly enjoy doing. Ryan and Deci (2000). It is considered the best type of motivation on could have as it produces the highest outcomes.

Figure 2.3. The Motivational Spectrum (Ryan & Deci, 2000).



Motivation was found multiple times to be a driver of creativity, either intrinsically, or extrinsically through contingent rewards (Amabile et al., 1998; Eisenberger & Armeli,1997; Eisenberger & Rhoades, 2001; Ford, 1996; Gilson, & Blum, 2009; Shalley, et al., 2009; Zhou & Shalley, 2010). Different stages of innovation require different motivational approaches (Gagné, & Deci, 2005). For example, idea generation is a stage characterised by exploration and curiosity. Without intrinsic motivation, one may not be motivated to spend time on a task that they would not enjoy or be interested in. Idea implementation on the other hand is full of structure, routines, careful planning as it is about the execution of an idea in every aspect. This procedure can take time and requires focus and discipline. It is less likely that individuals will be as excited about this innovation stage as they would be during the idea generation. Hence, extrinsic motivation might be more likely to help them go through with it, if not due to contingent rewards, then probably due to their desire to avoid any potential punishments.

Intrinsic and extrinsic motivation may also be outcomes of leadership. For example, specific leaders' behaviours such as opening or transformational are more positive, thus instilling the intrinsic motivation within the followers (Charbonneau, et al., 2001). On the other hand, behaviours that fall into the transactional or closing leadership style are less likely to promote intrinsic motivation, but extrinsic motivation. For example, a transactional leader using a reward system to encourage employees to finish an unpleasant task, is more likely to be successful compared to an open leader providing them with autonomy (Chang, et al., 2015; McMurray et al., 2013).

Motivation therefore is a key driver of individual behaviour (Deci, Olafsen & Ryan, 2017).
An ambidextrous leader is likely to support the three basic psychological needs of SDT (autonomy, relatedness, competence). For instance, leaders' opening behaviours may promote their followers' autonomy and relatedness, by showing signs of support and good relations with them, as well as trust in their skills and competence. However, closing behaviours may have a

negative effect if used on their own (e.g., Hetland et al., 2011) hence an integration with the opening behaviours should be more beneficial.

It is argued, therefore, that intrinsic and extrinsic motivation may underline this research. The self-determination theory may explain the proposed conceptual model due to the basic human needs in the workplace. According to SDT, a balance between the leaders opening and closing behaviour could have the ability to increase the followers' motivation, as ambidextrous behaviours promote autonomy and support but are also challenging and demanding. These aspects may foster a sense of motivation within the followers, as they can add a sense of interest and excitement (Amabile, 1993), which can lead them to be more engaged with their work. Motivation in the workplace is both a driver and an outcome of innovation, hence leaders whose aim is to influence the behavioural variance of their followers, do so without directly realising that their behaviours also have an effect on follower motivation.

2.4.3. Leader-Member Exchange Theory

The leader-member exchange theory (LMX) is a theory that focuses on the exchange relationship between a leader and a follower (dyad). As it is a process-driven theory, the relationship, and the interactions between the two parties are the aspects of interest in the present research. Followers who perceive their relationship with their leader as of high quality tend to have more benefits, be more productive, happy, and innovative at work (Graen and Uhl-Bien, 1995). This group of individuals is also known as in-group. On the other hand, followers who do not have high quality relationships with their leaders, also known as out-group, do not enjoy as many benefits, as their aim is to do the bare minimum of what is required of them (Graen and Uhl-Bien, 1995). Northouse (2021) claims that the distinction between in-groups

and out-groups is what characterises the LMX theory. The dyadic nature of this theory implies that both leaders and followers are active participants in the exchange process and reciprocate each other's actions and behaviours (Hollander, 1980; Van Breukelen, Schyns, & Le Blanc, 2006).

LMX theory has roots in social exchange theory (Liden, Sparrowe, & Wayne, 1997). Cropanzano and Mitchell (2005, p.874) state that this theory is "among the most influential conceptual paradigms in understanding workplace behaviour". Reciprocity is the key aspect underlying social exchange theory. Molm (2000) asserts that the reciprocal exchange is not based on bargaining, but rather it is contingent on the other person's behaviours and actions. When leaders for example provide their followers with support and positive feedback, followers are likely to reciprocate those actions with an increase in work engagement and productivity (Orpen, 1994). LMX suggests that that relationships between leaders and followers evolve within organisations and each party must offer the other party something that they value (Graen & Scandura, 1987). For instance, if leaders are motivational and encourage followers to explore new methods (opening behaviours), followers will return those behaviours with something that their leader finds valuable and fair (e.g., commitment, higher performance, etc.) (Eisenberger et al., 1986). If the perceived value of the exchanges is high, then quality of the LMX will also be high, thus leading to higher outcomes (Dienesch & Liden, 1986; Liden et al., 1997)

The positive relationship of LMX with innovation has been long established (Agarwal et al., 2012; Basu & Green, 1997; Janssen & Van Yperen, 2004; Karin et al., 2010; Khalili, 2018; Scott & Bruce, 1994, 1998; Tierney et al., 1999). Research shows that employees in high quality LMX relationships are more likely to respond positively to the leaders' behaviours, due to a sense of trust, mutual respect, and reciprocity (Sanders & Schyns, 2007). When employees believe that their efforts will be fairly acknowledged, appreciated, and rewarded by their leader,

they will put in the effort to satisfy their needs and follow their direction, by responding with higher innovative behaviours (Janssen, 2000).

Rosing and her colleagues (2011) found that LMX was the only consistent predictor for follower innovation, compared to other leadership constructs, which can be due to the need of different behaviours depending on the follower. This indicates that ambidextrous leadership may have a different effect on follower innovation depending on the relationship between leader and follower. Followers scoring high in LMX tend to characterise their working relationship with their leader as positive and based on a reciprocating feeling of trust, loyalty and respect, which may make them perceive the ambidextrous behaviours differently than those who perceive their relationship with their leader as of low quality.

The main aspect of the LMX theory that is of interest for this research, is how these relationships affect the perceptions of the followers about their leaders, due to their behaviours. It is highly likely that followers who belong in the in-group, have good relationships with their leaders as well as positive and constructive interactions, might benefit more from the ambidextrous leadership behaviours, compared to those in the out-group. This is likely due to the inconsistent nature of the behaviours. Followers who know their leaders well, their approaches, their objectives, and abilities, are more likely to understand and justify the inconsistent behaviours that ambidextrous leaders portray. Although opening behaviours are considered positive, which can be expected, it might be surprising to them when the leader demonstrates closing behaviours, but they might justify their leaders' approach due to the importance of the project for example, or the urgent deadline. On the other hand, followers who already belong in the out-group, do not communicate with their leader often and do not have many exchanges with them, are likely to perceive the ambidextrous behaviours as confusing, thus justifying any negative thoughts or feelings they had toward their leader. For

instance, instead of finding their opening behaviours a positive sign, they might perceive them as suspicious.

It is important therefore to consider the role of the relationship quality between leaders and followers. The theoretical framework of LMX may have a significant impact in ambidextrous relationship which may further provide an explanation to innovation outcomes. In essence, the social environment, and specifically, the relationships between leaders and followers and the exchanges between the two can be seen as important theoretical aspects for this research, as ambidextrous leader behaviours may facilitate or hinder innovation completely depending on the followers' relationship with their leader (Rosing et al., 2011).

2.4.4. Development of Conceptual Model

Based on the literature review findings, I propose a model based on Rosing et al's (2011) model (see Figure 2). My conceptual model is an expansion of the original model, which suggests that opening behaviours will increase follower exploration, while closing behaviours will increase follower exploitation. Follower exploration and exploitation are suggested and were found to lead to follower innovation (Rosing & Zacher, 2017). Not only do I assess the relationships set forward by Rosing and her colleagues (2011) and evidenced by many others (Alghamdi, 2018; Zacher & Rosing, 2015; Zacher & Wilden, 2015), I expand on them, by deconstructing the aspect of innovation, using further mediators, and examining the effects of some moderators as well.

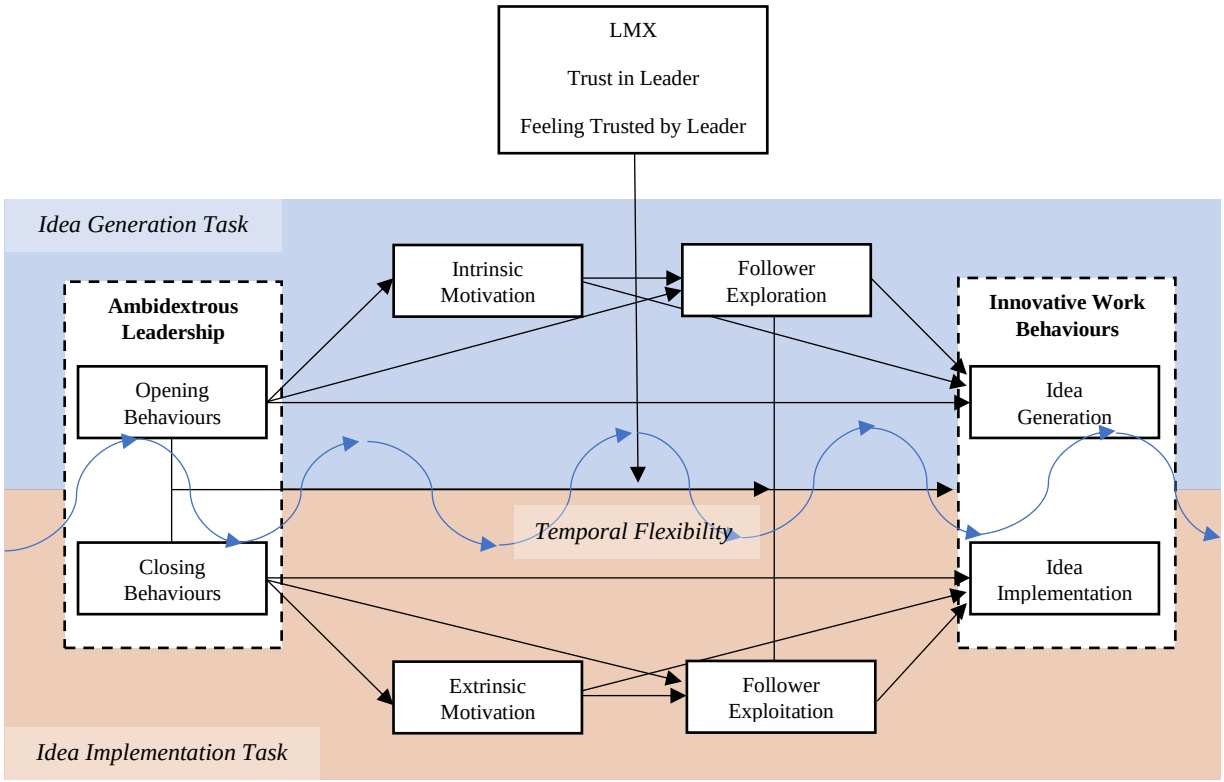
I agree with the assumptions that leaders' opening behaviours are positive, encouraging, and motivational, thus have the capability of facilitating the followers' explorative behaviours. However, I propose that the reason these behaviours make the followers to want to explore, is because they instil intrinsic motivation in them. On the contrary, closing behaviours are quite restrictive, controlling and not forgiving. Hence, it is unlikely that they would promote

followers' intrinsic motivation. It is more plausible that followers will need to find extrinsic motivators to carry on their work, such as avoiding punishment, or because it is part of their work. This extrinsic motivation could motivate them to carry on with their work, however, with the fear of being sanctioned, they would not attempt to be creative, hence they would stick to exploiting their own skills and competences.

As explained, innovation is not a straightforward process. It carries multiple paradoxes, and each stage is different. Rosing and her colleagues (2011) argued that leaders' opening behaviours are only beneficial during idea generation tasks. Logically, they would promote the idea generation behaviours of the followers. Similarly, closing behaviours were proposed to be more effective during implementation tasks, hence it can be more efficient if the measured outcome is the idea implementation behaviours of the followers. The interplay between the leaders' opening and closing behaviours is what might lead to innovative behaviours as a whole concept, which includes both follower idea generation and idea implementation behaviour.

I also proposed that the dyadic relationship between a leader and a follower might have an impact on the effectiveness of ambidextrous leadership. Followers who perceived the exchange quality as high and they believe that reciprocity between them and their leader them is effective, they are more likely to follow their leaders' direction even if their behaviours are inconsistent. Moreover, trust towards their leader, as well as feeling trusted by them, may also play big roles in the relationship between ambidextrous leadership and follower IWB, as followers, would not question their leaders' style, behaviours, or methods. They are more likely to justify them and acknowledge that they are competent enough to know what the best way forward is, hence, they are more likely to respond to the ambidextrous behaviours, as proposed.

Figure 2.4. Conceptual model developed for this research.



The proposed model, which can be seen in Figure 2.4, is tested through two studies. Each study (chapters 3 and 4) explains in depth the relationships tested from this model and further elaborates on the arguments made for each. In particular, the first study, which follows an experimental design, examines the entire model, apart from the moderators, as these may not be examined in laboratory settings. The second study, which follows a longitudinal field design, examines the whole model, including the moderators. While an experimental design allows me to manipulate the construct of interest (i.e., ambidextrous leadership) and focuses on testing temporal flexibility by introducing different innovation tasks, the daily diary study focuses on fluctuation of leader behaviours on a daily level in natural settings, which cannot be examined in laboratory settings. Moreover, some projects may spend weeks or months on each innovation stage, hence using an experimental design to examine whether the switch is effective for different situations, is something that a daily diary study in natural settings may

not be able to capture in a short amount of time. Further explanations may be found on the literature review and methodology sections of chapter 3 and chapter 4.

In essence, the model suggests that there are other mechanisms that could explain the relationship between ambidextrous leadership and follower innovation better, as well as further factors, that need to be considered (e.g., LMX). The aim of this model aims to extend our understanding on the effects of ambidextrous behaviours, and the reasons why it has been effective in the past. The model examines the factors, of intrinsic and extrinsic motivation, which is something new, as the concept of motivation has never been investigated in the literature. Moreover, assessing the role those dyadic relationships play, is also something never examined prior to this research. The model therefore proposes relationships which not only sound logical but aim to help us better understand the concept of ambidextrous behaviours and the situations where it can be applicable, useful, and effective.

Chapter 3: *Study 1*. Temporal Flexibility: Examining the role of behavioural changes amongst ambidextrous leaders through an experimental design

3.1. Introduction

Creativity and innovation are now more important than ever. Since the appearance of COVID-19 and the on-going pandemic, individuals and organisations have been looking for alternative ways and methods to conduct their business. A recent survey report by the World Economic Forum (2020) has found that innovation takes the number one spot of the top skills that employers will look for by 2025. Within the same list, creativity and innovation-related skills claim further top spots, such as complex problem solving (no.3), critical thinking and analysis (no.4), creativity, originality, and initiative (no.5) and reasoning, problem solving and ideation (no.10). Further business media such as Forbes and LinkedIn agree that creativity is currently the top skill that employers are looking for (Blaschka, 2019; Pate, 2020). But even research has shown that creativity and innovation are essential for an organisation as they can provide it with competitive advantages (Zhou & Shalley, 2003) thus helping it survive and succeed in the market (Anderson, De Dreu, & Nijstad, 2004; Anderson, Potocnik, & Zhou, 2014). These skills are necessary because they demonstrate the ability of an individual to come up with new ideas, overcome obstacles faster and deal with the competing demands of a fast-paced environment (Helzer & Kim, 2019).

Leadership has always been considered one of the key drivers of individual, team and organisational creativity and innovation (Huang, Krasikova, & Liu, 2016; Hughes et al., 2018; Martin, Guillaume, Thomas, Lee & Epitropaki, 2016). The process of innovation is paradoxical, nonlinear and to navigate through it successfully, leaders must demonstrate

paradoxical behaviours themselves (Andriopoulos & Lewis, 2009; Rosing et al., 2011; Zhang, Zhang & Law, 2021) in order to manage successfully the tensions built, thus facilitating the innovation of their followers. The present study investigates one of the newest leadership styles in the field; ambidextrous leadership, which is considered to be the optimal style if innovation of the followers is the intended outcome (Rosing et al., 2011). Leaders who possess a repertoire of contradictory behaviours and know when is the right time to portray each set of behaviours, are likely to be more effective in promoting their followers' innovation.

The main aim of this study is to assess the theoretical premises underpinning ambidextrous leadership and all its components to determine its validity as well as examine its effectiveness. Building on paradox theory (Smith & Lewis, 2011), the present study investigates whether and how the interplay and combination of two contradictory sets of behaviours may enhance the innovative performance of the followers. This study employs an experimental design to test parts of the conceptual model proposed in the previous chapter. Specifically, it attempts to examine the ability of leaders to switch between two opposing sets of behaviours when the situation demands it, also known as temporal flexibility. A method as such is beneficial when assessing theories, as it enables further scholars to replicate it if needed (Highhouse, 2009). The experimental nature of this study allows for the manipulation of the concept of ambidextrous leadership as well as testing of the effects of the leader behaviours, at different times and during different tasks. Only a handful of studies have used experimental approaches in the past, which yielded mixed results (Gerlach et al., 2021; Klonek et al., 2020) hence, this

study provides further insight into the effectiveness of this leadership style, and the importance of timing. The primary aim of this study was to test assumptions that leaders should use opening behaviours during tasks that focus on idea generation but closing behaviours during tasks that focus on idea implementation. Doing so, followers will either engage in exploration, or exploitation, respectively, which can facilitate their innovation. Moreover, by assessing the

theoretical assumptions, such as the interplay between opening and closing leader behaviours, as well as the interplay between follower exploration and exploitation, I provide further research evidence to the field of ambidextrous leadership.

This study has various contributions. First of all, this study examines the temporal flexibility part of the theory. Studies thus far tend to ignore the task while testing only the effect of leaders who show high levels of opening behaviours and high levels of closing behaviours (e.g., Alghmadi, 2018; Oluwafemi et al., 2020; Zacher et al., 2016; Zacher & Rosing, 2015). Temporal flexibility is what makes this leadership style fall under the contingency leadership theories umbrella, by focusing on the situational element the innovation process. According to the theory (Rosing et al., 2011), tasks that require employees to come up with new ideas would benefit from a leader who portrays opening behaviours, but for tasks that require the employees to stick to one idea, and follow certain protocols and plans to implement it, then a leader who portrays closing behaviours should be more appropriate. This study is the first that differentiates the nature of the task and examines the interactive effect of ambidextrous leaders on innovation. Although experiments were conducted previously that examined the interactive effect of the two behaviours (Gerlach et al., 2021; Klonek et al., 2020), they did not make a distinction between idea generation outcome and implementation outcome, but rather used one experimental task that aimed to capture all innovative behaviours. Only the study by Gerlach and her colleagues (2020) comes close to this study, as they did differentiate between ideation and implementation phase, and assessed creativity and implementation as outcomes, however they failed to assess the interactive effect of opening and closing behaviours. This is the first study that considers everything, including the interactive effect between leaders' opening and closing behaviours, the temporal flexibility such as the matching of the leader behaviour to the nature of the task, as well as the distinction between the two stages of innovation, namely idea generation and idea implementation, as outcomes.

Second, I examine the role of motivation. Motivation is an important element in organisational studies (Amabile, 1993; Deci & Ryan, 2014; Haslam, Powell & Turner, 2000; Van Knippenberg, 2000) and a key driver of creativity and innovation (Dewett, 2007; Eisenberger, Shanock 2003, Fischer, Malycha & Schafmann, 2019; Hennessey & Amabile, 1998). This is the first study in the ambidextrous leadership literature that proposes and examines motivation as a variable of interest, hence findings are considered not only novel, but a valuable input in the ambidextrous leadership literature which can help us understand better the theory, and the process of how ambidextrous leaders can facilitate employee innovation. By examining the way that opening and closing leader behaviours can affect follower motivation instantly, can be classed as an important finding, as it may have positive or negative effects on further follower outcomes, apart from creativity and implementation.

Third, the use of lab settings, and following an experimental approach, is crucial as the few experiments conducted thus far have shown mixed results (Gerlach et al., 2020a; 2021; Klonek et al., 2020). By using this method, I was able to manipulate the behaviours of the leaders, as well as build scenarios that focus on idea generation tasks and idea implementation tasks and examine how followers would respond to the tasks, based on the approach of their leader.

Finally, implications for management are also considered an important contribution. The practical implications for this study highlight key significant findings of this study, for example the importance of opening behaviours and intrinsic motivation in promoting follower innovation. The overall mixed results produced however challenge the theory, which may suggest that this leadership style may not be as effective as previously thought, as Gerlach et al. (2021) argued recently.

This chapter follows the structure of a traditional empirical paper. First, the literature review explains further the role of temporal flexibility in the innovation process, as well as the

paradoxical natural of innovation. Moreover, motivation as a mechanism in the relationship between ambidextrous leadership and follower innovative work behaviours is also discussed. This section also includes the hypotheses developed for this study. The method section then explains the reasons why an experimental approach is the most ideal way to test the concept of temporal flexibility and the proposed relationships. In the method section I also explain the process of this study, which has undergone major changes due to the impact of COVID-19. I discuss the problems and the methodological adaptation that this study has faced. As this is an experimental design study, I explain the scenarios created (vignettes), the experimental conditions as well as the validity of the manipulations. Lastly, in the methods section, I state the measures I used to collect the necessary data. The results section includes the necessary statistical procedures for the hypotheses testing; from descriptive statistics, to ANOVA and mediation analyses. The last part of this chapter focuses on the discussion of the results. It explains the findings and tries to give meaning to unexpected, as well as expected outcomes. I discuss further limitations of the study, as well as theoretical and practical contributions, and recommendations for future research.

3.2. Literature Review

3.2.1. Ambidextrous Leadership Theory

Ambidextrous Leadership was defined as the "*ability to foster both explorative and exploitative behaviours in followers by increasing or reducing variance in their behaviour and flexibly switching between those behaviours*" (Rosing et al., 2011, p.957). This leadership style consists of two key elements; leaders' behaviours and temporal flexibility. These two components have been theorised to be essential in order to facilitate one's innovative outcomes. The first component involves the two behavioural sets that leaders need to know how to portray. The first one, opening behaviours, focuses on increasing the variance in the followers' behaviours by allowing them to be autonomous, engage with new methods and activities and experiment with new ideas and techniques (Rosing et al., 2011). On the other hand, closing behaviours focus on decreasing the variance in the followers' behaviours by requiring them to stick to the rules and the guidelines, use the methods they are familiar with and follow the established routines (Rosing et al., 2011). Studies have found that leaders' opening and closing behaviours can promote followers' innovation (Alghamdi, 2018; Zacher & Wilden, 2014; Zacher & Rosing, 2015), however the aspect of timing is not often discussed, which is as crucial as the behaviours (Rosing et al., 2011).

Temporal flexibility is the second key component of the Ambidexterity Theory of Leadership for Innovation (Rosing et al., 2011), which claims that each set of the two behaviours has its time and place. According to theory, opening behaviours should be used by leaders during activities that require exploration, while closing behaviours should be used during activities requiring exploitation. These two concepts were first defined by March (2011) who used the concept of ambidexterity in a broader organizational context. Exploration refers to activities

that allow the employee to discover new methods and experiment with new ideas while exploitation refers to activities that focus on implementation and execution based on pre-existing knowledge. Temporal flexibility implies that leaders should know when to portray each behaviour, especially in the innovation process, which is complex and often non-linear (Anderson, De Dreu, & Nijstad, 2004; Mumford & McIntosh, 2017). In particular, the theory claims that that during creativity tasks leaders should use opening behaviours, but during implementation tasks, leaders should use closing behaviours (Rosing et al., 2021).

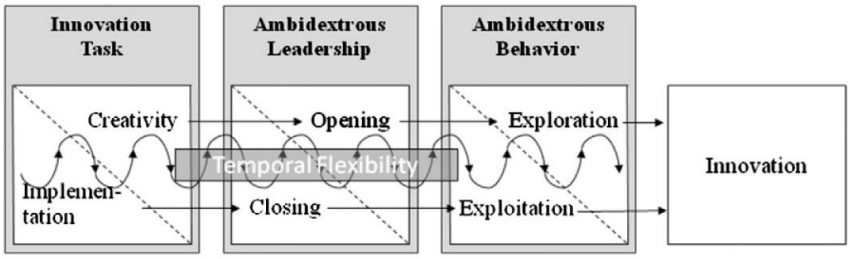
Creativity and implementation are considered opposing concepts, thus paradoxical behaviours are required (i.e., exploration and exploitation) in order to facilitate them. Research agrees that creativity and implementation are conceptually distinct (Faar, Sin & Tesluk, 2003; King, 1990). However, in reality, this distinction is often indistinguishable. The innovation process contains complex patterns and many of its stages are characterized by uncertainty, hence the time when one stage ends and the next one begins is often blurry (Cheng & Van de Ven, 1996). It is also important to understand that some stages may not be planned. March (1991) suggests that exploration and exploitation are dissimilar contexts and mutually exclusive. Conversely, Rosing and her colleagues argue that the two are in fact mutually dependent and may co-exist. Bledow, Frese, Anderson, Erez and Farr (2009) claim innovation can be higher if individuals take advantage of the synergies between exploration and exploitation rather than focusing on one. Interestingly, although Rosing and her colleagues (2011) claim that innovation is hard to be separated into stages, they also argue that a leader should be aware of the stages and act by portraying opening or closing behaviours accordingly. This may be considered a paradox itself, as if leaders are aware of when each innovation stage is occuring, then the differentiation of the stages is already evident, which implies that follower behaviours such as exploration and exploitation may exist independent from each other. Either way, the element of time is of high

significance when dealing with complexities and leading innovative endeavours (Halbesleben, Novicevic, Harvey & Buckley, 2003).

No matter whether we discuss paradoxes (Cunha & Putnam, 2019; Smith & Lewis, 2011) or dynamic leadership styles (Fürstenberg, Alfes & Kearney, 2021; Lee & Farh, 2019; Thompson & Glasø, 2015), one thing is for sure; time is important. Time has not been examined in organisational contexts as much as leadership has. Only in the past 20 years, there has been a rise in organisational and leadership research that considers time to be a variable worthy of thorough examination (Ancona Goodman, Lawrence & Tushman, 2001; Bluedorn & Jaussi, 2008; Castillo & Trinh, 2018; Day, 2014; Modammed & Nadkarni, 2011; Shamir, 2011). For instance, Bass (1985) suggests that charismatic leaders have a sense of time and appear to be more effective when their vision aligns with a social condition in a timely manner. Others examined the combination of leadership styles and their temporal spacing (Casimir, 2001). Casimir (2001) has found that task-oriented leadership should be combined with people-oriented leadership and that both influence how leadership is perceived by the employees. Participants in his study were asked to rate combinations of leadership styles which included leaders who provided support and pressure with time being the manipulated variable. Results from this study show that participants prefer to be provided with support immediately before being provided with pressure by their supervisor and that pressure should never be provided without support. The opposing nature of these two behaviours share characteristics with an ambidextrous leader's behaviours (opening & closing) and in a similar order as well. Leaders should portray opening behaviours at the beginning of the innovation process (i.e., during idea generation) which are more motivational, flexible, and supportive, whereas they should portray closing behaviours at a subsequent stage (i.e., during idea implementation) which focuses on errors, mistakes, deadlines, routines, and structure, thus providing pressure.

Rosing and her colleagues' (2011) take on temporal flexibility is that it is impossible to predict when each set of behaviours is more useful each time, due to the idiosyncratic nature of innovation and its interdependent stages. They argue that a leader should act ad-hoc by assessing the situation and deciding whether the aim is to increase or decrease variance in the followers' behaviours. They conclude their arguments by explaining the paradoxical nature of ambidextrous leadership behaviours, followers' ambidextrous behaviours and the innovation process. According to their model (see Figure 3.1) during creativity tasks, leaders should portray opening behaviours which will facilitate followers' explorative behaviours, and during implementation tasks leaders should portray closing behaviours which will facilitate the followers' exploitative behaviours. By the end of the innovative project, leaders who portrayed the correct behaviours at the correct times are likely to have followers with the highest innovation outcomes. It is worth pointing out that this model assumes that followers always respond and act on their leaders' behaviours, without any form of resistance and, also implies that the followers have no sense of how to approach a task without a leader. The arguments of the ambidextrous leadership theory lay entirely on the leaders' competence levels and expertise, as they should be "sensitive to the situation" and know immediately what behaviours to portray in order to get the desirable outcome but also be able to switch flexibly between the two. In summary, it is logical to assume and expect that leaders who are motivational, and encouraging are beneficial during tasks that require creativity, exploration and risk taking, while leaders who are strict and controlling are more likely to succeed during tasks that require adherence to rules, routines, and structure. By following an experimental design in this study, a scenario as such can be put to test.

Figure 3.1. Theoretical model by Rosing et al. (2011, p. 966).



Ambidextrous leadership literature is lacking experimental design studies, and their use would be very beneficial, as currently only three studies have followed an experimental design and their findings are inconsistent with the theory. Gerlach, Rosing and Zacher's (2021) study involved a laboratory experiment where they used leaders and trained them to portray three different leadership approaches: no leadership, a sequential approach of opening and then closing behaviours, and a flexible approach with a portrayal of both opening and closing behaviours depending on situational cues regarding the innovation process. In their study, 93 participants received one leadership manipulation and were asked to engage with a creativity task, in which they had to build something using craft material. The study's findings did not support their hypothesis, nor the theory (Rosing et al., 2011) which assumed that a flexible leader would lead to the highest innovative performance of the followers. Klonek, Gerpott and Parker (2020) conducted two experiments in which they manipulated leadership conditions, before randomly allocating participants in groups. Participants were exposed to either opening leadership, closing leadership, ambidextrous leadership, or transformational leadership, and undertaken one task that aimed to capture innovation. Their findings partially supported their hypotheses and the theory (Rosing et al., 2011) as they found that the ambidextrous leadership style did not predict follower innovation. Moreover, they did not find that leaders' opening behaviours can predict follower exploration. In their second experiment, they found some

support that an ambidextrous leader may predict follower innovation, however the effect was not stronger than opening leadership (Klonek et al., 2020). Last but not least, the study by Gerlach and her colleagues (2020) used a sample of 245 students to conduct a laboratory experiment to determine whether innovation requirements play a role when leaders use opening and closing behaviours. The researchers allocated participants into four experimental groups and showed them videos of an opening leader, a closing leader, a leader who portrays both opening and closing behaviours, and a leader without a specific style (control group). Participants engaged with either a creativity task, or an implementation task; not both. The creativity task was assessed solely based on the number of ideas participants generated, while the implementation task was assessed only through the number of mistakes participants made. Their results supported their two hypotheses that participants who received an opening leader and a creativity task, showed higher innovative outcomes, while participants who received a closing leader and an implementation task showed higher innovative performance. Innovative performance was measured by computing a new variable that combined the creativity score (number of ideas) with the implementation score (number of mistakes). It can be argued that this measure may not capture the depth of innovative performance, as there are more aspects to it than number of ideas, or mistakes made (errors, spelling, etc.). When they conducted a regression analysis with a three-way interaction of opening behaviours, closing behaviours and the nature of the task, they found no significant effects. Their result was not consistent with the theory (Rosing et al., 2011). It is important to explain that although they assessed the effect of opening and closing behaviours separately and used different tasks for creativity and implementation, they did not examine the aspect of temporal flexibility. Temporal flexibility is about switching from opening to closing behaviours and vice versa when the situation demands. Their groups experienced only a creativity task or an implementation task, hence there was no opportunity for the leader to switch behaviours. The ambidextrous leadership

experimental group that they created, is when the leader on their video manipulation portrayed both sets of behaviours at high levels at the same time, which does not align what the theory posits. The theory claims that leaders should switch behaviours based on the situation, not engage with both sets of behaviours at any given task. As participants did not experience the switching of their leader, then temporal flexibility could not be assessed. Therefore, the present study is the first study that examines whether temporal flexibility is important in this theory or not.

3.2.2. The Role of Motivation in the Innovation Process

Undeniably, workplace motivation is a concept that has a great effect and can lead to various positive outcomes (Kuvaas et al., 2017; Haslam et al., 2000). There are various reasons why motivation needs to be addressed in this study. First of all, it has been strongly linked with creativity and innovation; it has been found to be a positive predictor of creativity and innovation across multiple studies (Cadwallader et al., 2010; Fischer, Malycha & Schafmann, 2019). However, most importantly, is its relationship with ambidextrous leadership, which is a neglected element and has never been examined before alongside it. The ambidextrous leadership theory is leader-centric, meaning that the perspective of the followers usually goes unobserved. By examining the role of motivation, I can understand not only the effect that leaders' behaviours have on follower creativity, but how followers perceive their leaders' behaviours. This is a novel contribution for ambidextrous leadership field, as it can provide a better understanding in the work attitudes influenced by these inconsistent leader behaviours.

Motivation is what drives an individual to act on something. Ryan and Deci (2000) have said that "*being motivated means to be moved to do something*" (*p*.54). They also argued that motivation is not a unitary phenomenon, as it does not only depend on the quantity of one's

motivation, which may vary on different levels, but also the orientation of that motivation. It is easy to determine whether someone is highly motivated or not while doing something, but it is harder to clarify the reasons behind their actions. Self-determination theory posits that there are six types of motivation (regulatory styles) which may explain the reasons or goals behind someone's actions (Deci & Ryan, 1985). On the left side of the spectrum, one may find "amotivation". This is the category for the people who do not have any sort of motivation to do something as they see zero value towards the task or activity. Moving towards the right of the spectrum, one will find "external regulation", which is purely when an individual is doing something to satisfy an external demand (e.g., to receive a reward like an extra bonus, or to avoid punishment). "Introjected regulation" refers to situations when individuals engage with tasks not because they want to, but mainly because they are attempting to avoid potential guilt and anxiety, or even hurting their pride. "Identified regulation" is the type of motivation when individuals engage with a task only when it has some personal importance and value to them. "Integrated regulation" refers to motivation when individuals have full awareness of the situation, and the values are fully assimilated into themselves. "Intrinsic regulation" is the final, most desirable type of motivation. This type of motivation occurs when individuals engage with tasks and activities out of pure joy and interest in them.

The most important and common distinction of motivation in research is between intrinsic and extrinsic motivation (Barbuto, 2005; Chua & Ayoko, 2019; Dysvik & Kuvaas, 2013; Kark & Van Dijk, 2007). Intrinsic motivation may also be referred to as intrinsic regulation since it is theoretically and practically the same experience. Intrinsic motivation refers to "*doing something because it is inherently interesting or enjoyable*" (Ryan & Deci, 2000, *p.*55). Individuals who are intrinsically motivated while doing something get a genuine positive feeling from it, even if they do not get paid to do something. Having hobbies is the most common form of intrinsic motivation, as one always chooses them willingly and is never forced

to do them. Intrinsic motivation may also make one enter a state of flow; which is a state of mind occurring when an individual is fully immersed in a task or an activity (Mills & Fullagar, 2008; Rheinberg & Engeser, 2018; Salanova, Bakker & Llorens, 2006). Most importantly, intrinsic motivation is considered the highlight of motivation types as it can have further benefits in work performance (Cerasoli, Nicklin & Ford, 2014) as well as creativity (De Jesus, Rus, Lens, & Imaginário, 2013; Prabhu, Sutton & Saucer, 2008). Contrary to intrinsic motivation, extrinsic motivation refers to situations when individuals engage with tasks or activities because they have to (i.e., as part of their job) or because they simply desire the outcome (e.g., a reward). Individuals who work under extrinsic motivation do not necessarily enjoy their work and usually do the bare minimum of what is required of them (Kuvaas, Buch, Weibel, Dysvik & Nerstad, 2017). Despite the two being considered opposites on the same spectrum, there are also arguments that they can co-exist as someone may portray high levels of both. Some individuals are a good example of experiencing high levels of both intrinsic and extrinsic levels of motivation. For instance, students who study a course they enjoy and have genuine interest in, will experience intrinsic motivation, but at the same time they want to do well so they can get a degree with a good grade, thus having better job prospects (reward). Amabile (1993) also argues that intrinsic and extrinsic motivation can work in synergy and their combination may improve employee performance and job satisfaction.

Over the years, there has been a plethora of studies that investigated the association between motivation and various stages of creativity and innovation. Amabile's Componential Theory of Creativity (Amabile, 1988; 1996; Amabile & Pratt, 2016) for example suggests that intrinsic task motivation is one of the three key components of creativity, along with domain-relevant skills (expertise) and creativity-relevant processes (creativity thinking), along with further environmental aspects (i.e., climate, leadership). A study by Dewett (2007) showed support for

a link between intrinsic motivation and creativity. He found that intrinsic motivation can lead an individual to take more risks, thus be more creative. Moreover, a meta-analysis on the relationship between intrinsic motivation and (product-related) creativity from studies published between 1990 and 2010 also shows strong evidence for its existence (De Jesus et al., 2013). The study investigated 26 samples that included over 6,000 participants and found a significant positive relationship between the two constructs with an effect size of .30. In addition, the meta-analysis showed no significant differences between student samples and employee samples, demonstrating that the relationship between intrinsic motivation and creativity might exist regardless of the background or status of the individual.

Prabhu, Sutton and Saucer (2008) also found support for a role of intrinsic motivation as a mediator between traits and creativity. Their study found that intrinsic motivation partially mediates the relationship between openness to new experiences and creativity, and fully mediates the relationship between self-efficacy and creativity. When the researchers examined the association between extrinsic motivation and creativity, they found a significant negative effect. It is generally well-known among creativity scholars that the role of extrinsic motivation is confusing (Amabile, 1996). Extrinsic motivation has been debated for a long time as it is suggested to have a negative effect on individual creativity, but a positive effect under certain circumstances (i.e., contingent rewards) (Choi, 2004; Eisenberger & Rhoades, 2001), whereas intrinsic motivation has almost always a positive effect. There are two schools of thought, regarding this debate. On the one hand, extrinsic rewards may be perceived as controlling, and when that happens then intrinsic motivation will be lower, as individuals might feel like they have lost their autonomy (Deci, Koestner & Ryan, 2001). In this case, employees might be less interested in their tasks and consequently less likely to come up with more creative ideas (Amabile, 1996; Amabile, Goldfarb & Brackfield, 1990). On the other hand, individuals may experience intrinsic motivation through extrinsic rewards if those are perceived as

informational, meaning that they have the capacity to enhance their self-determined competence (Deci et al., 2001). If the extrinsic rewards are perceived as such, then employees might look at them from a positive perspective and feel like their competence is being supported and valued (Eisenberger & Rhoades, 2001).

A key study that is worthy of discussing is the one by Gilson and Madjar (2011). The two argue the importance of a distinction between radical and incremental creativity, and that the motivational mechanisms are different for the two. Radical creativity refers to new ideas that are substantially different from existing ones, whereas incremental creativity focuses on existing products and practices, their modification and refinement (Madjar, Greenberg, & Chen, 2011; Mumford & Gustafson, 1988). These two types of creativity can also be found in the literature as exploration and exploitation. Exploration is about taking risks and engaging with bold new methods to come up with new ideas, techniques, or practices which can be significantly different to what one is already familiar with. Exploitation, on the other hand, is about refinement of existing products. When employees follow an exploitative approach, they do not worry about new ideas, but rather focus on the ideas that are already established and how they can use their skills and knowledge to modify them for the better. Gilson and Madjar (2011) acknowledge that both are necessary for innovation to be effective. They argue that leaders who aim to help their employees improve the methods they currently use, then they should encourage incremental creativity, but if they want their employees to experiment and work with new ideas then they should encourage radical creativity. Their study had a longitudinal design and a sample of 148 student participants. The participants engaged with a university course which required them to do three things; find an organization to work with, identify at least one problem of that organization, and lastly, come up with new ideas and practical solutions to the problem. The study lasted for fifteen weeks, and the researchers collected data at three time points. Their results supported their hypotheses. First, they have

found a distinction between the two concepts of radical and incremental creativity. This is consistent with past research about follower ambidexterity and the difference between exploration and exploitation. Furthermore, their results show that intrinsic motivation had a positive significant contribution to radical creativity, whereas extrinsic motivation had a positive significant contribution to incremental creativity. This study evidenced that motivation (both intrinsic and extrinsic) is a key driver of follower ambidexterity and innovation outcomes among employees.

Motivation has also been examined in various leadership studies which show that positive leadership approaches and behaviours can effectively improve follower motivation and subsequently enhancing creativity and innovation. For example, Zhang and Bartol's (2010) study among software engineers in China has found evidence that intrinsic motivation mediates the relationship between empowering leadership and employee creativity. Yidong and Xinxin (2013) also found that intrinsic motivation mediated the relationship between ethical leadership and employee innovative work behaviours. Intrinsic motivation was also found to mediate the relationship between transformational leadership and employee creativity in a study by Chen, Li and Tang (2009) which looked at R&D employees from 50 Taiwanese companies. The researchers also found a direct effect between transformational leadership and intrinsic motivation. Further studies evidenced a significant positive effect of transformational leadership on employee intrinsic motivation. Wang, Kim and Lee (2016) found that cognitive diversity predicts follower intrinsic motivation, but only when transformational leadership levels are high. Their study included data from 478 R&D leader-follower dyads obtained from South Korea. Nguyen, Mai and Huynh, (2019) also found that a transformational leader's behaviours can have a positive impact on employee intrinsic motivation, thus improving their performance. Findings from Shin and Zhou's study (2017) also indicated that intrinsic

motivation partially mediates the relationship between transformational leadership and employee creativity. Although no previous research exists around ambidextrous leadership and motivation, findings as such provide support that leaders' behaviours can influence employee motivation. According to the ambidextrous leadership theory, ambidextrous leaders' opening behaviours are associated with behaviours of a transformational leader, while closing behaviours are more closely linked with the behaviours of a transactional leader (Rosing et al., 2011). An opening leadership approach is more encouraging, flexible, motivational, and supportive. Such behaviours may instil the intrinsic motivation within the followers. On the other hand, a closing leadership approach is more controlling, demanding and less forgiving. Such behaviours are more likely to make followers less interested in their job tasks and focus only on an extrinsic outcome (i.e., reward or avoid penalties). It can be argued therefore that the behaviours of an ambidextrous leader may correspond to the followers' intrinsic and extrinsic motivation. In essence, it is possible that a leader who portrays opening behaviours might instil intrinsic motivation of the followers, while one who portrays closing behaviours, might instil their extrinsic motivation.

3.2.3. Hypotheses Development

The hypotheses set for this study aim to confirm the validity of the ambidextrous leadership theory, by assessing its key components of opening behaviours, closing behaviours and temporal flexibility, as well as test motivation as a novel potential mechanism. The previous subsection (4.2) explains the relevant literature and theories that are being used as a basis for the development of the following hypotheses.

3.2.3.1. Follower exploration and exploitation as mediators of the relationship between ambidextrous leadership and follower IWB

Firstly, I consider the developed conceptual model, and examine the main effects of leaders' behaviours. According to the theory (Rosing et al., 2011), opening leader behaviours are encouraging, give the followers more flexibility, allow them to make errors, provide them with motivation, autonomy, and support to conduct their work. According to theory (Rosing et al., 2011) and past studies (Gilson & Madjar, 2011; Klonek, Gerpott & Parker, 2020; Zacher, Robinson & Rosing, 2016) such behaviours have the capacity to promote creativity. Positive leader actions as such can drive employee exploration, as they can enable them to engage with new techniques or methods they do their work, take risks, make mistakes, and think autonomously (Alghamdi, 2018; Rosing et al., 2011; Zacher & Wilden, 2014). Individuals who perceive their leader as "opening" and notice that they are allowed to make errors without repercussions, flexibility to think and work however they want, then they will be more intrigued to try out new methods and explore alternative routes. Such employee behaviours can be characterised as "explorative" (March, 1991). Rosing and her colleagues (2011) claim that although the ultimate outcome of opening behaviours is creativity, they argue that leaders' opening behaviours foster exploration of the followers, which is why it allows them to generate new and quality ideas without any worries. Exploration is therefore considered the key mechanism that enables ambidextrous leadership, and more specifically opening behaviours, to improve follower creativity.

Even though various studies have found that opening behaviours lead to follower exploration (Alghamdi, 2018; Klonek, Gerpott, & Parker, 2020; Zacher et al., 2016), some have found a direct link between opening behaviours and innovation (Klonek et al., 2020; Zacher & Wilden, 2014) or idea generation (Mascareño et al., 2021). It is therefore likely that when leaders allow

participants to make errors, encourage them openly to experiment with new ideas and motivate them as well, followers will generate more ideas than normally.

It is important to note, that although multiple studies have shown support for such relationships in the past, only the experiments by Klonek et al. (2020) considered the nature of the task. Theory claims that opening behaviours should only be used during creative tasks that require idea generation. This study takes in consideration the nature of the task and examines whether the right behaviours at the right time are beneficial for followers' creativity.

The first three hypotheses therefore examine the direct and indirect effect of opening behaviours. It is hypothesised that leaders who engage in opening behaviours during idea generation tasks will promote their followers' explorative behaviours. It is also hypothesised that opening leader behaviours will lead directly to idea generation. As per theory and past studies it is also expected that followers' exploration will be the key mechanism between leaders' opening behaviours and followers' idea generation behaviours.

Hypothesis 1. *When taking part in idea generation tasks, followers will demonstrate higher exploration when their manager demonstrates opening behaviours.*

Hypothesis 2. *When taking part in idea generation tasks, followers will demonstrate higher idea generation behaviours when their manager demonstrates opening behaviours.*

Hypothesis 3. *When taking part in idea generation tasks, followers' exploration will mediate the positive relationship between their leaders' opening behaviours and their own idea generation behaviours.*

Closing behaviours is the second set of behaviours that ambidextrous leaders need to portray according to theory. This set of behaviours is focuses on establishing routines that can aid the implementation phase, as well as monitoring of the overall goal (Rosing et al., 2011). Hence, it has been proposed that such behaviours should only be used during tasks that focus on idea implementation, as they might inhibit creativity due to followers having no autonomy nor flexibility in the way they do their work (Wang & Cheng, 2010).

Exploitation has been referred to as behaviours that focus on refinement, selection and execution (March, 1991). It is considered the actions of an individual to gain learning, not through experimentation and risk taking, but through using existing knowledge, skills and competences (Baum, Li, & Usher, 2004). It has been claimed (Rosing et al., 2011) as well as evidenced (Alghamdi, 2018, Zacher et al., 2016) that closing behaviours facilitate the exploitation of the followers. When leaders use behaviours that aim to reduce the variance of the followers' behaviours, by monitoring their process, and forcing them to stick to plans and routines, otherwise sanctions would apply, followers are more likely to not engage with anything that might jeopardise their job, the project or task, or even the relationship with their manager. Hence it is likely that they will only engage in exploitation, meaning behaviours that do not link with radical innovation, but simply refinement and improvement of existing products, procedures, or services. When followers perceive their leaders' behaviours as closing, they will use their current knowledge and skills, follow the necessary protocols and routines, and stick to the plans to carry out the implementation of the idea.

It can also be argued that closing behaviours can promote idea implementation, as Mascareño et al. have found (2021). During the idea implementation phase, there is no additional time nor resources for individuals to continue experimenting. This phase focuses entirely on the execution of the idea, thus requires the followers to stop experimenting with new ideas and start using their current skills and knowledge and turn the idea into a reality through the routines

and structures in place (Janssen, 2001; De Jong & Den Hartog, 2010). It is then expected that closing behaviours will also lead to idea implementation directly.

The ambidextrous leadership theory asserts that exploitation is the main mechanism that would make followers respond to their leaders' closing behaviours in order to enhance their idea implementation behaviours (Rosing et al., 2011). By using exploitative behaviours, during idea implementation tasks, followers are less likely to experiment with new ideas and take risks, rather, they are most likely to focus on the implementation of a chosen idea, as their leaders have established routines and structures on how they can move forward. It is expected therefore, that this relationship will be consistent with the theory and past studies (Alghamdi, 2018; Klonek, et al., 2020; Zacher et al., 2016) and show that closing leaders' behaviours will promote the followers' exploitation, which will subsequently lead to their idea implementation behaviours.

It can be therefore hypothesised that when leaders engage in closing behaviours during tasks that focus on idea implementation, then followers exploitation and idea implementation behaviours will be higher.

Hypothesis 4. *When taking part in idea implementation tasks, followers will demonstrate higher exploitation when their manager demonstrates closing behaviours.*

Hypothesis 5*. When taking part in idea implementation tasks, followers will demonstrate higher idea implementation behaviours when their manager demonstrates closing behaviours.*

Hypothesis 6. *When taking part in idea implementation tasks, followers' exploitation will mediate the positive relationship between their leaders' closing behaviours and their own idea implementation behaviours.*

3.2.3.2. The role of temporal flexibility in ambidextrous leadership

Ambidextrous leadership concerns the interplay of the two sets of ambidextrous leadership behaviours thus improving follower overall innovative performance (Klonek et al., 2020; Rosing et al., 2011). The theory suggests that a leader who portrays both high opening and high closing behaviours will facilitate the ambidexterity of their followers, thus leading them to be more innovative. To be successful in pursuing higher innovation, leaders need to balance opening and closing behaviours when necessary. When the task requires creative outputs, such as generating novel ideas, then leaders must engage in opening behaviours to facilitate their followers' exploration as well as idea generation behaviours. On the other hand, during tasks that focus on implementation, leaders need to engage in closing behaviours, which can facilitate the followers' exploitation and idea implementation behaviours.

Taking temporal flexibility into account, it is important for leaders to use the correct behaviours at the right time, which is supposed to yield the best results (Rosing et al., 2011). As innovation is a paradoxical process and involves stages that require either exploration or exploitation, then both sets of leaders' behaviours are necessary. By differentiating between ideation and implementation tasks, this study can test whether the flexible switching of the leaders' behaviours plays a role in their pursuit to enhance innovation. The interplay therefore between the two sets of leaders' behaviours is expected to facilitate innovation (Alghamdi, 2018; Rosing et al., 2011; Zacher & Wilden, 2014), which in this thesis has been referred to as IWB (mean of idea generation and idea implementation). Firstly, it is expected that when leaders use opening behaviours during idea generation tasks and closing behaviours during implementation tasks, then the follower exploration and exploitation, also referred to as follower ambidexterity,

will increase. As opening leader behaviours are expected to promote follower exploration (Alghamdi, 2018), and leader closing behaviours are expected to promote follower exploitation (Alghamdi, 2018), then it is logical that ambidextrous leadership can promote follower ambidexterity (mean of exploration and exploitation) (Zacher et al., 2016), which can then lead to follower innovation (Rosing & Zacher, 2017). Boundary conditions for these relationships remain the situational tasks that leaders have to be aware of. Leaders should engage in opening behaviours only during idea generation tasks, while closing behaviours should only be used during idea implementation tasks (Rosing et al., 2011). Hypotheses 7 and 8 refer to the experimental groups that participants were randomly allocated in. Hence, the outcomes of hypotheses 7 and 8 are based on what group participants were allocated in and not what they perceived their leader as.

The way temporal flexibility can be captured in the following two hypotheses is based on the experimental group that participants are allocated in. In each group, participants go through two different tasks (a creativity task and an implementation task). Temporal flexibility is the ability of the leader to switch from one set of behaviours to another, in order to match the stage of the innovation process. Hence, as theory suggests that the leaders who show opening behaviours at the beginning (which consists of idea generation tasks) and then switch to closing behaviours for the following stage (which consists of idea implementation tasks) will be facilitating their followers' highest innovative behaviours. This process can be seen in only one of the four experimental groups developed in this study. It is therefore expected that the correct group will show the highest innovative outcomes.

The following two hypotheses therefore assume that participants who were allocated in the correct experimental group of an ambidextrous leader will portray significantly higher follower ambidexterity, as well as higher follower IWB compared to the rest of the experimental groups.

The experimental groups and the design of the experiment are explained in the next section which is about the method that is being used for this study.

Hypothesis 7. *Follower ambidexterity is higher when the leader demonstrates temporal flexibility in line with innovation stages than when they don't.*

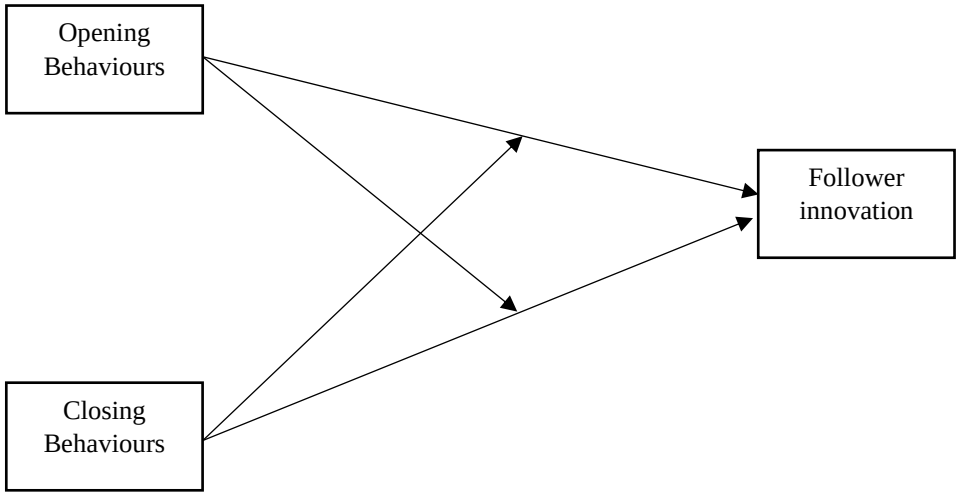
Hypothesis 8. *Follower innovative work behaviours is higher when the leader demonstrates temporal flexibility in line with innovation stages than when they don't.*

Although studies have shown that the interactive effect between leaders opening and closing behaviours does facilitate follower innovation (Alghamdi, 2018; Zacher & Rosing, 2015; Zacher & Wilden, 2014), they failed to take into account the timing that those behaviours were portrayed, and those who did take the situation into account found mixed results (Klonek et al., 2020), which raises questions as to whether timing is indeed an important aspect of the theory, or not. Nonetheless, as theory deems that timing is an important aspect, and one of the aims of this study is to test the theory, it is necessary to hypothesise that findings will be consistent with the theory and show that not only the interactive effect of ambidextrous behaviours is essential, but the timing of those behaviours as well, thus suggesting that the most effective leader behaviours will be those than align with the corresponding stage of the innovative process (Rosing et al., 2011). Theoretically it has been argued that closing behaviours will moderate the relationship between opening behaviours and innovation, insofar as innovation will be at its highest when both opening and closing behaviours are high. The proposition also

works vice versa, meaning that opening may moderate the relationship between closing behaviours and innovation, insofar that innovation will be at its highest when both closing and opening leader behaviours are at high levels. The figure below demonstrates this theoretical argument (see Figure 3.2).

In contrast, when the leaders' opening and closing behaviours are not at high levels, the innovative outcomes of the followers will not experience an increase and may remain at baseline levels, which can differ between individuals, based on factors such as personality or affect. For instance, when the leader's opening behaviours during idea generation tasks are at low levels, followers will be aware of the task, but might not feel as motivated to experiment with different ideas, and might also be scared of making errors, especially if they do not know their manager very well or they do not know what their leader's expectations are. Followers under leaders who portray low opening behaviours might be more reserved in showing their true creative potential, as without the leaders' behaviours, the leaders' intentions might also be unclear. Timing is also crucial in the theory, as the leaders need to portray opening behaviours during idea generation tasks. The experimental study by Gerlach and her colleagues (2020a) showed that under leaders who engage in high opening behaviours during the right timing, the creative performance of the followers was high, but when the leaders engaged in low opening behaviours during the right timing, the creative performance of the followers was low. In addition, leaders who portrayed high closing behaviours during the implementation task, the implementation performance of the followers was high, but when leaders portrayed low closing behaviours, the implementation performance of the followers was also low. This shows, that both leaders' behaviours, should be at high levels, and during the right timing, for a strong effect to take place. Therefore, it can be expected that the higher the levels of leaders' behaviours, the higher the followers' outcomes of innovation.

Figure 3.2. The interactive effect of ambidextrous leadership on innovation (Rosing et al., 2011).



Although studies have tested the interactive effect of ambidextrous leader behaviours on follower innovation (e.g., Zacher & Wilden, 2014), the theoretical model by Rosing and her colleagues demonstrates that exploration and exploitation mediate before the leaders' behaviours have an effect on follower innovation. It was suggested that the interaction between exploration and exploitation leads to follower innovation (Rosing et mal., 2011; Rosing & Zacher, 2017). The study by Oluwafemi et al. (2020) also found support that the interactive effect of leaders' opening and closing behaviours predicts the interaction of follower exploration and exploitation. Following the process of Oluwafemi and her colleagues (2020) this study also uses the term "employee ambidexterity" to refer to the interaction between exploration and exploitation. While "follower ambidexterity" refers to the mean of both exploration and exploitation, "employee ambidexterity" is the value of the interaction between the two. Their study showed a clear linear increase of employee ambidexterity based on the

leaders' ambidextrous behaviours. When leaders' opening and closing behaviours were low, then employee ambidexterity was low; when leaders' behaviours were at medium levels, then employee ambidexterity was also at medium levels; and when leaders' behaviours were at high levels, then employee ambidexterity was also at high levels. This suggests that the follower outcome is dependent on the the levels of the leaders' behaviours.

Yet, it is important to acknowledge what can be expected in situations where one of the sets is not high. For instance, a leader who shows low opening behaviours during idea generation tasks, but high closing behaviours during idea implementation tasks may be expected not to produce the same results as a leader who demonstrates high opening and high closing behaviours during the righ timing. The two behaviours are not the two ends of the same continuum; they are mutually exclusive, and each one has its own important role. High opening behaviours should be used during idea generation tasks as they would make participants engage with more explorative behaviours such as risk taking and experimentation, thus allowing them to generate more ideas. Now, if during the idea generation task, the leaders demonstrate low opening behaviours, participants may feel that they do not have enough support for innovation to experiment and take risks without repurcusions. Subsequently, those followers would not produce as many new and novel ideas as the followers who have a high opening leader. A combination of low opening – high closing leadership therefore, during the correct timing, would be expected to produce medium level results, as, although the low opening behaviours would not be sufficient for high idea generation outcomes, the high closing behaviours would be sufficient and effective for idea implementation outcomes. It could be assumed therefore that followers could score their own idea generation behaviours low, but their idea implementation behaviours high, as the closing behaviours could help them focus on getting things right and on time.

Similarly, in a situation where a leader portrays high opening behaviours during the idea generation task, as theory suggests, but low closing behaviours during the implementation task, then follower innovation would most likely be at medium levels as well. The high opening behaviours would allow the participants to engage with various behaviours and experiment in order to produce new and novel ideas. However, during the idea implementation phase, if the leader is not very clear with their closing behaviours, then followers might carry on responding to opening behaviours from the previous stage. This would make the followers to engage with experimentation and risk taking, in a situation that demands refinement, focus, and exploitation of existing skills and knowledge. It could be expected therefore, that followers would demonstrate medium level innovation outcomes, since idea generation scores would be high, but idea implementation scores would be low.

However, according to the theory (Rosing et al., 2011), in a situation where the leader portrays low opening behaviours during the idea generation task and low closing behaviours during the idea implementation task, then it should be expected that the followers' innovative behaviours would be at low levels. Opening behaviours' aim is to increase the behavioural variance of the followers, but closing behaviours' aim is to decrease the behavioural variance of the followers. With this in mind, if a leader shows low opening behaviours during idea generation tasks, then followers might miss the opportunity to engage in a lot more behaviours than what they would if they had the support of an opening leader. Similarly, if a leader shows low closing behaviours during idea implementation tasks, then followers might incorrectly engage in more or even new behaviours than the ones they would if they had a closing leader. This could lead to creativity outcomes that lack depth and variety, as well as implementation outcomes that vary between people and are different from what is usually expected. According to the theory therefore, the leaders' ambidextrous behaviours could be used as a tool to ensure that the innovative work behaviours of the followers are consistently high every time.

The following two hypotheses therefore test the interactive effect of the leaders' ambidextrous behaviours, while considering the correct timing as well. Unlike the previous two hypotheses which only consider the experimental group that participants were randomly allocated in, these two hypotheses focus on the perceptions of the participants about their leader and how they scored their ambidextrous behaviours.

To develop these two hypotheses therefore, I took in consideration Figure 3.2 (see page 99), which shows that the leaders' two sets of behaviours act as moderators for each other's relationship with innovation. Since the idea generation phase is the first in the innovation process, and opening behaviours need to be demonstrated during that phase, I am using the leaders' opening behaviours as the independent variable of the proposed hypotheses. It is expected therefore, that the portrayal of closing behaviours during the right timing (which comes after idea generation) will have a moderating effect, thus making the effect of leaders' opening behaviours on followers' outcomes stronger. It is therefore hypothesised that:

Hypothesis 9. *The positive effect of the leaders' opening behaviours during the idea generation phase on employee ambidexterity, is stronger when the leaders' closing behaviours during the idea implementation phase are high.*

Hypothesis 10. *The positive effect of the leaders' opening behaviours during the idea generation phase on follower IWB, is stronger when the leaders' closing behaviours during the idea implementation phase are high.*

3.2.3.3. The role of motivation as a mediator in the relationship between ambidextrous leadership and follower IWB

Research shows that positive and supportive leadership is beneficial for the followers' intrinsic motivation (Chen, Li, & Tang, 2009; Shin & Zhou, 2003; Wang, Kim & Lee, 2016; Zhang & Bartol, 2010). As no other studies have examined the role of intrinsic motivation in ambidextrous leadership, there is no supporting evidence that it can promote it. However, according to the theory, the opening behaviours of an ambidextrous leader are strongly related to transformational leadership due to their similarities and shared characteristics (Rosing et al., 2011; Zacher & Rosing, 2015). Leaders who use such behaviours, aim to motivate, inspire, and influence their followers to achieve their goals and perform better. (Bass & Avolio, 1990). Leaders' opening behaviours can be comparable to transformational, as these include motivation, encouragement and error and mistake allowance, which enable the followers to think outside the box and generate new and better ideas (Gerlach, Hundeling & Rosing, 2020; Tung, 2016). Since transformational leaders have been found to facilitate the followers' intrinsic motivation, it is logical to predict that leaders' opening behaviours can also facilitate to followers' intrinsic motivation.

Yet intrinsic motivation is not only an outcome of leadership. Intrinsic motivation is also one of the most important antecedents of creativity (Hennessey & Amabile, 2010; Sternberg, 2009). Amabile and her colleagues (2018) argued for example that intrinsic motivation is a significant compotent for creativity and various other studies have found positive relationships between intrinsic motivation and creativity (Amabile, Hill, Hennessey & Tighe, 1994; Choi, 2004; de Jesus, Rus, Lens & Imaginário, 2013; Fischer, Malycha, & Schafmann, 2019). As intrinsic motivation can act both as an outcome of positive leadership and a driver of creativity, then it

is logical to assume that it can also be a mediating mechanism between opening leader behaviours and followers' creativity.

Individuals who intrinsically enjoy what they are doing and find meaning in their work, are more likely to generate more ideas as they find their work exciting (de Jesus, Rus, Lens & Imaginário, 2013). Various studies show that positive leader behaviours that have the capacity to promote the followers' intrinsic motivation (e.g., transformational), may consequently lead to enhanced creativity as well (Charbonneau, Barling, & Kelloway, 2001; Chen, Li, & Tang, 2009; Jensen & Bro, 2018; Laksmana & Riana, 2020; Shafi, Lei, Song & Sarker, 2020). It is highly likely therefore that leaders' opening behaviours may instil intrinsic motivation within their followers which can be later transformed to higher creativity. When employees perceive their leaders' behaviours as motivational, they will be keener to find interesting ways to conduct their work, which can make them come up with more ideas as well.

It is also possible that the relationship between opening leaders' behaviours and creativity goes even further to form a serial mediation with intrinsic motivation and exploration. The theory (Rosing et al., 2011) suggests that follower exploration is the key mediator, something that is hypothesised prior. Yet, it can be that followers' exploration is the result of them being intrinsically motivated after being exposed to their leaders' opening behaviours, thus making them eventually more creative. In fact, some scholars believe that there is a positive relationship between intrinsic motivation and exploration (Amabile, Hill, Hennessey & Tighe, 1994; Gilson & Madjar, 2011). Izard (1977) claims that intrinsic motivation promotes the exploration of new situations and challenges. Moreover, self-determination theory (Deci & Ryan, 1985; Ryan & Deci, 2000) also posits that the two are also closely related and that exploratory behaviours are normally intrinsically motivated. Gilson and Madjar (2011) found that intrinsic motivation is a strong predictor of radical creativity as well, which can be defined as generating new ideas, taking risks, and engaging in experimentation (Gilson, D'Innocenzo, & Moye, 2012). Pittman,

Emery and Boggiano (1982) argue that individuals who are motivated intrinsically, show a tendency to examine new opportunities and look for alternative solutions.

The similarities between transformational leadership and opening leadership also suggest that a closer connection between intrinsic motivation and exploration might exist. Dimensions of transformational leadership, such as inspirational and intellectual stimulation, can promote generation of new ideas of the followers and encourage them to think out the box and engage with new activities respectively. This might suggest that intrinsic motivation can be related with exploration as well (García-Morales et al., 2012; Si &Wei, 2012). Drawing from SDT (Deci & Ryan, 2000), opening behaviours are likely to facilitate the satisfaction of the three basic needs, which in turn can promote the followers' motivation and cognitive capacity to invest efforts in exploring, thus leading them to being more creative. Providing autonomy and encouraging experimentation are key opening behaviours, hence the autonomy aspect of SDT can be captured. By encouraging the followers to work alone without supervision, can be perceived as a sign of their competence. Lastly, as opening leaders show enough trust to their followers, by allowing them work alone and make mistakes, can be a perceived as a sign of quality relationships between the two parties. Followers are more likely to perceive opening behaviours as a sign of trust and affection by their leader thus capturing the aspect of relatedness as well.

Although it is hypothesised that opening behaviours may have a direct effect on both intrinsic motivation and exploration, it is also worth examining a potential serial mediation where intrinsic motivation leads to follower exploration before enhancing their idea generation outcomes. As intrinsic motivation is a key component of creativity, and explorative behaviours are characterised by behaviours such as risk taking and experimenting with new ideas, it is possible that intrinsic motivation can predict exploration as well, thus leading to a serial

mediation. The positive behaviours of an opening leader then may have direct and indirect effects on follower creativity through intrinsic motivation and exploration.

As temporal flexibility is the main aspect that is being examined through this study, it is crucial to consider the type of the tasks involved in the process of innovation. Creative tasks require people to come up with new ideas and engage in problem solving discussion where they brainstorm and exchange thoughts. For individuals to be effective during such situations they need to be intrinsically motivated, as it will enable them to generate more and useful ideas (Amabile, Hill, Hennessey & Tighe, 1994; Choi, 2004; de Jesus, Rus, Lens & Imaginário, 2013; Fischer, Malycha, & Schafmann, 2019). The relationships proposed therefore should align with the followers' behaviours and the nature of the task. In essence intrinsic motivation is expected to play a big role, by being an outcome of opening behaviours, a mediator leading to exploration and indirectly affecting idea generation, and part of serial mediation as well. It is therefore hypothesised that:

Hypothesis 11. *When taking part in idea generation tasks, followers will demonstrate higher intrinsic motivation when their manager demonstrates opening behaviours.*

Hypothesis 12. *When taking part in idea generation tasks, followers' intrinsic motivation will mediate the positive relationship between their leaders' opening behaviours and their own exploration.*

Hypothesis 13. *When taking part in idea generation tasks, followers' intrinsic motivation will mediate the positive relationship between their leaders' opening behaviours and their own idea generation behaviours.*

Hypothesis 14. *When taking part in idea generation tasks, followers' intrinsic motivation and followers' exploration will mediate the positive relationship between their leaders' opening behaviours and their own idea generation behaviours, thus leading to a serial mediation.*

Both motivation types have been linked with creativity and innovation outcomes (Chang, Bai & Li, 2015; Elkins & Keller, 2003; Rickards, Chen & Moger, 2001; Sosik, Avolio & Kahai, 1998). Extrinsically motivated individuals tend to engage with an activity due to external factors, such as gaining a reward or avoiding a consequence (Amabile et al., 2018). Although intrinsic motivation has been a primary driver of creativity in many studies, research shows that extrinsic motivation can have a positive influence on innovation as well (George & Zhou, 2002; Taggar, 2002).

This study examines the role of closing leader behaviours in facilitating the followers' extrinsic motivation. Characteristics of closing behaviours include controlling of the process, monitoring the goal attainment, establishing routines, sticking to plans and penalising mistakes and errors (Rosing et al., 2011). Individuals who perceive their leaders' behaviours as closing, might not be willing to take the risk by acting autonomously and trying out things that do not align with the companies' routines or the project's plans, as they know that their actions can have negative consequences (Mascareño et al., 2021; Rosing et al., 2011). Similarly, if a reward is in place, it might motivate them to endure a process in order to obtain it. Closing leader behaviours have similarities with task-oriented approaches (House, 1971; Misumi & Peterson, 1985), hence followers may feel obliged to obey them due to a sense of responsibility towards their role and their duties. It is likely therefore that leaders who engage in closing behaviours may instil extrinsic motivation within their followers, thus making them engaged with what is required of them.

At this point, it is important to consider the role of temporal flexibility, as theory suggests that these behaviours are more effective when used under situations that require employees to exploit their current knowledge and skills, and thus turning an idea into reality (Rosing et al., 2011). The idea implementation stage of innovation focuses entirely on applying knowledge and executing the necessary procedures to turn a new idea into reality. In order to do that, employees need to take off their "thinking hat" and put on their "practical hat". While on implementation mode, employees do not need to engage with new methods, explore new paths, techniques or come up with new ideas, but use the available resources and execute the chosen idea. Theory claims that exploitation is the main mechanism that can explain why leaders' closing behaviours facilitate their followers' innovation, and, more particularly, their idea realization behaviours (Mascareño et al., 2021, Rosing et al., 2011). However, in this case, it can be possible that the main mechanism between leaders' closing behaviours and followers' exploitation is extrinsic motivation. Every individual needs to find motivation to act on something, either intrinsically or extrinsically. As closing behaviours restrict the employees' freedom, autonomy, and flexibility to think and work as they please, they are more likely to turn to extrinsic methods of motivation, such as gaining a reward (if there is one) (Eisenberger & Rhoades, 2001) or avoiding the punishment (e.g., sanctioning errors or penalising of mistakes). The meta-analysis of Hammond et al. (2001) also shows that extrinsic motivation is also positively correlated with innovative performance. It can be argued therefore that that followers' extrinsic motivation can act as a mechanism between leaders' closing behaviours and followers' exploitation.

As it has been argued that closing leader behaviour may lead to extrinsic motivation, and follower exploitation may lead to idea implementation, then a serial mediation may also be hypothesised. Individuals who perceive their leaders' behaviours as closing, will find extrinsic motivation to respond to them, as it is part of their duties and obligations to carry out their

tasks, and that will make them exploit their current skills and knowledge, as it is required by the leaders' behaviours, in order to enhance their idea implementation behaviours. Gilson and Madjar (2011) found that extrinsic motivation is linked with engagement of pre-established practices which is closely associated to incremental creativity. Incremental creativity has been defined as behaviours that are closely associated with the use and application of existing methods and processes (Gilson, et al.,2012), which can be argued that it shares similarities with exploitation. Although, it is not argued that incremental creativity and exploitation are the same concepts, it is suggested that they two share many similarities, hence extrinsic motivation may lead to exploitation.

Taking the nature of the task into account, I hypothesise that extrinsic motivation may play an important role during tasks that require followers to engage in implementation tasks or work towards executing an idea.

Hypothesis 15*. When taking part in idea implementation tasks, followers will demonstrate higher extrinsic motivation when their manager demonstrates closing behaviours.*

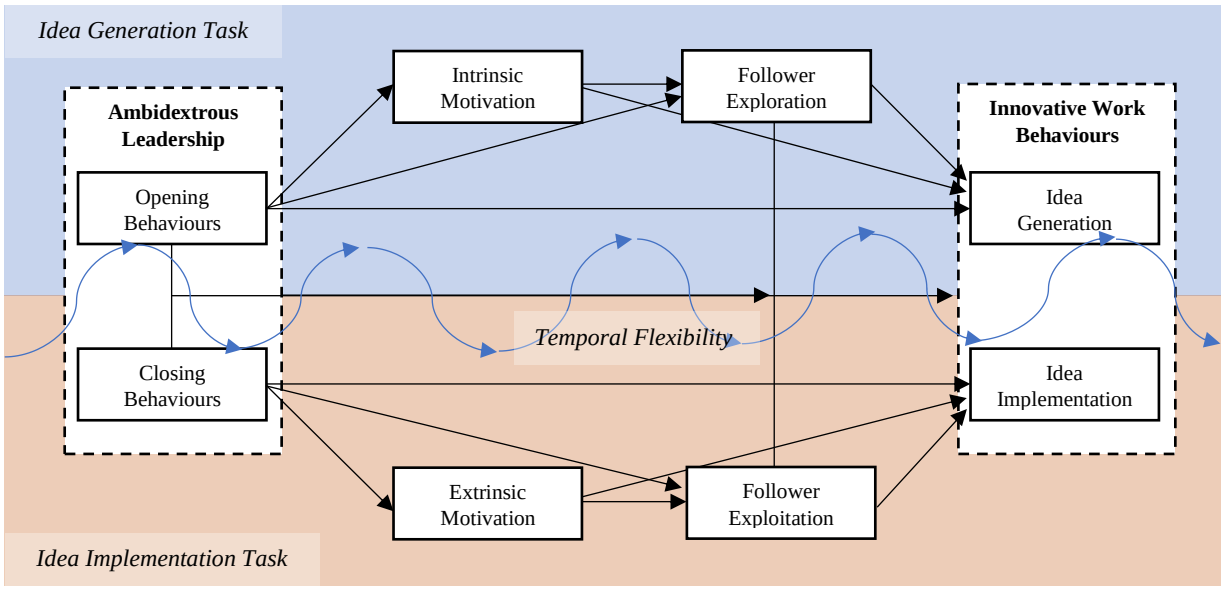
Hypothesis 16. *When taking part in idea implementation tasks, followers' extrinsic motivation will mediate the positive relationship between their leaders' closing behaviours and their own exploitation.*

Hypothesis 17. *When taking part in idea implementation tasks, followers' extrinsic motivation will mediate the positive relationship between their leaders' closing behaviours and their own idea implementation behaviours.*

Hypothesis 18*. When taking part in idea implementation tasks, followers' extrinsic motivation and followers' exploitation will mediate the positive relationship between their leaders' closing behaviours and their own idea implementation behaviours, thus leading to a serial mediation.*

The conceptual model developed and presented in the previous chapter demonstrates the relationships that this thesis examines. This particular study focuses on some parts of the model, and also considers the nature of the task as an important component of the theory. In summary, the model claims that leaders' opening behaviours will be related with followers' intrinsic motivation, exploration, and idea generation, during creativity tasks and activities, while leaders' closing behaviours will be related with followers' extrinsic motivation, exploitation, and idea implementation, during implementation tasks and activities. It is also hypothesised that the interactive effect of the leaders' opening and closing behaviours during the right timing, will facilitate the followers' innovative work behaviours overall. The model tested in this study can be seen below in Figure 3.3.

Figure 3.3. Conceptual model tested in this study.



Note. The colours denote the nature of the task – the relationships in the blue area are hypothesised to exist during idea generation tasks, while the relationships in the orange are hypothesised to exist during idea implementation tasks.

This study makes some novel contributions to existing literature of ambidextrous leadership. First of all, the theory considers follower innovation to be an outcome that involves all stages

of the innovation process (Rosing, et al., 2011). Studies that tested the theory for example, used innovation (Klonek et al., 2020; Zacher & Rosing, 2015; Zacher & Wilden, 2014), innovative work behaviours (Mascareño et al., 2021; Wang et al., 2021) or innovative performance (Alghamdi, 2018; Gerlach et al., 2020a) as the outcome. The present study however differentiates the two main stages of innovation by assessing creativity and implementation as two separate constructs as well as a unified one. Although both concepts make up innovative work behaviours, and share similarities, it is important to consider that they have different antecedents. Creativity, or idea generation, focus solely on the generation or production of new and useful ideas, practices, services or procedures (Amabile, 1988; Mumford & Gustafson, 1988; Shalley et al., 2004; West & Farr, 1990). Idea implementation on the other hand, does not involve generation of new ideas, but simply the implementation or execution of an idea (Janssen, 2000). Whereas idea generation focuses on the "thinking" part, implementation focuses on the "acting" part. Their distinction therefore needs to be considered. This study argues that the two opposing leader behaviours of opening and closing relate to follower idea generation and implementation respectively. Only the study of Mascareño et al. (2021) examined idea generation and idea realization separately, however they argue that opening behaviours will lead to implementation through idea generation, moderated by closing behaviours. The present study argues that both opening and closing leader behaviours have a direct effect on idea generation and idea implementation behaviours of the followers. This can contribute to the leadership literature as the two sets of behaviours may act standalone as two leadership styles. For example, if two managers are responsible for an innovative project, one of them may act as the leader for the idea generation part through portraying an opening leadership style, whereas the other one may lead the implementation and portray only a closing leadership style. Similarly, some leaders may be involved only with the implementation phases of all the innovative projects of their company, hence they might have to portray only one style

(closing) all around. It is important therefore to identify the main effects of each of these leaders' behaviours.

Another novel contribution of this study is the examination of a potential mediator which can help explain further the reasons why studies show that ambidextrous behaviours enhance follower innovation. Motivation, both intrinsic and extrinsic, have never been assessed alongside ambidextrous leadership before. Although past studies have shown how various leadership styles can promote motivation of their followers, which will then translate to performance (Charbonneau et al., 2001; Tu & Lu, 2016), as well as creativity and innovation (Bande et al., 2016; Siyal et al., 2021; Yidong & Xinxin, 2013, Zhang & Bartol, 2010), no studies have examined how ambidextrous leadership behaviours affect motivation. It was hypothesised that opening behaviours will promote intrinsic motivation, while closing behaviours will promote extrinsic motivation. Given that the two motivation types can co-exist and be on separate continuums (Amabile, 1993), the synergy between the two might also facilitate innovation.

Last but not least, another major contribution of this study is the examination of temporal flexibility, which theory suggests is an important component of the theory (Rosing et al., 2011). Temporal flexibility suggests that leaders should know when to switch between opening and closing behaviours. Opening behaviours should only be used during creativity tasks, while closing behaviours should be used only during implementation tasks. Research tends to ignore this component and studies so far only examined whether the interaction between opening and closing behaviours may facilitate the followers' innovation (Alghamdi, 2018; Oluwafemi et al., 2020; Zacher et al., 2016; Zacher & Rosing, 2015; Zacher & Wilden, 2014), without assessing the timing and the situations when the leaders portrayed each set of behaviours and whether it aligned with the theory.

3.3. Method

The primary purpose of this study was to assess the temporal flexibility element of the Ambidexterity Theory of Leadership for Innovation (Rosing et al., 2011). The dynamic nature of the ambidextrous leadership style implies that leaders portray opening or closing behaviours at the correct time depending on the stage of the innovation processes. In order to assess this aspect of the theory, an experimental design was necessary. An experiment can provide the benefit of manipulating the variables of interest before measuring an outcome, hence ensuring that any changes on the outcomes can be due to the manipulation (Podsakoff & Podsakoff, 2019). In this study, the variable of interest is ambidextrous leadership, and more precisely, the interactive effect between opening and closing behaviours and its correct timing.

By manipulating this variable, we can expose the participants to these specific behaviours and examine whether they influenced their innovative outcomes. Studies have already shown that the presence of these leadership behaviours influence the innovation of the followers (Klonek, Gerpott & Parker, 2020; Zacher, Robinson & Rosing, 2016; Zacher & Rosing, 2015), hence the aim was not only to confirm that but to assess the timing of these behaviours; temporal flexibility. Therefore the experimental conditions that have been created for this study, focus on the aspect of time and when these behaviours occur, in order to test the set hypotheses, as well as the theory, that opening behaviours should be used during tasks that require generation of new ideas thus enabling the employees to engage in exploratory behaviours, and closing behaviours should be used during tasks that require implementation of ideas, thus enabling the employees to engage with exploitative behaviours. Detailed description of the manipulation and the conditions can be found in the following section (3.3.3).

Experiments have undoubtedly further benefits too. In the field of organisational psychology, and especially in quantitative research, cause and effect relationship testing is prominent.

Experimental designs have the strength to determine causality in research, which is crucial in extending our knowledge in this field (Antonakis, Bendahan, Jacquart & Lalive, 2010; Falk & Heckman, 2009). Several scholars have argued their significance by deeming them as "powerful techniques" (Jones, 1985) or even the "gold standard" (Antonakis, 2017; Eden, 2017) for organizational research. There has been a drastic increase in the amount of research which uses experimental designs, ever since Colquitt's (2008) call for them in the Academy of Management Journal. Multiple scholars (Anderson & Edwards, 2015; Antonakis, 2017; Van Witteloostuijin, 2015) have used his appeal as a beacon and urged more researchers to publish more experiments. Since then, experimental designs have seen a steady increase by nearly 5% in 10 years (2009-2018) (Podsakoff & Podsakoff, 2019).

Internal validity has always been of critical importance to studies that focus on causal relationships (Drost, 2011). Lab experiments provide the benefit of minimising this threat, due to their ability of randomisation across the treatment and control groups. Randomisation even carries additional benefits on its own. Apart from the standard randomised allocation of demographic attributes (i.e., personalities, sex, age etc.), it may also control some nuisance variables that researchers may not even be aware of (Schwab, 2005). The randomisation, therefore, as well as the control that the researcher has over the manipulated and other extraneous variables, is one of the advantages of an experimental design study that may combat internal validity threats (Podsakoff & Podsakoff, 2019). Lab experiments also benefit from addressing any endogeneity concerns. Endogeneity occurs when the independent variable is correlated with further confounding variables causing biased results. A rigorous experimental design and the randomisation of the participants eliminate any endogeneity concerns and allow the researcher to be confident of any effects that the manipulated independent variables may have on the dependent variables (Antonakis et al., 2010).

Moreover, the ambidexterity theory of leadership for innovation (Rosing et al., 2011) does not make any claim regarding the background of the followers, their field of work or their ethnicity, hence, it is implied in the theorising that the propositions would work with anyone as a participant, and presumably, according to this theory, even a student sample may provide some support or full confirmation of the theory, especially when the variable of interest is manipulated effectively.

Due to numerous benefits and abilities that lab experiments can provide, the aims and objectives of this study were set to three:

1) To assess the main effects of ambidextrous leader behaviours on the followers' innovative behaviours. This means that every causal relationship that appears in proposed conceptual model is tested. Examining therefore the interactive effect of opening and closing leader behaviours on follower innovative behaviours was only a part of the process, as the main aim would be to test the main effect of opening and closing leader behaviour on follower behaviours that correspond to the innovation stages respectively. This is a novel aspect of this project as past studies did not examine whether the two sets of behaviours may act independently.

2) To examine the role and the importance of the temporal flexibility aspect. This theoretical element assumes that leaders should know when the right time is to portray opening or closing behaviours. Most studies thus far have examined the existence of the two sets of behaviours but neglected the importance of time in this dynamic leadership style. By manipulating the order and timing of variable of interest, one may examine whether the nature of the task plays a role in ambidextrous leadership, and it can help clarify whether leaders should use opening and closing behaviours only during set situations or not.

3) To investigate whether follower intrapersonal factors play a role in explaining the effect of leader behaviours on follower innovation, thus extending this theory further. Due to the cross-sectional nature of this design, one may examine mediated effect models (e.g., Allen & Rush, 1998; Eden, Stone-Romero & Rothstein, 2015; Spencer, Zanna & Fong, 2005) which can provide further understanding into leadership behaviours and their effects. Although some may argue that experimental designs are incapable of suggesting causal inferences regarding mediations (Podsakoff et al., 2003; Spencer et al., 2005), it is still important to examine whether intrinsic or extrinsic motivation, as well as exploration and exploitation, correlate with ambidextrous leadership behaviours, as well as innovation stages and followers' innovative work behaviours. Motivation has never been examined alongside ambidextrous leadership; hence, any significant findings can still be of valuable importance.

This experiment was originally designed to be conducted in a physical setting, however, due to the recent outbreak of COVID-19 and the lockdown restrictions imposed by the government, meant it could not proceed as such, and had to be terminated midway. Due to this crisis, the study has undergone a methodological adaptation, involving multiple changes. The original plan for this study was to conduct a pilot lab experiment across two sessions before proceeding to the main lab experiment. The outcome, however, was that after the pilot lab experiment, the study had to be redesigned and carried on as an online experiment. In the following section, I briefly explain the original plan along with how the COVID-19 outbreak has affected it, followed by the adaptation process. Detailed explanation of the main (online) experiment can be found in section 3.3.3.

3.3.1. The Original Plan

Before COVID-19 entered our lives, the plan was to conduct a few pilot experiments before engaging with the main one. Piloting the experiment was necessary to ensure the measures, the

process and the vignettes developed were effective before attempting to recruit a larger sample for the main experiment. The study lasted for one hour in total. Approximately ten days prior to each pilot experiment session, participants would receive an information sheet to read and understand the nature of the study, as well as what they had to do. Upon arrival at the session, the participants would get two envelopes. The first envelope contained the document with the scenario, the vignettes, the instructions for the hands-on tasks as well as scales and demographic questions. The second envelope consisted of some arts and crafts material that participants would need to use as part of their practical tasks. On opening the document, participants were able to read and sign the consent form. The document then had some basic instructions on the process of the experiment, before proceeding to a survey, followed by the main scenario, then one for the four different vignettes which were an ambidextrous leadership manipulation, then the tasks and finally a second survey at the end. For this study, four different experimental groups have been created in order to answer the hypotheses stated. Each envelope that contained a document, had a code written on it which corresponded to one of the four experimental groups. The participants were randomly given one of the four groups without them knowing what to expect or what the codes meant. A detailed description of the procedure, the scenario, the experimental groups, the tasks, and the measures used are explained in the following section (3.3.3).

Two data collection experimental sessions were conducted within a period of one month. In both cases, the sample was acquired through a convenient sampling method. The participants of the first pilot session were third year undergraduate students of a module that I had been teaching on. The sample consisted of thirteen students. The students were informed previously that a study in creativity would take place during the semester and were aware of the study's nature, as they had received an information sheet approximately two weeks prior to the date of the experiment. The second wave of data came from a sample of twelve PhD student volunteers

from the university of Sheffield, approximately a month later. A call for volunteers has been advertised in a PhD social media platform and some of the students had emailed to express their interest. The twelve participants followed the same procedure as the first group, and everyone provided valid responses.

The data collected from a total sample of twenty-five participants were analysed and necessary amendments to the questions and the tasks have been made, in preparation for the main experiment, which had an anticipated sample size of 300 student participants. Results from the two pilot sessions demonstrated high reliability for the measures, but also required some further amendments to the vignettes created, to make them more relevant. Furthermore, all twenty-five participants provided some feedback on the study, which allowed me to look at it from a participant's point of view. Based on the feedback, some small changes were made to the timed tasks (i.e., reduce the time of the tasks, as some of them were longer than necessary), as well as make some instructions clearer.

The main experiment was scheduled to start in March 2020. Calls for participants were sent out to many social media platforms and university email groups as well. Printed leaflets seeking participants have been also handed out in the University's libraries and common areas. Students who were interested followed a link to a form where they had to choose the day that they would like to attend the session. Due to the size of the room provided for this study, sessions had to be conducted in groups of 20. The sessions were planned to run on a daily basis for an entire month. The advantage of conducting all experiment sessions in the same room is that one may control for certain environmental factors, which may affect the responses of the participants and therefore the results. For instance, factors like time of the day, atmosphere, temperature, or noise can be controlled by the researcher who is conducting the experiment, to minimise external stimuli (Torresin, Pernigotto, Cappelletti & Gasparella, 2018). Being present for every

session, as the facilitator, also has its limitations. For example, research participants might have performance anxiety knowing that they are being supervised (Kirchner, Bloom & Skutnick-Henley, 2008). Nevertheless, the timing of this experiment was nothing but unfortunate. During that time, numerous British universities were striking, so many students returned home for a short period of time. The weather was also extremely bad and due to the University facility where the experimental sessions were allocated being the furthest from campus, made the students more reluctant to attend the session, especially since the reward was only a prize draw for Amazon vouchers. But worst of all, the COVID-19 virus was already spreading fast in the UK, and the lockdown restrictions from the government were imminent. The lockdown came into effect a few days after the initiation of the main study, causing its immediate termination.

3.3.2. The Methodological Adaptation Process

After careful evaluation of the situation, the decision made was to redesign the study in order to follow the necessary COVID-19 guidelines and policies. The experiment would now be conducted online, which was the safest alternative, given the fact that uncertainty was overwhelming when the first lockdown took effect. Online experiments carry many benefits, such as fast data collection as well as lower distribution costs (Bell, Bryman & Harley, 2018) and provide the researcher flexibility regarding the sample, as people from all around the world could now participate.

An online experiment, although sounding like an easy methodological adaptation, carried many unseen frustrations, as not only the design of the experiment had to change, but the sample, the setting and the content had to be revised. Since the overall aim of this research is to assess creative outcomes, it was of the researcher's benefit to assess the outcomes in as many ways

as possible. An experiment in a physical setting would have provided the participants the opportunity to engage with hands-on creative activities and the researcher for an additional measure of their creativity. The key downside of the new method therefore was that the practical bit of the experiment, which could have provided further insight about the participants' creativity levels, has been lost. As aforementioned, the primary benefit of lab experiments is that it allows the researcher to control for a variety of factors that may affect the outcomes. Unfortunately, the new design of this study also meant that it was not possible to control some environmental factors, as participants would undertake it in their own space and time (Finley & Penningroth, 2015). This could further lead to additional uncertainties, for example participants could ask for help from someone else around them (Kraut, Olson, Banaji, Bruckman, Cohen & Couper, 2004).

The next part of the adaptation process was to find a suitable platform to host the online experiment. After a week of researching various options, the decision was made to utilise a platform called *Gorilla Experiment Builder* (www.gorilla.sc). This platform has recently gained lots of popularity among behavioural scientists, due to its friendly user interface as well as its features, which are essential for experiments (Anwyl-Irvine, Massonnié, Flitton, Kirkham & Evershed, 2019). Randomizer widgets are necessary for this study, as they ensure that the different vignettes are equally distributed among the participants. Moreover, countdown timer widgets may create a sense of challenge, as this was another vital part of this study. The interactive tasks were timed, so it was important for participants to see how much time they had left before the screen changes. Another benefit of this platform is its ability to be integrated with participant recruitment platforms. Since the study was under a strict deadline and behind schedule, it was decided that participants would be recruited online via a paid-for recruitment platform, which would produce data instantly, usually within the same day. *Gorilla* can be integrated with *Prolific (*www.prolific.co*)*, a well-known participant recruitment platform that

numerous researchers and academics are using throughout the world. *Prolific* has a large pool of over seventy thousand (70,000) registered users who you can filter and choose very niche samples based on your requirements. One might argue that recruiting participants in exchange for payment may result to additional complexities, such as biased response (Ripley, 2006), yet multiple researchers have praised the platform for its honest and diverse population (Peer, Brandimarte, Samat, & Acquisti, 2017), as well as its functionality, transparency, and quality of data (Palan & Schitter, 2017). Online experiments, and particularly the two platforms selected, may also ensure research rigour as they provide the researcher the opportunity to use attention checks or to record the time that participants have spent in each section. If the researcher identifies issues as such, they choose to reject the participant's submission, hence ending up paying only for quality responses from participants who have passed all the criteria and followed every instruction. For this study, 37 participants' responses were rejected due to them having failed the online attention checks, which was a sign that responses were not genuine, nor they would reflect the real effect of the manipulation.

3.3.3. The Online Experiment

This study kept its initial aim and objectives, despite the changes undergone. This method is popular for producing high internal validity, due to the manipulation of the independent variable through the vignettes that have been developed. Hence, through this study, I aim to test multiple hypotheses that address all my goals and objectives. As aforementioned, the primary aim of this study is to examine the temporal flexibility aspect of the Ambidexterity theory of leadership for innovation, which claims that each set of leader behaviours (opening & closing) has its time and place in a work environment. This experiment allowed me to put this theory into practice. Furthermore, I test the causal relationships between

the interaction of the ambidextrous leadership behaviours and the followers' (participants) innovative behaviours, as well as the standalone leader behaviours (opening vs. closing) and their effect on the standalone dimensions of innovative behaviours. A secondary goal is to identify potential mechanisms that may explain this relationship better (i.e., follower ambidexterity and motivation).

In summary, this experiment is about the manipulation of the two ambidextrous leadership behaviours in relation to the innovation stage. As per the theory, an ideal ambidextrous leader can engage in opening behaviours during idea generation tasks and flexibly switch to closing behaviours during idea implementation tasks. This experiment is comprised of two tasks which capture idea generation and idea implementation respectively. As previous studies have neglected the temporal flexibility component of the theory, this study is using a 2x2 design to examine the combinations of the two leaders' behaviours with the two innovation stages, hence capturing whether the leaders' behavioural switch is important. This experiment therefore assesses whether leaders who portray opening behaviours during the idea task and then switch to closing behaviours for the idea implementation task, can promote their followers' highest innovative behaviours. Detailed explanation of the process is presented in the following section.

3.3.3.1. Sample

Due to the limited funds available, the new sample size could not be determined based on previous studies or G*Power, as researchers in the past have done or recommend (Faul, Refolded, Lang & Buchner, 2007; Klonek, Gerpott & Parker, 2020). A valid sample size of 122 participants have been recruited through Prolific, which was the maximum based on the

available funds. All participants were paid £9.00 (plus Prolific fees) for their participation in the experiment and the average time taken to complete it was 50 minutes. The final sample of *N* = 122 participants had a mean age of 31.80 (*SD* = 13.05), of whom 45% were female. In addition, 43% of the participants were in full time employment, while 19% in full time studies. Employed participants were working in a variety of positions, in industries such as education (6.6%) , IT (4.1%), as well as marketing (4.1%). Past studies have shown that the theory is applicable to multiple industries as previous researchers have recruited participants who were working in creative industries such as architecture and design (Zacher & Rosing, 2015) as well as non-creative industries, such as accounting (Zacher & Wilden, 2014). Studies have also shown that bilingual individuals possess higher levels of creativity compared to those who are monolingual (Lee & Kim, 2011; Leikin, 2013; Leikin & Tovli, 2014; Riccardelli, 1992). Therefore, the study also asked the participants whether English was their first language, and how many other languages they could speak. From the study's sample of 122 participants, 53% stated that English was their first language. Participants who said that English was not their first language, were also asked to state their first language. Responses varied and were primarily Polish (14%), Portuguese (14%), Spanish (7.4%), German (5.7%), Italian (5.7%) and Greek (4%) and in some cases a combination of two first languages (e.g., Spanish and Portuguese).

3.3.3.2. Recruitment

All data collected came from registered users of *Prolific.* All potential participants have received an email from *Prolific* that a study is being conducted and they were eligible to participate. Prolific works with user ratings, and users with high rating (i.e., 5 stars) receive more opportunities than those with lower rating. This algorithm of the platform ensures that

researchers only receive high quality responses. In the email that the users receive, they are able to see a few details of the study before deciding if this is something of interest to them. The users were able to see the title of the study, which in this case was "*Creativity and Innovation*". In addition to that they could see a short description of the study such as "*This is an exciting study during which you will be presented with some scenarios, and you have to imagine yourself in that situation and complete some virtual tasks and surveys*. *A good level of English is necessary*". It is important to not give away unnecessary information which is vital to the quality of the study that might lead to various kind of biases, such as social desirability bias (Krumpal, 2013; Larson, 2019) or priming effects (Doyen, Klein, Simons & Cleeremans, 2014)) (e.g., what the different scenarios say, or what the manipulated variables are). Lastly, users were also able to see my name, as the researcher of this study, the approximate length of this study, the amount of money this study pays per hour and the link to the external study in the Gorilla platform. Participants have been paid £9.00 per hour for their participation. No pre-screening requirements have been set for this study. Prolific users from all backgrounds and ethnicities regardless of age, sex or gender could receive an invitation to the study. The key benefit of this platform, as aforementioned, is that it sends out invitation links to users with a high approval rate, in order to ensure quality responses. Studies have shown in the past that online participant recruitment may provide as high-quality data, if not higher, compared to studies that occur in-person (Casler, Bickel & Hackett, 2013; Thomas & Clifford, 2017).

3.3.3.3. Experimental Tasks

This experiment has a central outcome focus of innovative behaviours. This outcome consists of two dimensions of idea generation as well as idea implementation. Similarly, the independent variable of ambidextrous leadership consists of behaviours which should be applied to situations, projects or tasks that focus either on generating new ideas or

implementing ideas. In order to be as effective and conceptually accurate as possible, this experiment was designed to capture both dimensions; the creativity of the participants (their ability to come up with new ideas) and the implementation of the participants (their ability to properly execute their ideas), through two tasks. The design of this experiment was structured in a way that participants would be randomly allocated in one of four experimental conditions, undergo a creativity task, then respond to a survey, then undergo an implementation task and respond to another survey. The tasks are explained below in detailed.

All participants were given the same scenario as part of the experiment (see Appendix A). The instructions were asking them to read the scenario and imagine themselves in that situation. The scenario was short and simple to understand. It was developed to represent a real-life scenario, in an industry where both idea generation and idea implementation are commonplace. It was asking the participants to imagine that they work in the Research and Development department of an arts and crafts manufacturing company, which sees rapid growth. The company manufactures and sells various products from birthday decorations to household supplies. Due to the rapid growth, more people have joined the company, including a new manager for the R&D department, who is acting as their new manager (leader) for this study. The new manager was given the name "Sam", which is often found as a gender-neutral name, in order to prevent response bias in regard to perceptions about gender roles in leadership that might influence the results (Hackman, Hills, Furniss & Paterson, 1992; Koenig, Eagly, Mitchell, & Ristikari, 2011).

The scenario then tells them that they have received a new email which they have to read and answer the questions that follow. The email, which was in the form of a screenshot being shown on their screens, is from the new manager who informs them that the company had some surplus of material and in order to avoid wasting them, they are responsible for coming up with

new ideas of what they can create with them. An email attachment with a photo of the material could be seen on the following screen (see appendix B) of the online experiment. In the email, the manager was setting the rules for the task, by explaining that each new idea should use one peg as a core item, plus any other combination of the remaining available items. The manager also informed them that this idea generation task was only five minutes long. Research shows that individuals are more creative when they have some sort of constraints, which makes them perceive the task as a challenge (Rosso, 2014). During this task, participants were able to see the picture of the materials provided to them, along with an empty open-response box, where they could list their ideas (see appendix C). Detailed description of each idea was not necessary at this point, as the focus of the task was to assess the quantity, quality, and novelty of each idea. Participants were naming the ideas they were coming up with, and in some cases, listing which materials they would use (For example: a toy doll, with the peg as the body, balloon as the head and sticks as arms and legs). A small timer widget could also be seen on the bottom right corner of the screen which showed the participants how much time they had left. The timer however only appeared during the last 60 seconds, to not distract them during the entire time. When the time was up, the screen changed automatically and a new screen asked participants to choose one of their ideas to take forward to the next stage of this study, which at this point they did not know what it was. A dynamic function would draw all the ideas the participants entered in the previous screen and present them in the new screen in case they have forgotten them. A new empty open-response box was asking the participants to type in the number or the name of their chosen idea. During the pilot lab experiment, participants had the additional hands-on task where they had all the materials in front of them and were asked to create a prototype for their chosen idea as well (see appendix D).

The second task was focused on idea implementation. Through a second email, the new manager was asking the participants to write up an implementation plan for their chosen idea.

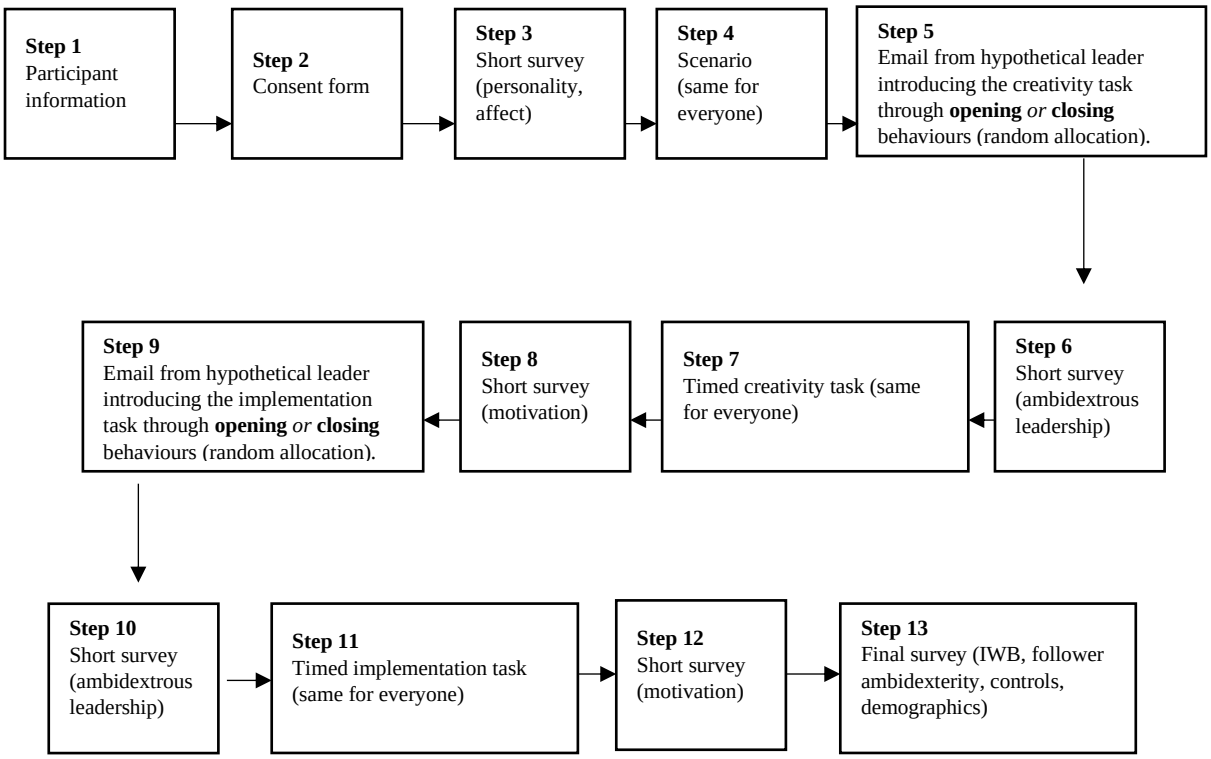
As this task was aiming to capture implementation, it was more focused on the technical aspect of executing an idea properly. As in the previous email, the new manager set some guidelines and provided some suggestions on what the company usually includes in the implementation plan. The information that the manager requested to see in the implementation plan included the number of resources needed for the production of 1000 products (including material quantities, costs, labour, time etc.), step-by-step assembling instructions, as well as health and safety concerns. The manager informed them that an implementation plan template was attached with the email so they could type in there what they wanted. While on the task screen, participants were able to engage with the implementation plan template and type in a large open-response box whatever they thought it would be useful (see appendix E). A timer widget also appeared during the last minute of this task, which lasted eight minutes in total.

Both tasks were developed based on definitions of creativity and innovation, as well as past research suggestions on how to best capture the constructs. The idea generation task (first task) had to allow the participants to generate as many original ideas as they could. On the other hand, during the idea implementation task, participants should take off their thinking hat and focus on understanding the details of the idea, focus on technicalities and try to turn it into reality. Both tasks therefore capture the definitional aspects of innovation (generating and executing new ideas), as they provide the participants with a platform to come up with novel and useful ideas as well as implement those ideas (Hughes, Lee, Tian, Newman, & Legood, 2018).

3.3.3.4. Procedure

Due to the complexity of the design, the process of the experiment can be seen in the diagram below, which outlines each stage that participants had to go through (Figure 4), and then thoroughly explained.

Figure 3.4. Diagram of the experiment's process.



The experiment was designed to manipulate ambidextrous leadership levels by changing the wording of two emails with instructions from the participants' hypothetical line manager. Each email was written to demonstrate either opening or closing leader behaviours, thus resulting in a 2x2 design and followed by a practical exercise requiring idea generation following the first email and idea implementation following the second email, thus allowing the testing of whether matching leader behaviour to the stage of the innovation process results in improvement in follower innovative behaviours.

In more detail, upon receiving an invitation email from Prolific, potential participants could proceed to the study via an external link button which directed them to the study in the Gorilla platform. The study was designed to be accessible from any device (laptop, PC, smartphone, or tablet). Participants would then see the first screen of the experiment which welcomed them to the study and provided them with all the necessary information they needed to know about the process of the study and their compensation. Participants were guaranteed anonymity and were able to provide their consent in the next screen. There was no option to carry on unless they agreed that they understood the study and its terms. The study began with scale measures of personality and affect. It was important to measure participants' positive and negative affect at the very beginning to be able to control for them in the analysis as these may influence the participant responses and behaviours during the experiment. In the following screen, the participants were introduced to the overall scenario before proceeding to the first email from their manager asking them to engage with the first task. The manipulations of the leadership behaviours were contained in the email. Participants were randomly allocated to receive one of the two vignettes (either an opening or a closing leader), through a randomizer widget existing in the *Gorilla* platform. Upon reading the email from the new manager, participants were asked to take a few notes about the requested task as well as their opinion about the new manager. This method would actively prompt them to return to the email and pay attention to the behaviours portrayed by the manager, hence enhancing the effectiveness of the manipulation. The next screen was asking the participants to rate the new manager's behaviours on the ambidextrous leadership scale, before proceeding to the task. The first task (idea generation task) was timed, and participants had five minutes in total to type in as many ideas as they could think of. Upon completion, participants were asked to fill in a scale of what motivated them to engage with the task. The same process followed for the second task, which was the idea implementation task. The participants received a second email from their manager asking

them to write an implementation plan for one of their new ideas. This task was also timed and lasted for eight minutes. The remainder of the experiment contained further scales that measured the desirable outcomes including innovative work behaviours and follower ambidexterity, further control variables such as paradox mindset, as well as demographic variables. The experiment lasted for approximately 50 minutes and ended with a thank you note, a debrief of the study, and my email address for further questions.

Although the Ambidextrous Theory of Leadership for Innovation is unclear on the time required for each set of behaviours to show an effect, there are a few pointers from literature that may provide some further guidance. Firstly, innovation is a dynamic, non-linear process (Mumford & McIntosh, 2017), meaning that individuals, or teams, may engage with idea generation and implementation tasks interchangeably (Anderson, De Dreu, & Nijstad, 2004). However, for purposes of keeping this experiment short, easy to understand and associated with the ambidextrous theory, I have decided to follow a linear phase model of innovation (Farr, Son & Tesluk, 2003) suggesting that a leader should portray opening behaviours at the beginning of the task and closing behaviours during the end.

Regarding the ambidextrous behaviours, researchers suggest that this style demonstrates dynamic fluctuation, and more particularly on a daily or weekly level (Zacher, Robinson & Rosing, 2016; Zacher & Wilden, 2014) while some researchers claim that a variability of such behaviours are also expected to be found on much shorter times scales such as an hourly basis (Rosing & Zacher, 2017). Shorter experiments may have the capacity to create variations among the participants' explorative behaviours, thus enhancing their creativity and innovation (Ederer & Manso, 2013).

3.3.3.5. Experimental Conditions

In order to develop the four vignettes that have been used for this experiment, I have relied on the definitions of the concepts of ambidextrous leadership and characteristics of each set of behaviours as described by Rosing, Frese and Bausch (2011), and subsequently used as measures by further researchers (Klonek, Gerpott & Parker, 2020; Zacher, Robinson & Rosing, 2016; Zacher & Rosing, 2014; Zacher & Wilden, 2014). Such approaches have been priorly used and supported by other researchers through (e.g., Gerlach et al., 2021; Klonek et al., 2020), thus enhancing the rigor of this method. Participants were randomly assigned by the platform into one of the following four conditions. The four email vignettes that have been created for this experiment reflect the concepts of leader opening and closing behaviours. As the aim of the experiment is to differentiate between the idea generation phase and the idea implementation phase each of the four conditions is a combination of one set of behaviours for the first task and another one for the second task. The four email vignettes can be seen in Appendix F.

Opening - Closing Condition. The first condition is the *Ambidextrous Leadership Group,* which is the correct one according to theory, where participants experience an ambidextrous leader. The leader portrays opening behaviours in the first email which instructs the participants to generate new ideas for a new product and closing behaviours in the second email which requires them to write up an implementation plan for one of their ideas. In the first email, the leader encourages experimentation, is motivational, flexible and allows participants to make mistakes (Rosing et al., 2011). Hence, in the first email, the leader writes things such as "*This is your opportunity to put forward all your ideas, no matter how risky*". During the second email, the leader takes a task-focused approach and expects the participants to follow the instructions and guidelines closely but is also warning them that penalties might occur if mistakes are made (Rosing et al., 2011). In this email, the leader writes things such as "*I will*

check for errors when I'm back at the office and, if I find any, we will address them at our net review meeting". Theory and past research would suggest that this group should exhibit the highest innovative behaviours, in comparison to the other three groups, as this condition demonstrates the correct interaction between the two sets of behaviours and at the right time (Rosing et al., 2011). A very common real-life example of the interaction of these behaviours is when a leader allows his or her followers to choose a new idea to work with but then expects them to stick to it until the end of the project.

Opening - Opening Condition. Participants in this *Opening Leadership Group* experience a more consistent leader. The leader portrays opening behaviours throughout both emails. For instance, in the first email, the leader writes things such as "*This is your opportunity to put forward all your ideas, no matter how risky*" and in the second email "*There are many ways to do this, and I'm happy for you to choose your preferred approach*" . This leadership style focuses entirely on increasing the variance in the followers' behaviours, hence encouraging them to experiment with new methods and take risks for both tasks (Rosing et al., 2011). Moreover, Klonek, Gerpott and Parker (2020) have also found this approach to be as effective as the ambidextrous condition.

Closing - Closing Condition. The *Closing Leadership Group* is focused entirely on decreasing the variance of the participants' behaviours. Through a more controlling approach, the leader engages in behaviours that do not provide the participant with any sort of autonomy and demand from him or her to follow the instructions and guidelines as closely as possible (Rosing, et al., 2011). Therefore, participants allocated in this group should experience a leader who discourages experimentation and focuses on monitoring the process, establishing routines and penalising errors and mistakes, in both emails. For example, leaders in this group wrote things such as "*I have set a timer on the form to keep track of time for you*" in the first email, and "*I*

will monitor whether you followed my instructions in preparing the implementation plan", in the second email.

***Closing - Opening Condition*.** This final condition entails an ambidextrous leader who possesses the ability to portray opening and closing behaviours, however during the wrong time. In this *Ambidextrous Leadership Group (wrong time),* the leader uses closing behaviours while asking the participants to engage with the idea generation task. Hence, the leader wrote things such as "*Any mistakes in the new ideas form may result in a reduced bonus for you this year*". This is not the ideal approach, as closing behaviours decrease the variance in the followers' behaviours hence making them cautious about experimenting or trying out new methods. On the other hand, the leader portrays opening behaviours during the second task. The idea implementation phase is characterised by structure (Magadley & Birdi, 2012; Škerlavaj, Černe & Dysvik, 2014), hence an opening leader would not be ideal as his or her behaviours would provide the followers with enough autonomy to choose how they approach the task. In the second email, the leader would say things such as "*There is always room for new ideas when it comes to implementation planning*". Although this leader does portray paradoxical behaviours, the timing of these is wrong, making this condition crucial to be examined since this experiment focuses on temporal flexibility.

3.3.3.6. Measures

Ambidextrous leadership. The primary concept of interest and the key independent variable of this study entails two dimensions, *perceived opening leader behaviours* and *perceived closing leader behaviours*. These are rated by the participants based on the vignettes they have received during the study. The scale used has been adapted from the theoretical paper of Rosing et al. (2011) who have provided seven behaviour description of each of the two leadership

styles, opening and closing. Various scholars have also used the same behaviour descriptions as scale items since then with lots of success in their research. Alghamdi (2018) found Cronbach's Alpha values of .85 for opening behaviours and .74 for closing behaviours, Zacher and Rosing (2015) report reliability scores of .95 for opening behaviours and .87 for closing behaviours, while Zacher and Wilden (2014) found Cronbach's Alpha values of .94 for opening behaviours and .90 for closing behaviours. The scale includes fourteen items: seven for opening behaviours and seven for closing behaviours. For quality purposes all items were placed in random order before being presented to the participants. The participants were asked to rate their new manager's behaviours after they have read each vignette (two times in total). Opening behaviours were measured with items such as "My new manager allows me different ways of accomplishing the task", "My new manager provides me with opportunities to think and act independently", "My new manager allows me to make errors" and "My new manager encourages me to experiment with new ideas". Sample items for measuring the leader's closing behaviours included "My new manager does not allow any errors", "My new manager wants to monitor and control how I achieve the goal", "My new manager establishes routines for working" and "My new manager wants me to stick to the plan". Both sets of behaviours were rated on a five-point Likert scale from 1 (Strongly Disagree) to 5 (Strongly Agree) and both showed high internal reliability scores. The leader's opening behaviours scale has shown a Cronbach's Alpha coefficient of .92 when measured after the first email and .95 after the second one. Similarly, the leader's closing behaviours scale has shown a Cronbach's Alpha coefficient of .89 after the first email and .87 after the second email.

Innovative Work Behaviours. There is a myriad of scales that measure creativity and innovation related outcomes (Axtell et al., 2000; De Jong & Den Hartog, 2010; Kleysen & Street, 2001; Krause, 2004; Messman & Mulder, 2012; Scott & Bruce, 1994), yet the most appropriate for this project is the scale developed by Janssen (2000) and measures Innovative

Work Behaviours (IWB) through three dimensions; idea generation, idea promotion and idea realization (implementation). The first dimension corresponds to creativity while the last two dimensions are associated with innovation (Mascareño et al., 2021). For this experiment, only two of three dimensions have been used; *idea generation* and *idea realization* (also known as *idea implementation*). This decision was made for two reasons. Firstly, the actual experiment focused entirely on individual innovation. The participants did not have a team or a board of directors that they could share their ideas with and gain support (Janssen, 2000). The experiment therefore did not require the participants to engage in a third task about promoting and gaining support for their ideas. Second, it is without a doubt that idea promotion plays a key role in the innovation process (Wisse, Barelds & Rietzschel, 2015; Zhou, Ma, Cheng, & Xia, 2014). However, so far, there is minimal research that examined the idea promotion dimension of innovative behaviours (Mascareño et al., 2021) as most past studies focused on idea generation and implementation (Klonek, Gerpott & Parker, 2020; Wang, Eva, Newman & Zhou, 2020) since the theory mainly focuses on the two dimensions of idea generation and implementation and does not make a case for idea promotion (Rosing et al., 2011). This measure therefore was self-reported during the last survey of the experiment. The two dimensions consist of three items each, measured on a five-point Likert scale from 1 (Strongly disagree) to 5 (Strongly Agree). *Self-reported idea generation* included the items "In this study, I came up with new ideas for unfamiliar situations", "In this study, I looked for new methods or techniques that could work" and "In this study, I generated original solutions to the problems". The *self-reported idea implementation* dimension included the items "In this study, I have transformed my innovative ideas into useful applications", "In this study I believe I have introduced many innovative ideas" and "In this study, I evaluated how useful my innovative ideas were." The idea generation scale showed a Cronbach's Alpha coefficient of .75 and the

idea realization scale showed a coefficient of .71. The IWB variable, that included all six items, showed a Cronbach's Alpha of .82.

Rater-assessed creativity and innovation. Even though some would argue that self-perceived measures of creativity are very effective (Silvia, Wigert, Reiter-Palmon & Kaufman, 2012) others claim that individuals tend to overestimate their creativity levels when responding to self-reported measures (Ng & Feldman, 2012). Self-perceived measures could sometimes be questionable due to social desirability bias or other factors (Demetriou, Ozer & Essau, 2015). Hence, innovation outcomes of the participants have also been measured through a Consensual Assessment Technique (CAT) (Amabile, 1982; Baer & McKool, 2009; Kaufman et al., 2009). For this study, three individuals with expertise have taken the role of the independent assessors and have rated objectively the ideas generated by the participants and the implementation plans that they developed during the tasks. The first assessor was me, a researcher in creativity and innovation. Assessor number two was also a researcher in creativity and innovation from a different institution in the UK. The last assessor was a professional product designer with a focus on footwear and fifteen years of industry experience. All assessors received a copy of all ideas and plans in random order, hence none of us knew the experimental condition that each participant was in. In addition, all three of us used an evaluation form for the ideas and the implementation plan, which was created by me and had to be filled for every participant. The evaluation form was designed based on the concepts of creativity and innovation as well as the specific tasks that participants have been assigned with, (see appendix G). All items in this form were rated on a five-point Likert scale from 1 (Strongly Disagree) to 5 (Strongly Agree). The creativity part of the objective evaluation form contained five items that measured ideas in terms of quantity, variety, feasibility, novelty as well as overall creativity as in "Considering all the proposed ideas, to what extent is this individual creative". The assessors were able to assess the ideas that participants generated during the first task of the experiment, which was

the idea generation (creativity) task. These metrics are among the most used when measuring one's ability to generate novel ideas (Girotra, Terwiesch & Ulrich, 2009; Litchfield, Fan & Brown, 2011; Shah, Smith & Vargas-Hernandez, 2003).

The implementation plan on the other hand generated in task two, had to be as specific as possible, since the aim was to examine whether participants have followed the guidelines explained in the vignette. The ten items for this part were designed to reflect closing behaviours, as well as engagement with the actual task. The items for this part of the evaluation plan included quantity of details, how realistic it was, the extent to which the participant has followed the rules and, whether the plan contains grammatical errors, wrong calculations, or other flaws, as well as the overall quality of the plan. Some examples of the items are "The participant provided a step-by-step guide on how to assemble the product", "The implementation plan contains mistakes such as grammar or wrong calculations" (reversed item) and "The implementation plan seems realistic". Intraclass Correlation Coefficient has been used to ensure the questions asked were reliable and all three assessors were agreeable on their meaning. Regarding the creativity evaluation of the participants, the ICC showed results of .91 for idea variety, .71 for idea feasibility, .89 for idea novelty and .93 for overall creativity. Results for the implementation evaluation were also high with scores of .87 for quantity of details in the plan, .82 for how realistic the plan was, .88 for grammar mistakes and errors as well as .85 for overall implementation quality. ICC estimates and their 95% confidence intervals were calculated using SPSS (V.26), based on a mean-rating (k = 3), absolute agreement, 2-way mixed-effects model. Since the ICC estimates were at acceptable levels, new dependent variables have been calculated in the dataset for overall creativity based on assessors' scores (mean of creativity-related items on evaluation form) (α = .87), overall implementation based on assessors' scores (mean of all implementation-related items on evaluation form) (α = .92) as well as the combination of both dimensions (overall innovation;

mean of all items on evaluation form) which showed a Cronbach's Alpha coefficient of .90. It is worth noting that the *idea quantity* item was not added in this creativity scale because responses were continuous and not ordinal, thus it acted as a standalone variable. Moreover, some items regarding the evaluation of the implementation plans based on the assessors, have been reverse-coded to reflect nature of closing behaviours. For example, the item that asks the assessors whether "the implementation plan of the participant contains mistakes such as grammar and wrong calculations" was reverse-coded, as higher scores would mean more errors, thus not implementing properly.

Motivation. Motivation was measured through the Situational Motivation Scale (SIMS) developed by Guay, Ballerand and Blanchard (2000), which was not only appropriate for this situation, but it has also been widely used over the past 20 years, thus indicating its efficiency (Gillet, Vallerand, Amoura & Baldes, 2010; Rich, Lepine, & Crawford, 2010; Skeem, Louden, Polaschek, & Camp, 2007). This 16-item scale consists of four dimensions; intrinsic motivation, identified regulation, external motivation and amotivation. For this study, only two dimensions were used which assess the situational *intrinsic motivation* and *extrinsic motivation* of the participants after they engaged with each task. The scale was measured twice, right after the completion of each task. Each dimension was measured through four items and was rated on a five-point likert scale from 1 (Strongly Disagree) to 5 (Strongly Agree). The *intrinsic motivation* scale included items such as "I have engaged with this task because I thought it was interesting" and "I have engaged with this task because I felt good doing it". On the other hand, *extrinsic motivation* included items such as "I have engaged with this task because I did not have a choice" and "I have engaged with this task because I was supposed to do it". For quality purposes, all eight items of the motivation scale have been presented to the participant in a random order right after they have completed each task. The *intrinsic motivation* scale's

Cronbach's Alpha was .91 (T1) and .91 (T2) while the *extrinsic motivation* scale Cronbach's Alpha was .88 (T1) and .89 (T2).

Follower Ambidexterity. The key mechanism according to theory that makes the ambidextrous leadership style effective is follower ambidexterity. Follower ambidexterity refers to the ambidextrous behaviours and activities that followers (participants) engage with because of the leader's ambidextrous behaviours. The two sets of behaviours that comprise follower ambidexterity are *exploration* and *exploitation*. To assess the exploration and exploitation of the participants, the scale developed by Mom, Van Den Bosch, and Volberda (2007) was utilised. The original scale assesses the managers' exploration and exploitation activities, however, the activities examined are on an individual level and do not specify the position of the employee. Numerous studies have used this scale to measure exploration and exploitation of both workplace leaders and followers (i.e., Volery, Mueller & Von Siemens, 2015; Zacher et al., 2016). The scale consists of eleven items in total and has been rated on a seven-point likert scale from 1 (Strongly Disagree) to 7 (Strongly Agree). The *exploration* activities scale consists of five items and a sample item from this scale is "Today in this study, to what extent did you engage in work-related activities that can be characterized as follows: Activities requiring you to learn new skills or knowledge." The scale measuring *exploitation* activities however consists of six items, and a sample item is "Today in this study, to what extent did you engage in work-related activities that can be characterized as follows: Activities of which it is clear to you how to conduct them." The internal reliability tests have shown Cronbach's Alpha coefficients of .72 and .70 for exploration and exploitation respectively. The follower ambidexterity scale yielded an overall Cronbach's Alpha of .79. This scale was measured only once, during the last survey of the experiment.

Control variables

Affect. Affect refers to one's moods and emotions. These are the affective reactions people have due to various situations, which can last from a few seconds to weeks, and many times they are powerful enough to cause a disturbance in one's psychological state. The impact may be either positive or negative and may subsequently have an influence on the individual's actions and behaviours (Ekman, 1994; Frijda, 1986; Kagan, 1994; Thayer, 1996; Watson, 2000). Research has shown that individuals who feel good are more likely to be more creative as well (Amabile et al., 2005; Binnewies & Wörnlein, 2011; George & Zhou, 2007; Madjar, Oldham & Pratt, 2002; Madrid et al., 2014). When individuals feel positive during a work situation, they tend to come up with more ideas compared to individuals who feel low or worried. Hence, it is important consider affect of the participants as a potential exogenous factor which might affect their creative outputs.

In order to take into account, the mood of the participants as soon as they have started the study, the Positive Affect Negative Affect Scale (PANAS; Watson, Clark & Tellegen, 1988) has been used. This concept was measured at the beginning of the experiment, as to not be disturbed by the leaders' behaviours due to the priming effect. The PANAS consists of twenty items; ten for each dimension and has been rated on a five-point likert scale from 1 (Ver Slightly/ Not at all) to 5 (Extremely). The *positive affect* dimension was measured through items such as "Today I am feeling: Enthusiastic" and "Today I am feeling: Interested", while the *negative affect* dimension was measured through items such as "Today I am feeling: Upset" and "Today I am feeling: Distressed". All twenty items have been placed randomly in the scale to ensure quality of responses and attention of participants. The *positive affect* scale showed Cronbach's Alpha coefficient of .90 while the *negative affect* scale indicated a coefficient of .89.

Openness. Personality of the participants is another big factor influencing ones' actions, behaviours and attitudes. Personality is a factor that plays a role in many employee' positive and negative outcomes such as satisfaction (Matzler & Renzl; 2007), absence (Judge, Martocchio, & Thoresen, 1997), engagement (Hart, 1999; Young et al., 2018) as well as creativity (Baer & Oldham, 2006; Zhang, Sun, Jiang, & Zhang, 2019). The Big-Five personality inventory categorises personality traits into five main groups, which include extraversion, neuroticism, openness to new experiences, conscientiousness, and agreeableness. Different personalities were found to predict creativity such as openness (Tan, Lau, Kung & Kailsan, 2019; Zhang et al., 2019), extraversion Amin et al., 2020; Furnham, & Nederstrom, 2010) and conscientiousness (Amin et al., 2020; Chen, 2016).

Research on creativity however is mostly drawn to openness as it is the most correlated with creativity and innovation (Baer & Oldham, 2006; Tan et al., 2019; Zhang et al., 2019). The reason is that this personality trait is described people who are open to taking risks, trying out new things, and engaging with new experiences, hence it is logical that individuals high on the openness trait will also show higher creativity outcomes. To avoid having this personality trait influencing the manipulation and the genuine effect of the ambidextrous leaders' behaviours, it has been controlled for in the analysis.

Openness was measured with 10 items from the 44-item Big Five Inventory Personality assessment (BFI) of John and Srivastava (1999). This is a five-point likert scale measured from 1 (Strongly Disagree) to 5 (Strongly Agree). Sample items of this scale included "I see myself as someone who has an active imagination", "I see myself as someone who likes to reflect and play with ideas" and "I see myself as someone who is original and comes up with new ideas". This scale showed a Cronbach's Alpha coefficient value of .80. *Openness* was captured during

the first short survey of the experiment, as participants' perception of themselves could change after realising they did well (or not) in the tasks.

Creative Self-Efficacy. Creative self-efficacy was defined as "the belief one has the ability to produce creative outcomes" (Tierney & Farmer, 2002, p.1138). Perceiving oneself as someone creative who is capable and confident of coming up with new ideas is a driver of creativity (Tierney & Farmer, 2002). This specific self-efficacy characteristic focuses on the awareness of an individual about their creative skills and is based on their self-judgement. Even though, self-efficacy in general, focuses on the self-esteem and confidence of one about their skills and competence (Bandura, 1997; Chen, Gully & Eden, 2001), creative self-efficacy is only about their ability to be creative. Research in organisational creativity has shown that individuals who score high on creative self-efficacy, scored high on creative performance as well (Gong, Huang, & Farh, 2009; Hu & Zhao, 2016; Jaiswal & Dhar, 2015; Liu et al., 2016; Teng, Hu, & Chang, 2020; Tierney & Farmer, 2011). Some even claim that the relationship between creative self-efficacy and follower creativity depends on the measurement that is being used to assess creativity (Haase et al., 2018). It can be of additional value therefore to control for this concept, as individuals who already perceive themselves as creative might perform creatively without the infuelnce of the leader. By controlling creative self-efficacy, results can show whether the creative outcomes were due to the leader and not the individuals' self-perception. This construct was measured at the final survey of the experiment, to avoid any potential priming effects.

The concept of *creative self-efficacy* was assessed as another measure to check how individuals perceived themselves in terms of their creativity. *Creative self-efficacy* was measured through Tierney and Farmer's scale (2002), which is widely used and validated over the years (Gong, Huang & Farh, 2009; Pieterse, Van Knippenberg, Schippers, & Stam, 2010; Zhang & Bartol,

2010). The scale was rated through four items on a five-point likert scale from 1 (Strongly Disagree) to 5 (Strongly Agree). Sample items included "I feel that I am good at generating novel ideas" and "I am good at finding creative ways to solve problems". A reliability test for this scale has shown a Cronbach's Alpha value of .91.

Paradox Mindset. The concept of paradox mindset, although recent, is arguably an upcoming concept of high significance, as it is considered an individual trait that is correlated with high levels of individual creativity (Liu, Xu & Zhang, 2020; Miron-Spektor et al., 2018). Paradox mindset is the extent to which some individuals embrace contradictions and are energised by tensions (Liu, et al., 2020). When employees learn not only to manage conflicting demands at work but do it effectively and in a way that gives them energy and excitement, then they are more likely to enjoy the innovation process, as it is full of paradoxes and contradictions (Schad, Lewis, Raisch, & Smith, 2016). Innovation involves opposing activities such as idea generation where individuals need to think outside the box and explore new methods, and implementation where individuals have to focus on executing the idea through the established company's protocols and sell it through various channels (Scott & Bruce, 1994). "The innovation paradox" implies that such paradoxes are inherent in organisations (Miron-Spektor, Erez & Naveh, 2011) and individuals with such mindset are more likely to be successful in handling them (Miron-Spekter & Erez, 2017). Recent studies have also evidenced that individuals who possess a paradox mindset are also more innovative (Lauritzen & Karafyllia, 2019; Liu et al., 2020; Liu & Xu, 2019; Miron-Spektor et al., 2018; Wang, 2022). Due to its strong relationship with innovative outcomes, this construct was used as a control variable and was asked at the final survey of the experiment.

The scale used for *paradox mindset* has been developed by Miron-Spektor and her colleagues (2018) and measures the extent to which an individual possesses a paradox mindset. It consists

of nine items being scored on a five-point likert scale from 1 (Strongly Disagree) to 5 (Strongly Agree). Sample items of this scale include “Tension between ideas energizes me”, “I often feel uplifted when I realize that two opposites can be true” and “I am comfortable dealing with conflicting demands at the same time”. The reliability test for this scale showed a Cronbach’s Alpha of .87.

3.3.3.7. Additional measures

Flow. Flow is a state of mind where individuals are fully immersed and concentrated into their work tasks (Csikszentmihalyi, 2014). This feeling of absorption can make individuals spend lots of time on their work without realising how quickly the time has passed (Csikszentmihalyi, 2014). Csikszentmihalyi (1997) also claimed that flow plays a big part in creative, as individuals who enter a state of flow are more likely to generate more novel ideas. Research also supports this, by showing that individuals who experience flow demonstrate higher work-related creativity (Byrne, MacDonald & Carlton, 2013; Schutte & Malouff, 2020; Zubair & Kamal, 2015a, 2015b).

Flow was not used as a control variable but due to its positive association with creativity, it was examined for potential association with ambidextrous leaders’ behaviours, as these target the innovation of the followers. Even though this variable was not hypothesised, it is argued that examining potential relationships with ambidextrous behaviours would be of high importance, as past studies have shown that *flow* is related with creativity (Cseh, Phillips & Pearson, 2015; Zubair & Kamal, 2015a, 2015b). Since opening leader behaviours aim to enhance follower creativity, then it is likely that they may facilitate participants to enter a state of *flow* as well. This variable therefore was treated as a secondary dependent variable and analysis with it can be seen in the supplementary analysis section of the results.

As with every scale used in this study, one of the aims was to try to keep them short and brief to not bore or frustrate the participants. For this concept, the decision was to use a short *flow* scale, and in particular the Dispositional Flow Scale Short Form (DFS-2) first developed and used by Jackson and Eklund (2002). Although this concept has been developed and used in research around psychology of sports and exercise (i.e.,Jackson, Martin & Euklund, 2008; Kee & Wang, 2008) others have used it for research in different domains such as online gaming (Hamari & Koivisto, 2014; Procci, Singer, Levy & Bowers, 2012; Wang, Liu & Khoo, 2009) as well as creativity (Moneta, 2012; Zubair & Kamal, 2015a, Zubair & Kamal, 2015b). This scale includes nine items in total measured on a five-point likert scale from 1 (Strongly Disagree) to 5 (Strongly Agree). Sample items for this scale included "I performed automatically (without having to think)", "I had a strong sense of what I wanted to do" and "I was completely focused on the tasks at hand". A reliability test has shown a Cronbach's Alpha value of .68 for the DFS-2. This construct was captured at the final survey of the experiment.

A dictionary version of the measures can be seen in Appendix H. This appendix shows all the scales used and their items.

3.3.3.8. Validity of Manipulation

Even though similar vignettes have been developed for the pilot studies, the small sample of the pilot group (N = 22) was not adequate to demonstrate whether the manipulation was effective. However, the vignettes underwent a thorough examination process, by the supervisors of this project during their development, which enhanced face and content validity. The two supervisors were the first to pilot the experiment, which allowed them to give me constructive feedback and thus clarify whether the ambidextrous leadership scale is reflected in the tasks. To ensure further validity of the manipulation for the online experiment, the new sample size of 122 participants was used. As aforementioned, participants were asked to

comment on their new manager's behaviours, thus forcing them to reread the email and develop a better understanding about them. Participants were then asked to rate their new leader's behaviours on a 5-point ambidextrous leadership scale (from Strongly Disagree to Strongly Agree) (Rosing et al., 2011; Zacher, Robinson & Rosing; 2016; Zacher & Rosing, 2014; Zacher & Wilden, 2014). As there were two emails received, each participant was asked to rate their leaders' behaviours twice, after each email. Opening and closing behaviours were measured through seven items each, as put forward by Rosing, Frese and Bausch (2011) and used by further researchers (Klonek, Gerpott & Parker, 2020, Zacher & Rosing, 2014). Some examples of items of the opening leadership used are "My new manager...allows me different ways of accomplishing the task", and "My new manager...provides me with opportunities to think and act independently" (α = .92 (T1), α = .95 (T2)) (T1= First task - idea generation task; T2 = Second task – idea implementation task). Examples of items from the closing leadership scale included "My new manager...wants me to stick to the plans", and "My new manager...does not allow any errors" (α = .89 (T1), α = .87 (T2)). It is worth mentioning that the ambidextrous leadership scale was not developed using conventional scale development processers. Instead, researchers have been using the behaviour descriptions put forward by Rosing et al (2011) as a scale and have overall reported adequate reliability (Alghamdi, 2018; Zacher & Rosing, 2015; Zacher & Wilden, 2014). Despite being randomly allocated in one of the four experimental groups, participants' gender, and age distribution amongst the four groups was normal. The *Opening Leadership Group* had 32 participants, while the other three groups had 30 each.

The participants' responses have been assessed via *t-test* analyses in SPSS (V. 26), to ensure that their perceptions for their leader matched the vignettes they have received. The data of the perceived leader's ambidextrous behaviours had a normal distribution and met the primary assumptions of parametric tests (Garson, 2012). Independent samples *t-test* is a well-known method of comparing two groups for differences. Although some would argue that these *t-tests*

may not be as robust due to the multiple assumptions that they need to meet (Delacre, Lakens & Leys, 2017), others claim that they are still amongst the most used and consistent techniques to compare two groups, even with smaller sample sizes (De Winter, 2013). All four vignettes have been tested for between-group differences. In particular, the statistical tests examined each the behaviours during each task. For instance, during each task, participants who received an opening leader were expected to score their leader high in opening and low in closing behaviours. On the other hand, participants who received a closing leader were expected to score their leaders' behaviours high in closing but low in opening.

The first *t-test* that was performed, measures the participants' ratings of the perceived leader's opening behaviours for the first email they have received. The independent samples *t-test* has shown a statistically significant difference between the two groups, (t (111) = 9.60, $p < .001$) with those experiencing the opening leader behaviours condition scoring a higher mean (M = 4.21, SD = .62) on perceived opening leader behaviours than those in the closing leader behaviours condition (M = 2.96, SD = .80). Similarly, a second *t-test* was performed to measure the participants' ratings of the perceived leader's closing behaviours during the first email. The results have shown a statistically significant difference between the two groups (t (120) = -10.97, $p < .001$). Participants who received a closing leader email vignette had a higher mean rating of the perceived leader's closing behaviours (M = 4.07, SD = .67) than those who received an opening leader email (M = 2.84, SD = .57).

The same process followed for the following email which focused on idea implementation. A *t-test* measured the participants' ratings of the perceived leader's opening behaviours for the second email. The results have shown a statistically significant difference between the two groups (t (120) = 8.67, $p < .001$). Participants who received an opening leader behaviour vignette for the second email had a higher mean rating of the perceived leader's opening

behaviours (*M* = 3.97, *SD* = .85), compared to those who received a closing leader (*M* = 2.62, *SD* = .86). Lastly, the final independent samples *t-test* has also shown significant differences between the two groups, regarding the participants' ratings of perceived leader's closing behaviours for the second email (t (120) = -7.64, *p* <.001). Participants who received a closing leader for the second email, have rated their leaders closing behaviours higher (*M* = 4.14, *SD* = .64) than those who have received an opening leader (*M* = 3.02, *SD* = .70).

The four vignettes were also tested for within-person differences through paired *t-tests*. The paired samples t-test can show whether the scores of a measured variable have changed from time one to time two, when the participants have received an ambidextrous leader. Thus, the following two tests examine only the opening-closing group and closing-opening group. Ideally, as these participants had leaders who switched behaviours, there should be significant differences between T1 and T2. The first paired samples *t-test* assessed whether there were any differences between the participants' scores of perceived leaders' opening behaviours at the first email and the second email. The paired samples *t-test* indicated that there was a statistically significant difference between the participants' ratings of perceived leader's opening behaviours after the first email (*M* = 4.1, *SD* = .47) and after the second email (*M* = 2.8, *SD* = .89) (t (29) = 6.77, p < .001). The mean difference is -1.4, suggesting that participants observed a key difference in leaders' behaviours from T1 to T2. The same process followed for examining the perceived closing behaviours of the leaders. The paired samples t-test indicated that there was a significant difference between the participants' ratings of perceived leader's closing behaviours after the first email (*M* = 2.9, *SD* =. 48) and after the second email (*M* = 4.0, *SD* = .53) (t (29) = -7.85, p < .001). The mean difference was -1.1 and significant suggesting that the 2 groups also observed the difference in closing behaviours.

The results of these tests indicate that the participants have clearly spotted the leader's behaviours from the emails. Participants who have received emails from an opening leader have rated opening behaviours higher than closing behaviours. Likewise, participants who have received vignettes portraying a closing leader have rated closing behaviours higher than opening behaviours. These results confirm therefore that the vignettes developed match the behaviours explained by the theory (Rosing et al., 2011).

3.3.3.9. Confirmatory Factor Analysis

In order to ensure the validity of the measures used prior to the analysis, some confirmatory factor analyses (CFA) were performed. CFA examines the factor structure and may determine whether the factors are composed of observed variables that have shared variance-covariance (Schumacker & Lomax, 2004). This analysis may explain how well the model fits the data. The CFA for this study was performed in SPSS AMOS (v.26). The hypothesised eight-factor model consists of the main constructs that are being used in this study and correspond to the theoretical model of Rosing et al. (2011); leader opening behaviours, leader closing behaviours, follower exploration, follower exploitation, follower idea generation and follower idea implementation, intrinsic motivation and extrinsic motivation, all rated by the study participants. It is usually advised to consider several indices when assessing model fit through a CFA. Even though there are various indices that one can examine to determine model fit, some of them are essential and are being used most of the times, such as the chi-square value (χ^2), the comparative fit index (CFI), the root-mean square error of approximation (RMSEA) and the standardised root mean square residual (SRMR). The chi-square value (χ^2), although it is always reported as one of the main indices, some argue that it is problematic, as it is too dependent on the sample size, and it is not advised to make conclusions entirely based on that

(Byrne, 2013). A low value of chi-square indicates a good model fit, whereas its *p* value indicates whether the covariance matrices between the hypothesised and actual data are significantly different, with non-significant models indicating good fit. Some researchers claim that when this value is adjusted by the degrees of freedom it can become a better measure of comparative fit between models (Wheaton, Muthen, Alwin & Summers, 1977). Yet, the new index (Cmin/df) can still not be fully trusted to be used as a measure of absolute fit, due to its bias to both small and large sample sizes (Bentler & Bonnet, 1980; Jöreskog & Sörbom, 1993).

A CFI is the most used method of comparing nested models or comparing the hypothesised model against independent models. The value of a CFI ranges from 0 to 1, and it is advised that a value of .95 (or above) is considered an excellent fit (Hu & Bentler, 1999). The RMSEA is an absolute fit index and assesses how far the hypothesised model is from being a perfect reflection of the data. Values lower than .05 are considered excellent fit while values less than .10 are considered moderate and over .10 indicates a bad fit (MacCallum, Browne & Sugawara, 1996). The SRMR is also an absolute measure of fit and it is the difference between the observed model and the hypothesised model. A value of .10 or less is considered a good model fit (MacCallum, Browne & Sugawara, 1996).

As shown in Table 3.1, the eight-factor hypothesised model, had the best model fit compared to the seven alternative models (χ^2 (674, N = 122) = 1165.47; $p < .001$, χ^2 /df = 1.73; CFI = .83; RMSEA = .08; SRMR = .09). All items of the model had high loadings in general (over .60), apart from two items which had a low loading (less than .40), yet those items have remained as they are key items of the scale and the theory of Rosing's et al. (2011) ambidextrous leadership (*see* Caci, Morin & Tran, 2015). Despite that the model's indices values did not show a great model-fit, the values can be considered in the acceptable range. Yet there may be some explanations as to why the indices are not perfect. For example, the RMSEA index is

considered sensitive to the complexity of a model (Browne & Cudeck, 1993) as well as the sample size (Lai & Green, 2016). A sample of 122 participants may be considered a poor sample size according to Comrey and Lee (2013). A small sample size may also affect other indices as well, hence influencing the overall goodness of fit of a model (Marsh, Balla & McDonald, 1988).

Table 3.1. Confirmatory Factor Analysis (model comparison).

Models	χ^2	***df***	**cmin/ df**	**CFI**	**RMSEA**	**SRMR**
Eight factor Model *(opening, closing, idea generation, idea implementation, exploration, exploitation, intrinsic motivation, extrinsic motivation)*	1165.47**	674	1.73	.83	.08	.09
Seven factor model *(opening, closing, idea generation, idea implementation, exploration, exploitation, motivation)*	1381.56**	681	2.03	.75	.09	.10
Six factor model *(opening, closing, innovative work behaviours, exploration, exploitation, motivation)*	1406.23**	687	2.05	.74	.09	.10
Five factor model *(opening, closing, innovative work behaviours, follower ambidexterity, motivation)*	1457.94**	692	2.11	.73	.10	.10
Four factor model *(ambidextrous leadership, innovative work behaviours, follower ambidexterity, motivation)*	1504.17**	696	2.16	.71	.10	.11
Three factor model *(ambidextrous leadership, motivation, innovative work behaviours & follower ambidexterity combined)*	1575.75**	699	2.25	.69	.10	.11
Two factor model	1777.44**	701	2.54	.62	.11	.12

(ambidextrous leadership, motivation & innovative work behaviours & follower ambidexterity combined)						
One factor model	2367.24**	702	3.37	.41	.14	.17

Note. N = 122. All alternative models were compared to the eight-factor model. CFI = Comparative Fit Index; RMSEA = Root Mean Square Error of Approximation; SRMR = Standardised Root Mean Square Residual; ** p <. 001. For constructs measured at two time points, only the T1 measure was used.

3.4. Results

All data analyses undertaken to test the set hypotheses have been conducted in SPSS (v. 26). The table below (see Table 3.2) exhibits the means, standard deviations as well as the correlations for the examined variables. The four experimental conditions have been dummy-coded for easier interpretation of their correlations with the rest of the variables.

Table 3.2. Means, standard deviations and Pearson correlation matrix for independent and dependent variables.

		M	*SD*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*	*17*
1	Ambidextrous Leader condition	-	-	-																
2	Opening Leader condition	-	-	-.341**	-															
3	Closing Leader condition	-	-	-.326**	-.341**	-														
4	Ambidextrous Leader condition *(wrong time)*	-	-	-.326**	-.341**	-.326**	-													
5	Opening Behaviours (T1)	3.60	.95	.332**	.425**	-.301**	-.465**	-												
6	Closing Behaviours (T2)	3.67	.82	.226**	-.468**	.407**	-.155	-.315**	-											
7	Exploration	5.28	.88	-.184*	.183*	.016	-.019	.196*	-.167	-	-									
8	Exploitation	4.69	.93	-.017	.103	.021	-.109	.074	.100	.501**	-									
9	Follower Ambidexterity [a]	4.99	.78	-.113	.164	.021	-.075	.154	-.035	.858**	.875**	-								
10	Intrinsic Motivation (T1)	3.48	.93	-.040	.153	-.112	-.004	.312**	-.196*	.390**	.364**	.435**	-							

11	Extrinsic Motivation (T2)	3.60	.69	-.101	-.143	.082	.157	-.304**	.283**	-.152	-.005	-.088	-.362**	-						
12	Idea Generation	3.87	.73	-.067	.043	.082	-.059	.191*	.069	.462**	.365**	.476**	.484**	-.102	-					
13	Idea Implementation	3.33	.79	-.044	-.012	.085	-.028	.036	.058	.436**	.437**	.504**	.483**	-.166	.644**	-				
14	Innovative Work Behaviours [b]	3.60	.69	-.061	.016	.092	-.047	.122	.070	.494**	.444**	.541**	.533**	-.149	.898**	.915**	-			
15	Creativity (CAT)	2.98	.92	.044	.077	-.056	-.067	.027	-.049	.068	.066	.077	.261**	.109	.199*	.132	.181*	-		
16	Implementation (CAT)	2.81	.71	.019	.025	.106	-.150	-.021	.174	-.095	-.119	-.124	.045	.053	.175	.052	.122	.357**	-	
17	Innovation (CAT) [c]	2.96	.65	.037	.066	.031	-.136	.009	.068	-.009	-.011	-.011	.187*	.109	.217*	.106	.175	.861**	.776**	-

Note. $N = 122$. M = mean; SD = Standard Deviation;

Experimental conditions are dummy-coded 1 for Yes, 0 for No;

T1: Task 1 (Idea Generation Task); T2: Task 2 (Idea Implementation Task); CAT: Means across the three assessors;

[a] : mean of all exploration and exploitation items;

[b] : mean of all idea generation and idea implementation items; [c] : mean of creativity and implementation items as rated by the three assessors;

* p <. 05; ** p <. 01.

The correlation matrix in Table 3.2 demonstrates some interesting results. Participants who perceived their leaders' behaviours during the first task (creativity task) as opening, also showed a positive correlation with exploration (r =.196, $p < 0.05$), intrinsic motivation (r =.312, $p < 0.01$) and self-perceived idea generation (r =.191, $p < 0.05$). On the other hand, participants who perceived their leaders' behaviours during the second task (implementation task) as closing demonstrated only a positive correlation with extrinsic motivation (r =.283, $p < 0.01$). The interactive term between leaders opening behaviours during the creativity task and closing behaviours during the implementation task was only positively correlated with self-perceived idea generation (r =.207, $p < 0.05$). These results are an initial indication that an opening leader is more beneficial for innovation than a closing leader.

Regarding the four experimental conditions, results were interesting. First of all, the group that received an ambidextrous leader portraying opening and closing behaviours during the correct times was not significantly correlated with any innovation outcomes, apart from exploration which was surprisingly in a negative direction (r = -.184, $p < 0.05$). On the other hand, a leader who demonstrated opening behaviours during both tasks was significantly correlated with exploration in a positive direction (r =.183, $p < 0.05$), but was not significant with any other outcome. The group that had a leader who was showing closing behaviours at all times was not significantly correlated with any other outcomes. The group who had a leader demonstrating opening and closing behaviours but during the wrong times, was also not significantly correlated with any outcomes. Follower ambidexterity was also significantly correlated with self-perceived innovative work behaviours in a positive direction (r = .541, $p < 0.01$) where both idea generation (r = .476, $p < 0.01$) and idea implementation (r = .504, $p < 0.01$) were positively correlated. This is in line with past research (Rosing & Zacher, 2017) who showed that the duality of exploration and exploitation can lead to employee innovation.

In terms of motivation, only intrinsic motivation has showed multiple interesting results. As expected, according to Amabile's (1996) arguments, intrinsic motivation is highly correlated with nearly all the innovation-related outcomes. The variable is positively correlated with exploration (r =.390, $p < 0.01$), exploitation (r =.364, $p < 0.01$), follower ambidexterity (r =.435, $p < 0.01$), idea generation (r =.484, $p < 0.01$), idea implementation (r =.483, $p < 0.01$), innovative work behaviours (r =.533, $p < 0.01$), creativity as rated by the assessors (r =.261, $p < 0.01$) and overall innovation as rated by the assessors (r =.187, $p < 0.05$). On the other hand, extrinsic motivation was not related with any innovation-related outcomes.

Discriminant validity analysis was also conducted for pairs of variables that were highly correlated (> 0.5). This analysis can show whether two measures that are not supposed to be related, are indeed unrelated and measure different concepts. To do this analysis, I have used the Fornell-Larcker criterion (1981) which is a popular technique to check the discriminant validity of measurement models. In the above correlation matrix table, it can be seen that some variables have correlations that are high (> 0.5), such as innovative work behaviours dimensions with follower ambidexterity dimensions. These dimensions have undergone further analysis to establish whether they are different. The table below (see Table 3.3) shows the highly correlated variables (displayed in bold) whereas the figures in the brackets indicate the square root of the Average Variance Extracted of each construct which was calculated using the formula √(AVE). The AVE was calculated as the average of the factor loadings of all the items of each construct. The next step in this analysis is to examine whether the correlation of a construct with the other constructs is less than the square root of its AVE (figure in blue). Since all correlation values are less than the √(AVE) value, it can be said that the criterion is satisfied, and there is discriminant validity.

Table 3.3. Correlations and Square Root AVE values of the highly correlated variables.

Variable	1	2	3	4
Exploration	(.708)			
Exploitation	**.501****	(.647)		
Idea Generation	.462**	.365**	(.820)	
Idea Implementation	.436**	.437**	**.644****	(.800)

Note. The figures in blue indicate the √(AVE) values of each variable. The figures in bold indicate the correlations that are over 0.5.

Due to the size of the extended correlation matrix, the results are being presented in two tables. The following table is the second correlation matrix which focuses on the control variables and additional measures (see Table 3.4). Flow is positively correlated with opening behaviours (r =.195, $p < 0.05$). Paradox mindset was highly correlated with multiple variables in a positive direction, thus demonstrating its key role in creativity research. It was found to be related with exploration (r =.329, $p < 0.01$), exploitation (r =.189, $p < 0.05$), intrinsic motivation (r =.259, $p < 0.01$), idea generation (r =.189, $p < 0.05$), idea implementation (r =.299, $p < 0.01$), flow (r =.332, $p < 0.01$), positive affect (r =.208, $p < 0.05$), openness (r =.397, $p < 0.01$) and creative self-efficacy (r =.440, $p < 0.01$). Positive affect was also correlated with intrinsic motivation (r =.259, $p < 0.01$), exploration (r =.200, $p < 0.05$), idea generation (r =.187, $p < 0.05$), idea implementation (r =.346, $p < 0.01$), and flow (r =.257, $p < 0.01$). Similarly, creative-self efficacy and openness to new experiences were also positively associated with the same variables as well as with each other (r =.538, $p < 0.01$). The age and gender of the participants were not significantly correlated with any innovation-related outcome variables, hence were not used as control variables for this study. In essence, the four suggested control variables of positive affect, openness, creative self-efficacy and paradox mind-set were all related with idea generation and idea implementation of the participants, which strengthens the case that their use as control variables is important.

Table 3.4. Means, standard deviations and Pearson correlation matrix for independent, dependent and control variables.

		M	*SD*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*
1	Opening Behaviours (T1)	3.60	.95	-														
2	Closing Behaviours (T2)	3.67	.82	-.315**	-													
3	Exploration	5.28	.88	.196*	-.167	-												
4	Exploitation	4.70	.93	.074	.100	.501**	-											
5	Intrinsic Motivation (T1)	3.48	.93	.312**	-.196*	.390**	.364**	-										
6	Extrinsic Motivation (T2)	3.60	.89	-.304**	.283**	-.152	-.005	-.362**	-									
7	Idea Generation	3.87	.73	.191*	.069	.462**	.365**	.484**	-.102	-								
8	Idea Implementation	3.336	.79	.036	.058	.436**	.437**	.483**	-.166	.644**	-							
9	Flow	3.26	.79	.195*	-.108	.452**	.617**	.586**	-.270**	.470**	.648**	-						
10	Positive Affect	2.91	.81	.061	-.092	.200*	.149	.259**	-.137	.187*	.346**	.257**	-					
11	Openness	3.64	.57	-.012	-.032	.272**	.185*	.260**	.060	.208*	.336**	.164	.204*	-				
12	Creative self-efficacy	3.43	.98	-.066	.124	.279**	.346**	.420**	-.091	.400**	.637**	.529**	.209*	.538**	-			

13	Paradox mindset	3.45	.63	.123	-.091	.329**	.189*	.259**	-.029	.189*	.299**	.332**	.208*	.397**	.440**	-		
14	Age	31.80	13.01	-.143	.049	-.089	-.129	-.183*	.067	.022	.004	-.198*	.061	.153	.110	-.087	-	
15	Gender	.56	.59	-.120	.050	.052	.080	.072	.068	.075	-.005	-.073	-.100	.133	-.136	-.117	.188*	-

Note. $N = 122$. M = mean; SD = Standard Deviation;
Gender is coded 0 for Male, 1 for Female;
T1: Task 1 (Idea Generation Task); T2: Task 2 (Idea Implementation Task);
* $p < .05$; ** $p < .01$.

Discriminant validity analysis was also conducted based on results of the second correlation matrix which examined the control variables. In particular, it can be observed that some variables, such as creative self-efficacy, openness to new experiences, flow, and idea implementation have high correlations. For this reason, the same process as before, was carried out to ensure that the variables are distinct and differ from each other. For most variables, the criterion is satisfied indicating that the variables of idea implementation, creative self-efficacy and openness are unrelated. However, as can be seen from the table below, flow is highly correlated with idea implementation. The results of this discriminant validity analysis may be seen below in Table 3.5. I have conducted further analysis using cross-loadings, to examine how similar the items from the two scales are and I observed that two of the three items of idea implementation load highly in the Flow scale (>.75). This suggests that the two scales are not only highly related, but they also might capture a very similar construct. Hence, results from analysis that tested flow should be reported and interpreted with caution. It is worth to mention that flow is not being treated as a control variable for this study, but it is only being examined as an outcome of ambidextrous leader behaviours (see section 3.4.2). Nonetheless, future research should be conducted to distinguish conceptually between flow and related constructs and establish scales that differentiate it from others.

Table 3.5. Correlations and Square Root AVE values of the highly correlated variables.

Variable	1	2	3	4
Idea Implementation	(.800)			
Creative Self-Efficacy	**.637****	(.888)		
Openness	.336**	**.538****	(.620)	
Flow	**.648****	**.529****	.164 **	(.549)

Note. The figures in blue indicate the √(AVE) values of each variable. The figures in bold indicate the correlations that are over 0.5.

3.4.1. Hypothesis Testing

The data analysis that was conducted to test the hypotheses was in three parts due to the different relationships assumed. For causal relationship hypotheses, hierarchical linear regressions were used (Cohen, West & Aiken, 2014), for group differences ANOVA was used, while for mediation analysis, the PROCESS macro was used (Hayes, 2017). H1 stated that *when taking part in idea generation tasks, followers will demonstrate higher exploration when their manager demonstrates opening behaviours*. Hierarchical linear regression was used to test this hypothesis, in order to examine the role of the control variables as well. The results of the first hypothesis can be seen in Table 3.6. In the first step, the four control variables (positive affect, openness, creative self-efficacy, and paradox mindset) were entered into the regression. In this step, only the paradox mindset variable was a significant predictor of exploration ($\beta = .22$, $p < 0.05$). In the second step, the main predictor of opening leader behaviours (T1) was added. Opening leader behaviours significantly predicted exploration ($\beta = .18$, $p < 0.05$) above and beyond the control variables. The results show that 18.2% of the variance on exploration is explained by all the predictors examined, however only 3% of the variance on exploration is explained by opening behaviours. Nevertheless, the variance is highly significant ($p < 0.01$) thus H1 is accepted.

Table 3.6. Results of regression analysis - Exploration.

Dependent variable: Exploration

		Unstandardised Coefficients		Standardised Coefficients					
Step	***Predictor***	***B***	***SE***	***β***	***P***	R^2	ΔR^2	R^2 ***change***	***F***
1						.152	.123	.152	5.23**
	Positive affect	.121	.56	.112	.208				
	Openness	.166	.160	.108	.301				
	Creative self-efficacy	.092	.095	.102	.336				
	Paradox mindset	.303	.136	.218*	.027				
2						.182	.147	.030	5.17**
	Positive affect	.110	.094	.101	.247				
	Openness	.170	.157	.111	.282				
	Creative self-efficacy	.116	.095	.129	.223				
	Paradox mindset	.258	.136	.185	.060				
	Opening Behaviours (T1)	.164	.079	.177*	.041				

Note. $N = 122$; * $p < .05$; ** $p < .01$.

H2 stated that *when taking part in idea generation tasks, followers will demonstrate higher idea generation behaviours when their manager demonstrates opening behaviours.* To examine this hypothesis, three hierarchical linear regressions were conducted with three different dependent variables; one with self-perceived idea generation, one with creativity as rated by the assessors and one with the quantity of ideas that participants came up with. The results of the first test with self-perceived idea generation as the DV can be seen in Table 3.7. In the first step, the four control variables were entered into the regression, which

showed that only creative self-efficacy was a significant predictor of idea generation (β = .39, $p < 0.01$). In the second step, the main predictor of opening leader behaviours (T1) was added. Opening leader behaviours significantly predicted participants' idea generation (β = .22, $p < 0.05$) above and beyond the control variables. The results indicate that 17.2% of the variance of idea generation is explained by all the predictors examined, however only 4.5% of the variance on exploration is explained by opening behaviours. In regard to the self-perceived idea generation outcomes, H2 is supported.

Table 3.7. Results of regression analysis - Idea generation.

Dependent variable: Self-perceived idea generation

		Unstandardised Coefficients		Standardised Coefficients					
Step	***Predictor***	***B***	***SE***	***β***	***P***	***R^2***	***ΔR^2***	***R^2 change***	***F***
1						.172	.143	.172	6.06**
	Positive affect	.099	.078	.110	.208				
	Openness	-.033	.130	-.026	.803				
	Creative self-efficacy	.289	.078	.388**	.000				
	Paradox mindset	.006	.111	.005	.955				
2						.217	.183	.045	6.43**
	Positive affect	.087	.076	.098	.253				
	Openness	-.028	.127	-.022	.824				
	Creative self-efficacy	.313	.077	.421**	.000				
	Paradox mindset	-.040	.110	-.034	.719				
	Opening Behaviours (T1)	.166	.064	.217*	.011				

Note. N = 122; * p < .05; ** p < .01.

For the second DV of H2 (objective creativity as rated by the assessors), the same process was followed (see Table 3.8). In the first step of the hierarchical linear regression, the four control variables were entered, whereas the independent variable of leader opening behaviours was added in step 2. The results from this regression analysis were not significant. Regarding the objective creativity outcome as rated by the three assessors, neither the control variables nor the independent variable predicted it in either step. Hence, regarding this creativity outcome, H2 is not supported.

Table 3.8. Results of regression analysis - Creativity (CAT).

Dependent variable: Creativity (CAT)

		Unstandardised Coefficients		Standardised Coefficients					
Step	***Predictor***	***B***	***SE***	***β***	***P***	***R^2***	***ΔR^2***	***R^2 change***	***F***
1						.074	.042	.074	2.34
	Positive affect	-.175	.104	-.155	.095				
	Openness	.313	.174	.195	.074				
	Creative self-efficacy	.084	.104	.090	.420				
	Paradox mindset	.026	.148	.018	.863				
2						.076	.036	.002	1.91
	Positive affect	-.178	.104	-.158	.091				
	Openness	-.314	.174	-.196	.074				
	Creative self-efficacy	.090	.105	.096	.392				
	Paradox mindset	-.014	.151	.010	.926				
	Opening Behaviours (T1)	.042	.088	.044	.632				

Note. $N = 122$; * $p < .05$; ** $p < .01$.

Table 3.9 exhibits the hierarchical linear regression results for the number of total ideas that participants came up with. As before, the four control variables were entered into step 1, indicating a significant model at $p < 0.05$. In the second step, the main predictor of opening leader behaviours (T1) was added. Opening leader behaviours predicted the number of ideas that participants came up with, interestingly, in a negative way (β = -0.18, $p < 0.05$). The model shows that 3.1% of the variance in the number of ideas can be explained by opening behaviours. Nevertheless, regarding this outcome, H2 is not supported as the direction is not positive.

Table 3.9. Results of regression analysis - Idea quantity.

Dependent variable: idea quantity

		Unstandardised Coefficients		Standardised Coefficients					
Step	***Predictor***	***B***	***SE***	***β***	***P***	***R^2***	***ΔR^2***	***R^2 change***	***F***
1						.079	.048	.079	2.52*
	Positive affect	-.508	.375	-.124	.178				
	Openness	1.23	.628	.212	.052				
	Creative self-efficacy	.400	.357	.118	.289				
	Paradox mindset	-.138	.535	-.026	.797				
2						.110	.072	.031	2.87*
	Positive affect	-.466	.371	-.114	.212				
	Openness	1.20	.620	.210	.052				
	Creative self-efficacy	.309	.373	.091	.410				
	Paradox mindset	.034	.535	.007	.949				
	Opening Behaviours (T1)	-.625	.312	-.178*	.048				

Note. N = 122; * p < .05; ** p < .01.

H3 stated that *when taking part in idea generation tasks, followers' exploration will mediate the positive relationship between their leaders' opening behaviours and their own idea generation behaviours.* This mediation hypothesis was tested using the PROCESS macro for SPSS (Hayes, 2017). There are numerous mediation and moderation models and each one has its own model number which must be entered into the syntax along with the IV, DV and mediators. The appropriate model number for this hypothesis is no.4. The model number is entered in the syntax editor of SPSS along with the IV and DV. This hypothesis was tested in two stages. Firstly, with the self-perceived idea generation as the outcome and again with the objective creativity outcome. The results of the former mediation analysis through the PROCESS macro may be seen in Table 3.10. The results from this analysis are showcased in two stages. Firstly, direct relationships are tested each step of the way. The first model is significant (R = .43, $p < 0.01$) and indicates that leader opening behaviours are a significant predictor of follower exploration [β = .16, 95% C.I. (.007, .321)]. The second model was also significant (R = .57, $p < 0.01$) and shows that exploration is a significant positive predictor of idea generation [β = .30, 95% C.I. (.164, .441)]. Results from this analysis also show the indirect effect coefficients. Creative self-efficacy was also a significant predictor of follower exploration in a positive direction [β = .28, 95% C.I. (.136, .420)]. Exploration is a significant mediator between opening leader behaviours and followers' idea generation [β = .07, 95% C.I. (.000, .144)]. Even though the effect of exploration as a mediator is not large, the lower and upper levels of the confidence interval indicate its significance, as the two values do not include zero and are positive (.0003, .1451). Since exploration is a significant mediator, this confirms the hypothesis hence H3 is supported, in regard to self-perceived idea generation.

Table 3.10. Mediation Analysis Results - Idea Generation.

Outcome	Predictor	*β*	SE	95% CI [LLCI, ULCI]	*R*	R^2	*p*
Exploration					.429	.182	.000
	Opening Behaviours (T1)	.164*	.08	[.007, .321]			
	Openness	.170	.16	[-.142, .482]			
	Positive Affect	.101	.09	[-.077, .296]			
	Creative Self-Efficacy	.116	.09	[-.072, .304]			
	Paradox Mindset	.258	.14	[-.011, .527]			
Idea Generation					.572	.327	.000
	Opening Behaviours (T1)	.117	.07	[-.004, .237]			
	Exploration	.303**	.07	[.164, .441]			
	Openness	-.080	.12	[-.316, .156]			
	Positive Affect	.054	.07	[-.087, .196]			
	Creative Self-Efficacy	.278**	.07	[.136, .420]			
	Paradox Mindset	-.118	.10	[-.323, .088]			

Indirect Effects	*β*	Boot *SE*	Boot 95% CI
Opening Behaviours → Exploration →Idea Generation	.065	.04	[.000, .145]

Note. N = 122;
CI = Confidence Interval; LLCI = Lower-Level Confidence Interval; ULCI = Upper-Level Confidence Interval.
* p < 0.05; ** p < 0.01.

The same hypothesis was also tested using the objective measure of creativity, as rated by the assessors. The results from this mediation analysis may be seen below in Table 3.11. The new model showed no significant results, and the variables do not significantly predict the outcome. The indirect effect result also indicates that exploration is not a significant mediator between opening behaviours and participants' creativity as rated by the assessors. Thus, when considering this creativity outcome, H3 is not supported.

Table 3.11. Mediation Analysis Results - Creativity (CAT).

Outcome	Predictor	β	SE	95% CI [LLCI, ULCI]	R	R^2	p
Exploration					.429	.182	.000
	Opening Behaviours (T1)	.164*	.08	[.007, .321]			
	Openness	.170	.16	[-.142, .482]			
	Positive Affect	.101	.09	[-.077, .296]			
	Creative Self-Efficacy	.116	.09	[-.072, .304]			
	Paradox Mindset	.258	.14	[-.011, .527]			
Creativity					.276	.076	.161
	Opening Behaviours (T1)	.041	.09	[-.137, .219]			
	Exploration	.009	.10	[.196, .214]			
	Openness	.312	.18	[-.036, .661]			
	Positive Affect	-.179	.11	[-.389, .030]			
	Creative Self-Efficacy	.089	.11	[.121, .299]			
	Paradox Mindset	.012	.15	[-.293, .316]			
Indirect Effects				β	Boot *SE*		Boot

			95% CI
Opening Behaviours → Exploration →Creativity	.002	.02	[-.046, .046]

Note. N = 122;
CI = Confidence Interval; LLCI = Lower-Level Confidence Interval; ULCI = Upper-Level Confidence Interval.
* p < 0.05; ** p < 0.01.

Hypothesis 3 was finally tested using the number of ideas as the dependent variable. Analysis was conducted using the PROCESS macro. The results from this mediation analysis can be seen below in Table 3.12. The results show that there is no significant effect of exploration on the number of ideas that the followers have produced. Hence, regarding this outcome, H3 is not supported.

Table 3.10. Mediation Analysis Results – Idea Quantity

Outcome	Predictor	*β*	SE	95% CI [LLCI, ULCI]	*R*	R^2	*p*
Exploration					.429	.182	.000
	Opening Behaviours (T1)	.164*	.08	[.007, .321]			
	Openness	.170	.16	[-.142, .482]			
	Positive Affect	.101	.09	[-.077, .296]			
	Creative Self-Efficacy	.116	.09	[-.072, .304]			
	Paradox Mindset	.258	.14	[-.011, .527]			
Idea Quantity					.340	.116	.026
	Opening Behaviours (T1)	-.573	.32	[-1.204, .058]			
	Exploration	-.314	.37	[-1.040, .412]			
	Openness	1.27*	.62	[.036, 2.508]			

Positive Affect	-.432	.37	[-1.172 .309]
Creative Self-Efficacy	.345	.38	[-.400, 1.091]
Paradox Mindset	.116	.54	[-.962, 1.193]

Indirect Effects	*β*	Boot *SE*	Boot 95% CI
Opening Behaviours → Exploration →Idea Quantity	-.015	.02	[-.066, .017]

Note. N = 122;
CI = Confidence Interval; LLCI = Lower-Level Confidence Interval; ULCI = Upper-Level Confidence Interval.
* p < 0.05; ** p < 0.01.

H4 stated that *when taking part in idea implementation tasks, followers will demonstrate higher exploitation when their manager demonstrates closing behaviours.* A hierarchical linear regression was used to test this hypothesis with positive affect, openness, creative self-efficacy, and paradox mindset as control variables. Initially, the four variables have been entered in Step 1. Results can be seen in Table 3.13 and show that creative self-efficacy is a strong predictor of exploitation (β = .32, p < 0.01). In Step 2, closing leader behaviours during the idea implementation task were added as a predicting variable. Results from the model in Step 2 demonstrate that closing behaviours is not a significant predictor of exploitation. Therefore, H4 is not supported.

Table 3.13. Results of regression analysis - Exploitation.

Dependent variable: Exploitation

		Unstandardised Coefficients		Standardised Coefficients					
Step	***Predictor***	***B***	***SE***	***β***	***P***	***R^2***	***ΔR^2***	***R^2 change***	***F***
1						.127	.097	.127	4.27**
	Positive affect	.089	.103	.078	.387				
	Openness	-.034	.172	-.021	.843				
	Creative self-efficacy	.309	.103	.324**	.003				
	Paradox mindset	.058	.146	.039	.693				
2						.132	.095	.005	3.54**
	Positive affect	-.097	.103	-.085	.348				
	Openness	-.023	.172	-.014	.895				
	Creative self-efficacy	.291	.105	.305**	.007				
	Paradox mindset	.074	.148	.050	.617				
	Closing Behaviours (T2)	.084	.102	.074	.408				

Note. $N = 122$; * $p < .05$; ** $p < .01$.

H5 states that *when taking part in idea implementation tasks, followers will demonstrate higher idea implementation behaviours when their manager demonstrates closing behaviours.* Similar to hypothesis 2, this one is also tested with two dependent variables; self-perceived idea implementation and implementation as rated by the assessors. Table 3.14 exhibits the results of the hierarchical linear regression model with self-perceived idea implementation as the outcome. In the first step, the four predictors have been added. Results show that the model is highly significant with 44% of the variance in idea implementation

being explained by the four control variables ($p < 0.01$). Openness to new experiences and paradox mindset however were not significant. Positive affect was a significant predictor of idea implementation ($\beta = .23$, $p < 0.01$) as well as creative self-efficacy ($\beta = .61$, $p < 0.01$). Closing behaviours (T2) was added in the second step. The model shows non-significant results, hence H5 is not supported when self-reported idea implementation is used as the outcome.

Table 3.14. Results of regression analysis - Self-reported idea implementation.

Dependent variable: Self-reported idea implementation

		Unstandardised Coefficients		Standardised Coefficients					
Step	***Predictor***	***B***	***SE***	***β***	***P***	***R^2***	***ΔR^2***	***R^2 change***	***F***
1						.455	.436	.455	24.38**
	Positive affect	.220	.069	.226**	.002				
	Openness	-.053	.115	-.038	.645				
	Creative self-efficacy	.494	.069	.611**	.000				
	Paradox mindset	-.002	.098	-.001	.987				
2						.455	.431	.000	19.33**
	Positive affect	-.220	.069	.227**	.002				
	Openness	-.053	.116	-.038	.649				
	Creative self-efficacy	.493	.070	.611**	.000				
	Paradox mindset	-.001	.099	-.001	.991				
	Closing Behaviours (T2)	.002	.068	.002	.975				

Note. $N = 122$; * p < .05; ** p < .01.

Table 3.15 presents the results of the hierarchical linear regression model that tests H5 with implementation as rated by the three assessors as the dependent variable. The four control variables were entered in the first step, whereas the independent variable of leader closing behaviours was added in step 2. The results from this regression analysis were not significant, although the closing leader behaviours predictor was close at $p = .056$. In regard to the objective implementation outcome, neither the control variables nor the independent variable predicted it in either step. Hence, H5 is not supported.

Table 3.15. Results of regression analysis - Implementation (CAT).

Dependent variable: Implementation (CAT)

		Unstandardised Coefficients		Standardised Coefficients					
Step	***Predictor***	***B***	***SE***	***β***	***P***	***R^2***	***ΔR^2***	***R^2 change***	***F***
1						.034	.001	.034	1.03
	Positive affect	-.045	.082	-.051	.588				
	Openness	.194	.137	.156	.161				
	Creative self-efficacy	-.044	.082	-.061	.593				
	Paradox mindset	-.170	.117	-.152	.148				
2						.064	.024	.030	1.59
	Positive affect	-.030	.082	-.034	.716				
	Openness	.215	.136	.173	.118				
	Creative self-efficacy	-.078	.083	.107	.352				
	Paradox mindset	-.141	.117	-.125	.230				
	Closing Behaviours (T2)	.155	.080	.178	.056				

Note. $N = 122$; * $p < .05$; ** $p < .01$.

H6 stated that *when taking part in idea implementation tasks, followers' exploitation will mediate the positive relationship between their leaders' closing behaviours and their own idea implementation behaviours.* The PROCESS macro was used to test this mediation hypothesis, with model no.4. This hypothesis was tested using two different dependent variables. Firstly, self-perceived idea implementation was tested as an outcome, and then the objective implementation scores as rated by the assessors. The results of the former may be seen below in Table 3.16. The first model examined exploitation as an outcome and was significant (R = .36, $p < 0.01$). It suggests that creative self-efficacy was a positive predictor of exploitation [β = .29, 95% C.I. (.083, .499)]. The second model was also whereas the second was also significant (R = .71, $p < 0.01$) and examined idea implementation as the outcome. It indicates that exploitation predicts idea implementation in a positive way [β = .19, 95% C.I. (.075, .312)]. It also shows that positive affect [β = .20, 95% C.I. (.069, .334)] as well as creative self-efficacy [β = .44, 95% C.I. (.298, .575)] were both positive predictors of idea implementation. The indirect effect results however show that exploitation is not a significant mediator in the relationship between closing leader behaviours and idea implementation, as zero falls between the confidence interval levels. Hence, H6 is not supported regarding follower self-perceived idea implementation.

Table 3.16. Mediation Analysis Results - Idea Implementation.

Outcome	Predictor	β	SE	95% CI [LLCI, ULCI]	R	R^2	p
Exploitation					.364	.132	.005
	Closing Behaviours (T2)	.085	.10	[-.117, .286]			
	Openness	-.023	.17	[-.364, .319]			
	Positive Affect	.097	.10	[-.107, .302]			

	Creative Self-Efficacy	.291**	.11	[.083, .499]			
	Paradox Mindset	.074	.14	[-.218, .367]			
Idea Implementation					.707	.500	.000
	Closing Behaviours (T2)	-.014	.07	[-.145, .116]			
	Exploitation	.194**	.06	[.075, .312]			
	Openness	-.048	.11	[-.269, .172]			
	Positive Affect	.201**	.07	[.069, .334]			
	Creative Self-Efficacy	.437**	.07	[.298, .575]			
	Paradox Mindset	-.016	.10	[-.204, .174]			

Indirect Effects	β	Boot *SE*	Boot 95% CI
Closing Behaviours → Exploitation →Idea Implementation	.017	.02	[-.024, .065]

Note. $N = 122$;
CI = Confidence Interval; LLCI = Lower-Level Confidence Interval; ULCI = Upper-Level Confidence Interval.
* $p < 0.05$; ** $p < 0.01$.

The implementation scores of the assessors were also used as a dependent variable to assess H6. The results from this hypothesis can be seen below in Table 3.17. As per the results, the second model indicates non-significance in predicting the dependent variable. Only closing leader behaviours predicts implementation in a positive way [$\beta = .16$, 95% C.I. (.003, .322)]. Exploitation was not a significant predictor of implementation. The indirect effect results indicate that exploitation is not a significant mediating variable between closing leader behaviours and participants' implementation scores. Thus, H6 is not supported, when the

scores from the assessors regarding follower implementation are used as the dependent variable.

Table 3.17. Mediation Analysis Results - Implementation (CAT).

Outcome	Predictor	β	SE	95% CI [LLCI, ULCI]	R	R^2	p
Exploitation					.364	.132	.005
	Closing Behaviours	.085	.10	[-.117, .286]			
	Openness	-.023	.17	[-.364, .319]			
	Positive Affect	.097	.10	[-.107, .302]			
	Creative Self-Efficacy	.291**	.11	[.083, .499]			
	Paradox Mindset	.074	.14	[-.218, .367]			
Implementation					.276	.076	.158
	Closing Behaviours	.163*	.08	[.003, .322]			
	Exploitation	.-.091	.07	[-.236, .055]			
	Openness	.213	.14	[-.057, .482]			
	Positive Affect	-.021	.08	[-.183, .141]			
	Creative Self-Efficacy	-.051	.09	[-.221, .118]			
	Paradox Mindset	-.134	.12	[-.365, .097]			

Indirect Effects	β	Boot *SE*	Boot 95% CI
Closing Behaviours → Exploitation → Implementation	-.009	.01	[-.042, .018]

Note. N = 122;
CI = Confidence Interval; LLCI = Lower-Level Confidence Interval; ULCI = Upper-Level Confidence Interval.
* p < 0.05; ** p < 0.01.

H7 and H8 stated that "Follower ambidexterity and innovative work behaviours is higher when the leader demonstrates temporal flexibility in line with innovation stages than when they don't" respectively. The hypotheses imply that the experimental group of participants who received the ambidextrous leadership condition, will exhibit the highest ambidexterity and innovative behaviour outcomes, compared to the rest, thus testing appropriately the ability of the leaders to show *temporal flexibility*. Therefore, the experimental group, was the independent variable for these two hypotheses. Essentially, I tested whether the group (*Opening*, *Closing*, *Ambidextrous* or *Ambidextrous at wrong time*) that the participants were randomly allocated to can be responsible for their ambidextrous or innovative outcomes of the participants. The manipulation check that was conducted priorly in section 3.3.3.8 demonstrates clearly that the participants rated their leader's behaviours correctly after each stage of the innovation process. This indicates that they observed and understood correctly how their leader acted when emailing them each time. Since these manipulation checks showed significant differences between the different stages and in the right directions, it is appropriate to use the variable of the experimental groups as the independent variable and conduct further analysis.

For testing these hypotheses, I have used ANOVA, as it allows me to examine mean differences between more than two groups. Table 3.16 exhibits the results of the ANOVA tests across the four experimental groups and the three dependent variables (follower ambidexterity, innovative work behaviours and innovation as rated by the assessors). H7 assumes that participants who were in the ambidextrous leadership group would portray the highest levels of follower ambidexterity. The ANOVA result for this hypothesis was insignificant thus H7 is not supported. H8 assumes that participants who were also allocated in this group would exhibit the highest levels of innovation. Both measured outcomes of

innovation were tested (self-perceived and CAT) and neither has showed significant results. Therefore, H8 is also not supported.

However, as the CFA has shown that the dimensions of the two variables should be treated separately, I have also added examined the groups differences for the outcomes of exploration and exploitation, as well as idea generation and idea implementation. Yet, even when examining the dimensions separately, the results were not significantly different between the four experimental groups.

Nonetheless, as the hypotheses developed were formed based on theoretical premises that the two dimensions should be under one construct, and not based on what the CFA has later shown, it can be concluded that H7 and H8 were not supported.

The dependent variables were also tested using ANCOVA to examine the role of the four control variables that have been set in this study. The results for these tests can be seen in table 3.18. A one-way ANCOVA was conducted to determine a statistically significant different between the four groups on the followers' exploration controlling for positive affect, openness, creative-self efficacy, and paradox mindset. The first ANCOVA showed that there is a significant effect of the leadership style on the exploration of participants after controlling for paradox mindset , $F(1,122) = 7.37$, $p<.05$. Bonferroni pairwise comparisons indicated that the statistical difference exists between the ambidextrous leadership group and the opening leadership group. The results indicate that participants who possessed a paradox mindset had significantly higher exploration levels when working under an opening leader ($M_{diff} = .613$, $p < .05$) compared to when working with an ambidextrous leader. There were no significant differences between any other groups. The second ANCOVA showed that creative self-efficacy was a significant covariate on the exploitation of the participants, $F(1,122) = 9.79$, $p<.01$. However, there were no significant differences between any groups. The third ANCOVA examined follower ambidexterity as the DV. It showed that creative

self-efficacy ($F(1,122)= 6.83$, $p<.01$) is a significant covariate, however pairwise comparisons showed no significant differences between any groups. The fourth ANCOVA examined self-perceived idea generation as the DV. Creative self-efficacy was the only significant covariate ($F(1,122) = 13.59$, $p<.001$) however there were no significant mean differences between any of the groups. The fifth ANCOVA looked at self-perceived idea implementation as the DV. Positive affect ($F(1,122) = 11, 22$, $p<.001$) and creative self-efficacy ($F(1,122) = 50.48$, $p<.001$) were both significant covariates. However, the pairwise comparisons showed no significant mean differences between any groups. The sixth ANCOVA examined IWB as the DV. It showed that positive affect ($F(1,122) = 6.88$, $p<.010$) and creative self-efficacy ($F(1,122) = 36.47$, $p<.001$) were both significant covariates. However, the pairwise comparisons indicated no significant mean differences between any of the groups. The seventh ANCOVA looked at the number of ideas that each participant generated, but no significant covariates were identified. The eighth ANCOVA looked the creativity of the participants as rated by the experts, but the results did not show any significant covariates. The ninth ANCOVA examined the idea implementation of the participants as rated by the experts. The results also indicated no significant covariates. The tenth and last ANCOVA test examined the overall innovation as rated by the experts. However, the results also showed no significant covariates.

As the effects were not significant, it is also important to consider the sample size. Since the data collection and analysis has already occurred, a post-hoc power analysis may determine the power of finding an effect. For this test I have used the G* Power software. In this test I have added the effect size, the number of groups, as well as the sample size. The test has shown a power of 0.10 which is much lower than the desirable 0.80 which can make the findings more valid. A priori power analysis indicates that the ideal sample size for a medium effect size for this study requires 280 participants. However, as aforementioned, for this

study, I have recruited as many participants as my funds allowed me, which unfortunately were not enough to determine a strong effect (n=122).

Table 3.18. Means, standard deviations, and F-statistics across the four experimental groups.

	Ambidextrous Leader		***Opening Leader***		***Closing Leader***		***Ambidextrous Leader (Wrong timing)***		***Total***		***Test Statistic***	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*F*	*p*
Exploration	4.99	.90	5.54	.94	5.30	.74	5.25	.88	5.28	.88	2.10	.104
Exploitation	4.67	.77	4.85	1.05	4.73	.92	4.52	.97	4.69	.93	.693	.558
Follower Ambidexterity [a]	4.83	.70	5.20	.88	5.01	.70	4.88	.82	4.99	.78	1.38	.251
Idea Generation	3.79	.50	3.93	.75	3.98	.73	3.80	.90	3.87	.73	.496	.686
Idea Implementation	3.27	.63	3.13	.88	3.44	.77	3.29	.86	3.33	.79	.302	.824
Innovative Work Behaviours [b]	3.53	.48	3.62	.74	3.71	.69	3.54	.81	3.60	.69	.440	.725
Idea Quantity	4.00	2.38	4.00	3.27	3.77	2.45	4.43	4.77	4.04	3.32	.210	.889
Creativity	3.05	1.00	3.10	.79	2.89	.78	2.87	1.09	2.98	.92	.461	.710
Implementation	2.83	.84	2.84	.57	2.94	.78	2.62	.62	2.81	.71	1.06	.368
Innovation [c]	3.00	.73	3.03	.53	3.00	.65	2.81	.69	2.96	.65	.762	.517

Note. $N = 122$.
[a] : mean of exploration and exploitation items;
[b] : mean of self-perceived idea generation and idea implementation items;
[c] : mean of creativity and implementation items as rated by the assessors;
F-values were calculated through ANOVA.
* $p < .05$; ** $p < .01$.

Table 3.19. F-statistics of the covariates.

	Positive Affect		***Openness***		***Creative Self-efficacy***		***Paradox Mindset***		***Group***	
	F	*p*	*F*	*p*	*F*	*p*	*F*	*p*	*F*	*p*
Exploration	1.95	.165	.471	.494	1.46	.230	7.37	.008	3.43	.020
Exploitation	1.00	.319	.090	.765	9.79	.002	.434	.511	1.56	.203
Follower Ambidexterity[a]	1.98	.163	.040	.842	6.83	.010	3.74	.056	2.92	.037
Idea Generation	1.88	.173	.056	.813	13.59	.000	.116	.734	1.20	.031
Idea Implementation	11.22	.001	.109	.741	50.48	.000	.091	.763	1.61	.192
Innovative Work Behaviours[b]	6.88	.010	.103	.749	36.47	.000	.136	.713	1.78	.154
Idea Quantity	1.88	.173	3.53	.063	1.06	.307	.105	.746	.103	.958
Creativity	2.69	.104	2.55	.113	.761	.385	.046	.831	.538	.657
Implementation	.193	.661	2.70	.103	.541	.463	1.58	.211	.990	.400
Innovation[c]	1.81	.181	3.93	.053	.040	.843	.276	.600	.865	.462

Note. $N = 122$.
[a] : mean of exploration and exploitation items;
[b] : mean of self-perceived idea generation and idea implementation items;
[c] : mean of creativity and implementation items as rated by the assessors;
F-values were calculated through ANOVA.
* $p < .05$; ** $p < .01$.

The theoretical aspect of temporal flexibility is based on the assumption that ambidextrous leadership is dependent on interaction effects. Specifically, Rosing and her colleagues (2011) suggest that closing behaviours will moderate the relationship between opening behaviours and follower innovation and vice versa, opening behaviours will moderate the relationship between closing behaviours and follower innovation. The next two hypotheses are based on the interactive effect that ambidextrous behaviours will have on follower innovation.

H9 stated that *the positive effect of the leaders' opening behaviours during the idea generation phase on employee ambidexterity, is stronger when the leaders' closing behaviours during the idea implementation phase are high.* H9 was tested in three different tests. The first test examined exploration as the outcome, the second test examined exploitation, and the third test examined their interaction. For this analysis, a hierarchical linear regression was using. Testing exploration as the outcome, at the first step, the four control variables were examined, which showed that they can explain about 12% of the variance in exploration. In this model, paradox mindset was a significant predictor of exploration ($\beta = .22$, $p < 0.05$). At the second step, opening behaviours (T1) and closing behaviours (T2) were added. By doing that I'm not only considering the leaders' behaviours, but also the nature of the task. The model although significant, did not indicate any positive predictors. The second test used exploitation as the outcome. The first model was significant suggesting a 10% explanation in variance, while creative self-efficacy was a positive predictor of exploitation ($\beta = .34$, $p < 0.01$). The second model showed that neither opening nor closing behaviours were significant predictors of exploitation. The third and final test involved the interaction of opening and closing behaviours as well as the interaction of exploration and exploitation. For this test, further preparation was needed. The four variables of interest had to be mean-centred before calculating their interaction effect. Then, two new variables were computed, one for ambidextrous leadership and one for employee ambidexterity, using the mean-centred variables. The hierarchical linear regression was now in three steps, where the first step included the four control variables; the second step included the two leader behaviours; and the last step included the interaction between the two leader behaviours. Contrary to the theory (Rosing et al., 2011) and past studies (Oluwafemi et al., 2020) this test showed no significance results for any of the variables. As ambidextrous leadership was not significant in predicting employee ambidexterity, then the

hypothesis is not supported, hence H9 is not supported. The following table (see Table 3.20) shows the results of the three tests.

Table 3.20. Results of regression analysis – Employee Ambidexterity.

Predictor Variables		Exploration		Exploitation		Employee Ambidexterity		
		Step 1	***Step 2***	***Step 1***	***Step 2***	***Step 1***	***Step 2***	***Step 3***
Step 1	Positive Affect	.112 (.208)	.092 (.291)	.078 (.387)	.081 (.367)	.013 (.895)	.013 (.893)	.010 (.918)
	Openness	.108 (.301)	.099 (.334)	-.021 (.843)	-.009 (.933)	.131 (.243)	.139 (.220)	.142 (.214)
	Creative Self-Efficacy	.102 (.336)	.153 (.153)	.324** (.003)	.314** (.005)	-.029 (.799)	-.030 (.796)	-.032 (.788)
	Paradox Mindset	.218* (.027)	.175 (.076)	.039 (.693)	.033 (.741)	-.104 (.323)	-.113 (.293)	-.114 (.292)
Step 2	Opening Behaviours (T1)		.144 (.108)		.120 (.193)		.100 (.307)	.099 (.318)
	Closing Behaviours (T2)		-.113 (.210)		.109 (.243)		.063 (.524)	.061 (.541)
Step 3	Ambidextrous Leadership (OB T1 * CB T2)							.026 (.781)
ΔR^2		.123	.151	.097	.101	-.017	-.024	-.032

R^2	.152	.193	.127	.145	.017	.027	.027
F	5.24**	4.59**	4.27**	3.26**	0.50	0.53	0.46
Sig. (p)	.001	.000	.003	.005	.737	.787	.862

Note. N = 122. Standardised regression coefficients are reported. * p < .05; ** p < .01. Actual levels of significance are reported in ( ). OB = Opening behaviours, CB = Closing Behaviours

H10 stated that *the positive effect of the leaders' opening behaviours during the idea generation phase on follower IWB, is stronger when the leaders' closing behaviours during the idea implementation phase are high*. This hypothesis was tested through two dependent variables (self-reported innovative work behaviours and innovation as rated by the assessors). As a reminder, the IWB measure is the mean of the self-reported idea generation and idea-implementation, while the innovation measure is the mean of all the creativity and implementation items from the raters' evaluation form. The interaction variable between opening behaviours (T1) and closing behaviours (T2) that was computed for H9 is also used for H10. Table 3.21 exhibits the results of the hierarchical linear regression testing whether the interplay between opening and closing leader behaviours may predict the participants' self-perceived innovative work behaviours. In the first step, the four predictors showed a highly significant model ($\Delta R^2 = .345$, $p < 0.01$). Positive affect ($\beta = .19$, $p < 0.05$) and creative self-efficacy ($\beta = .56$, $p < 0.01$) were strong predictors of innovative work behaviours. Opening and closing leader behaviours were added in the second step. Opening leader behaviours were found to be a significant predictor of participants' innovative work behaviours ($\beta = .17$, $p < 0.05$), however closing behaviours were not significant. In the third and final step, the interaction term was added, yet the model has showed that it was not a significant predictor of the participants' innovative work behaviours. Opening behaviours remained a significant predictor of IWB ($\beta = .18$, $p < 0.05$). However, since ambidextrous leadership did not predict innovative work behaviours, the hypothesis cannot be supported. Therefore, H10 is not supported when self-perceived outcomes are used.

Table 3.21. Results of regression analysis - Self-perceived innovative work behaviours.

Dependent variable: Innovative work behaviours

		Unstandardised Coefficients		Standardised Coefficients					
Step	***Predictor***	***B***	***SE***	***β***	***P***	***R^2***	***ΔR^2***	***R^2 change***	***F***
1						.367	.345	.367	16.95**
	Positive affect	.159	.064	.188*	.015				
	Openness	-.043	.108	-.036	.692				
	Creative self-efficacy	.391	.064	.556**	.000				
	Paradox mindset	.002	.092	.002	.980				
2						.393	.361	.026	12.41**
	Positive affect	.156	.064	.185*	.016				
	Openness	-.032	.107	-.027	.299				
	Creative self-efficacy	.397	.065	.564**	.000				
	Paradox mindset	-.021	.092	-.019	.874				
	Opening Behaviours (OB) (T1)	.124	.056	.171*	.029				
	Closing Behaviours (CB) (T2)	.057	.066	.068	.384				
3						.403	.366	.010	11.00**
	Positive affect	.166	.064	.196*	.011				
	Openness	-.047	.107	-.039	.662				
	Creative self-efficacy	.400	.065	.569**	.000				
	Paradox Mindset	-.018	.092	-.017	.845				

	Opening Behaviours (OB) (T1)	.129	.056	.178*	.023
	Closing Behaviours (CB) (T2)	.064	.066	.076	.330
	Ambidextrous Leadership (OB*CB)	-.081	.058	-.102	.167

Note. $N = 122$; * $p < .05$; ** $p < .01$.

Regarding the objective outcomes of innovation for H10, results of the hierarchical linear regression can be seen in Table 3.22. The first step included the four control variables which showed no significant results in explaining the variance in followers' innovation. In the second step, opening and closing leaders' behaviours were added, which also showed no significant results. The interaction term between opening and closing behaviours was added in the third step, however it was not significant either. As ambidextrous leadership did not show any support for innovation outcomes as scored by the experts, then the hypothesis cannot be supported. Hence, H10 is not supported, even with objective measures of innovation.

Table 3.22. Results of regression analysis – Innovation (CAT).

Dependent variable: Innovation (CAT)

		Unstandardised Coefficients		Standardised Coefficients					
Step	***Predictor***	***B***	***SE***	***β***	***P***	R^2	ΔR^2	R^2 ***change***	***F***
1						.050	.018	.050	1.55
	Positive affect	-.109	.075	-.136	.146				
	Openness	.234	.125	.205	.064				

	Creative self-efficacy	.017	.075	.026	.818				
	Paradox mindset	-.071	.107	-.069	.507				
2						.056	.006	.005	1.13
	Positive affect	-.106	.076	-.133	.162				
	Openness	.243	.126	.213	.057				
	Creative self-efficacy	.010	.077	.015	.896				
	Paradox mindset	-.070	.109	-.068	.523				
	Opening Behaviours (OB) (T1)	.035	.066	.051	.595				
	Closing Behaviours (CB) (T2)	.057	.078	.071	.465				
3						.067	.010	.012	1.18
	Positive affect	-.096	.076	-.120	.206				
	Openness	.227	.127	.200	.075				
	Creative self-efficacy	.014	.077	.020	.859				
	Paradox Mindset	-.067	.109	-.065	.540				
	Opening Behaviours (OB) (T1)	.041	.066	.059	.542				
	Closing Behaviours (CB) (T2)	.064	.078	.080	.413				
	Ambidextrous Leadership (OB*CB)	-.083	.069	-.110	.232				

Note. $N = 122$; * $p < .05$; ** $p < .01$. CAT = Consensual Assessment Technique.

H11 stated that *leaders who portray opening behaviours during idea generation tasks, will have a positive effect on the followers' intrinsic motivation*. This hypothesis involves the motivation of the participants and whether their leader's opening behaviours facilitated that. Regression analysis was used to determine the influence of a leader's opening behaviours (during an idea generation task) on the participants' intrinsic motivation. Results from this analysis can be seen below in Table 3.23. As prior hypothesis, this analysis followed a hierarchical linear regression where the control variables were entered into the first step, and the independent variable of opening behaviours was entered into the second step.

The first model was statistically significant ($F(4,121) = 7.81$, $p < 0.01$). The adjusted R^2 indicated that 18% of the variance in participants' intrinsic motivation can be explained by variance in the four control variables. Specifically, positive affect was a positive predictor of intrinsic motivation ($\beta = .17$, $p < 0.05$), as well as creative self-efficacy ($\beta = .35$, $p < 0.01$). The second model was also statistically significant ($F(5,121) = 10.67$, $p < 0.01$) and showed that approximately 29% of the variance in intrinsic motivation can be explained when introduced leaders' opening behaviours. This suggests that leaders' opening behaviours have an effect of about 10% on followers' intrinsic motivation. The model indicates that creative self-efficacy was still a positive predictor of intrinsic motivation ($\beta = .40$, $p < 0.01$), but so was leaders' opening behaviour ($\beta = .33$, $p < 0.01$).

Results suggest that for every unit increase in leaders' opening behaviours, the participants' intrinsic motivation was increased by 0.33. Since opening leaders' behaviours (during the correct timing) are a positive predictor of follower intrinsic motivation, it can be concluded that H11 is accepted.

Table 3.23. Results of regression analysis – Intrinsic Motivation.

		Dependent variable: Intrinsic Motivation (T1)							
		Unstandardised Coefficients		Standardised Coefficients					
Step	***Predictor***	***B***	***SE***	***β***	***P***	***R^2***	***ΔR^2***	***R^2 change***	***F***
1						.211	.184	.211	7.84**
	Positive affect	.195	.097	.170*	.047				
	Openness	.017	.162	.011	.915				
	Creative self-efficacy	.332	.097	.350**	.001				
	Paradox mindset	.096	.138	.066	.487				
2						.315	.286	.104	10.67**
	Positive affect	.173	.091	.151	.060				
	Openness	.026	.152	.016	.867				
	Creative self-efficacy	.379	.091	.399**	.000				
	Paradox mindset	.008	.131	.005	.954				
	Opening Behaviours (T1)	.322	.077	.329**	.000				

Note. $N = 122$; * $p < .05$; ** $p < .01$.

H12 stated that *when taking part in idea generation tasks, followers' intrinsic motivation will mediate the positive relationship between their leaders' opening behaviours and their own exploration.* In order to test this mediation hypothesis, the PROCESS macro for SPSS has been used. The results of this analysis can be seen below in Table 3.24.

Before testing the mediation, two regression models were run to explore the effect of leader opening behaviours on the two types of motivation. The first model was significant (R = .56, $p < 0.01$) and indicates that leader opening behaviours are a significant predictor of intrinsic motivation [β = .32, 95% C.I. (.170, .473)]. Creative self-efficacy also significantly predicted intrinsic motivation [β = .38, 95% C.I. (.198, .560)]. The second model examined extrinsic motivation as an outcome of opening behaviours. This examination was conducted for comparison purposes, based on the theoretical arguments that leaders' opening behaviours are beneficial for the followers' intrinsic motivation only and not for their extrinsic motivation. This model was significant (R = .35, $p < 0.01$) and indicated that opening variable was a predictor of extrinsic motivation but in a negative direction [β = -.26, 95% C.I. (-.431, -.095)].

The third model is a parallel mediation model, with intrinsic and extrinsic motivations mediating the effect of leader opening behaviours on follower exploration. The model overall was also significant (R = .48, $p < 0.01$) and showed that intrinsic motivation was a positive predictor of exploration [β = .28, 95% C.I. (.083, .485)]. The indirect effects showed that intrinsic motivation was a significant mediator between leaders' opening behaviours and followers' exploration [β = .10, 95% C.I. (.014, .225)]. Even though the effect is not very strong, it is still significant as the range between the two confidence interval values does not include 0. On the contrary, the extrinsic motivation of the followers was not significant. It can be therefore concluded that H12 is accepted.

Table 3.24. Mediation Analysis Results – Intrinsic Motivation.

Outcome	Predictor	β	SE	95% CI [LLCI, ULCI]	R	R^2	p
Model 1							
Intrinsic Motivation (T1)					.561	.315	.000

	Opening Behaviours (T1)	.322**	.08	[.170, .473]			
	Openness	.026	.15	[-.275, .326]			
	Positive Affect	.173	.09	[-.007, .353]			
	Creative Self-Efficacy	.379**	.09	[.198, .560]			
	Paradox Mindset	.008	.13	[-.252, .267]			
Model 2							
Extrinsic Motivation (T1)					.347	.120	.010
	Opening Behaviours (T1)	-.263**	.08	[-.431, .-.095]			
	Openness	.263	.17	[-.070, .597]			
	Positive Affect	-.174	.10	[-.374, .025]			
	Creative Self-Efficacy	-.150	.10	[-.351, .051]			
	Paradox Mindset	.099	.15	[-.189, .386]			
Model 3							
Exploration					.484	.235	.000
	Opening Behaviours (T1)	.096	.08	[-.070, .262]			
	Intrinsic Motivation (T1)	.284**	.10	[.083, .485]			
	Extrinsic Motivation (T1)	.090	.09	[-.092, .271]			
	Openness	.139	.16	[-.169, .447]			
	Positive Affect	.076	.09	[-.110, .262]			
	Creative Self-Efficacy	.022	.10	[-.174, .218]			
	Paradox Mindset	.247	.13	[-.016, .510]			

Indirect Effects	*β*	Boot *SE*	Boot 95% CI
Opening Behaviours → Intrinsic Motivation →Exploration	.099	.05	[.014, .225]
Opening Behaviours → Extrinsic Motivation →Exploration	-.025	.03	[-.109, .033]

Note. $N = 122$; * p < .05; ** p < .01.

Hypothesis 13 states that w*hen taking part in idea generation tasks, followers' intrinsic motivation will mediate the positive relationship between their leaders' opening behaviours and their own idea generation behaviours.* As this is a mediation hypothesis, the same process as before has been followed. Using the PROCESS macro in SPSS I was able to test this hypothesis. Results from this analysis can be seen below in Table 3.25.

The third model is a parallel mediation model, with intrinsic and extrinsic motivations mediating the effect of leader opening behaviours on follower idea generation. The model was significant (R = .56, p < 0.01) and showed that creative self-efficacy [β = .21, 95% C.I. (.059, .366)], as well as intrinsic motivation [*β* = .32, 95% C.I. (.161, .476)] were positive predictors of self-perceived idea generation. The indirect effect results suggest that intrinsic motivation is a significant mediator between leaders' opening behaviours and followers' idea generation [*β* = .13, 95% C.I. (.043, .252)]. Extrinsic motivation showed on the contrary showed no significant mediation effect. Regarding the followers' self-perceived idea generation therefore, H13 can be accepted.

Table 3.25. Mediation Analysis Results – Intrinsic Motivation.

Outcome	Predictor	*β*	SE	95% CI [LLCI, ULCI]	*R*	R^2	*p*
Model 1							

Intrinsic Motivation (T1)					.561	.315	.000
	Opening Behaviours (T1)	.322**	.08	[.170, .473]			
	Openness	.026	.15	[-.275, .326]			
	Positive Affect	.173	.09	[-.007, .353]			
	Creative Self-Efficacy	.379**	.09	[.198, .560]			
	Paradox Mindset	.008	.13	[-.252, .267]			
Model 2							
Extrinsic Motivation (T1)					.347	.120	.010
	Opening Behaviours (T1)	-.263**	.08	[-.431, .-.095]			
	Openness	.263	.17	[-.070, .597]			
	Positive Affect	-.174	.10	[-.374, .025]			
	Creative Self-Efficacy	-.150	.10	[-.351, .051]			
	Paradox Mindset	.099	.15	[-.189, .386]			
Model 3							
Idea Generation					.560	.314	.000
	Opening Behaviours (T1)	.099	.07	[-.031, .229]			
	Intrinsic Motivation (T1)	.318**	.08	[.161, .476]			
	Extrinsic Motivation (T1)	.133	.072	[-.010, .275]			
	Openness	-.072	.12	[-.313, .170]			
	Positive Affect	.056	.07	[-.090, .201]			

Creative Self-Efficacy	.212**	.08	[.059, .366]
Paradox Mindset	-.055	.10	[-.261, .151]

Indirect Effects	β	Boot *SE*	Boot 95% CI
Opening Behaviours → Intrinsic Motivation →Idea Generation	.134	.05	[.043, .252]
Opening Behaviours → Extrinsic Motivation →Idea Generation	-.046	.03	[-.119, .004]

Note. N = 122; * p < .05; ** p < .01.

The same hypothesis was tested using the creativity outcome based on the assessors' ratings. The same process was followed, and analysis was carried out using the SPSS PROCESS macro developed by Professor Hayes (2017). Results from this analysis can be seen below in Table 3.26. The third model, which was a parallel mediation model, with intrinsic and extrinsic motivations mediating the effect of leader opening behaviours on follower creativity was significant (R = .36, $p < 0.05$) and showed that intrinsic motivation was a significant predictor of creativity [β = .28, 95% C.I. (.065, .512)]. Results also showed that surprisingly, the positive affect of the followers was a negative predictor of their creative output [β = -.23, 95% C.I. (-.431, -.018)]. The indirect effect was significant and suggest that intrinsic motivation is a positive mediator between opening leaders' behaviours and followers' creativity [β = .10, 95% C.I. (.012, .234)]. Hence, it can be concluded that H13 is accepted, even with the creativity outcome as rated by the experts.

Table 3.26. Mediation Analysis Results – Intrinsic Motivation.

Outcome	Predictor	β	SE	95% CI [LLCI, ULCI]	R	R^2	p
Model 1							

Intrinsic Motivation (T1)					.561	.315	.000
	Opening Behaviours (T1)	.322**	.08	[.170, .473]			
	Openness	.026	.15	[-.275, .326]			
	Positive Affect	.173	.09	[-.007, .353]			
	Creative Self-Efficacy	.379**	.09	[.198, .560]			
	Paradox Mindset	.008	.13	[-.252, .267]			
Model 2							
Extrinsic Motivation (T1)					.347	.120	.010
	Opening Behaviours (T1)	-.263**	.08	[-.431, .-.095]			
	Openness	.263	.17	[-.070, .597]			
	Positive Affect	-.174	.10	[-.374, .025]			
	Creative Self-Efficacy	-.150	.10	[-.351, .051]			
	Paradox Mindset	.099	.15	[-.189, .386]			
Model 3							
Creativity					.363	.132	.021
	Opening Behaviours (T1)	-.046	.09	[-.231, .138]			
	Intrinsic Motivation (T1)	.282**	.11	[.065, .512]			
	Extrinsic Motivation (T1)	.016	10	[-.186, .512]			
	Openness	.303	.17	[-.040, .645]			
	Positive Affect	-.225*	.10	[-.431, -.018]			

	Creative Self-Efficacy	-.017	.11	[-.235, .201]			
	Paradox Mindset	.010	.15	[-.282, .303]			

Indirect Effects	β	Boot *SE*	Boot 95% CI
Opening Behaviours → Intrinsic Motivation →Creativity	.096	.06	[.012, .234]
Opening Behaviours → Extrinsic Motivation →Creativity	-.004	.03	[-.073, .062]

Note. $N = 122$; * $p < .05$; ** $p < .01$.

Finally, H13 was also tested using the quantity of the ideas that participants came up with. The same process was followed as the previous two tests. The results for this test can be seen below in Table 3.27. The third model is a parallel mediation model, with intrinsic and extrinsic motivations mediating the effect of leader opening behaviours on idea quantity of the followers. The model was significant ($R = .37$, $p < 0.05$), but indicated that opening behaviours was a negative predictor of idea quantity. Results also showed that there was no significant mediating effect of intrinsic motivation, nor extrinsic motivation. This suggests that H13 is not supported when idea quantity is used as the outcome.

Table 3.27. Mediation Analysis Results – Intrinsic Motivation.

Outcome	Predictor	β	SE	95% CI [LLCI, ULCI]	*R*	R^2	*p*
Model 1							
Intrinsic Motivation (T1)					.561	.315	.000
	Opening Behaviours (T1)	.322**	.08	[.170, .473]			
	Openness	.026	.15	[-.275, .326]			

	Positive Affect	.173	.09	[-.007, .353]			
	Creative Self-Efficacy	.379**	.09	[.198, .560]			
	Paradox Mindset	.008	.13	[-.252, .267]			
Model 2							
Extrinsic Motivation (T1)					.347	.120	.010
	Opening Behaviours (T1)	-.263**	.08	[-.431, -.095]			
	Openness	.263	.17	[-.070, .597]			
	Positive Affect	-.174	.10	[-.374, .025]			
	Creative Self-Efficacy	-.150	.10	[-.351, .051]			
	Paradox Mindset	.099	.15	[-.189, .386]			
Model 3							
Idea Quantity					.370	.137	.016
	Opening Behaviours (T1)	-.867*	.34	[-1.53, -.200]			
	Intrinsic Motivation (T1)	.633	.41	[-.174, 1.44]			
	Extrinsic Motivation (T1)	-.145	.37	[-.873, .584]			
	Openness	1.24*	.62	[.004, 2.48]			
	Positive Affect	-.601	.38	[-1.35, .148]			
	Creative Self-Efficacy	.047	.40	[-.740, .834]			
	Paradox Mindset	.044	.53	[-1.01, 1.10]			

Indirect Effects	β	Boot *SE*	Boot 95% CI

Opening Behaviours → Intrinsic Motivation →Idea Quantity	.058	.05	[-.028, .171]
Opening Behaviours → Extrinsic Motivation →Idea Quantity	.011	.03	[-.041, .076]

Note. $N = 122$; * $p < .05$; ** $p < .01$.

Hypothesis 14 suggests a serial mediation where both intrinsic motivation and exploration can act as mediators in order to facilitate the followers' idea generation. H14 states that *when taking part in idea generation tasks, followers' intrinsic motivation and followers' exploration will mediate the positive relationship between their leaders' opening behaviours and their own idea generation behaviours, thus leading to a serial mediation.* In order to test a hypothesis as such, I have used the SPSS PROCESS macro developed by Professor Hayes (2017). The macro was added onto SPSS through a syntax file, and analysis was conducted through syntax as well. As aforementioned, there are several mediation and moderation models and each one has its own model number which has to be entered into the syntax along with the IV, DV and mediators. The model number for this case was no.6 which refers to a sequential mediation, as it is portrayed in my conceptual model (see Figure 3.3). The analysis produced results for three models, as there are two mediators and one dependent variable, each one of them acting as an outcome variable for each model. As previous hypotheses, this one is tested with both self-perceived measures and assessors' ratings. Firstly, analysis is conducted with the self-perceived idea generation of the participants as the dependent variable. Results can be seen in Table 3.28. A relationship in a mediation analysis is not significant if the value of zero (0) falls between the values of the lower and upper level of confidence intervals. Both values of the confidence interval levels need to be either positive or negative for the effect to be significant. As the first three models have been introduced in previous tests, a more in-depth look will be taken on the final model. The fourth model that examined idea generation as an outcome and was significant ($R = .62$, $p < 0.01$). It shows that intrinsic motivation [$\beta = .25$, 95% C.I. (.093, .403)],

exploration [β = .25, 95% C.I. (.109, .385)] and creative self-efficacy [β = .21, 95% C.I. (.061, .353)] are positive predictors of idea generation. The indirect effect showed significant results, suggesting that a serial mediation exists where leaders' opening behaviours lead to intrinsic motivation, which enhances exploration, thus facilitating idea generation [β = .03, 95% C.I. (.002, .079)]. Although the effect is not large, it is nonetheless significant and in a positive direction, thus confirming the assumptions made. On the contrary, extrinsic motivation is not significant in a serial mediation relationship. H14 can be therefore accepted when self-perceived idea generation is used as an outcome. The figure below (see Figure 3.5) demonstrates the results of this serial mediation.

Table 3.28. Serial Mediation Analysis Results –Idea Generation as outcome.

Outcome	Predictor	β	SE	95% CI [LLCI, ULCI]	R	R^2	p
Model 1							
Intrinsic Motivation (T1)					.561	.315	.000
	Opening Behaviours (T1)	.322**	.08	[.170, .473]			
	Openness	.026	.15	[-.275, .326]			
	Positive Affect	.173	.09	[-.007, .353]			
	Creative Self-Efficacy	.379**	.09	[.198, .560]			
	Paradox Mindset	.008	.13	[-.252, .267]			
Model 2							
Extrinsic Motivation (T1)					.490	.249	.000
	Opening Behaviours (T1)	-.126	.08	[-.294, .041]			

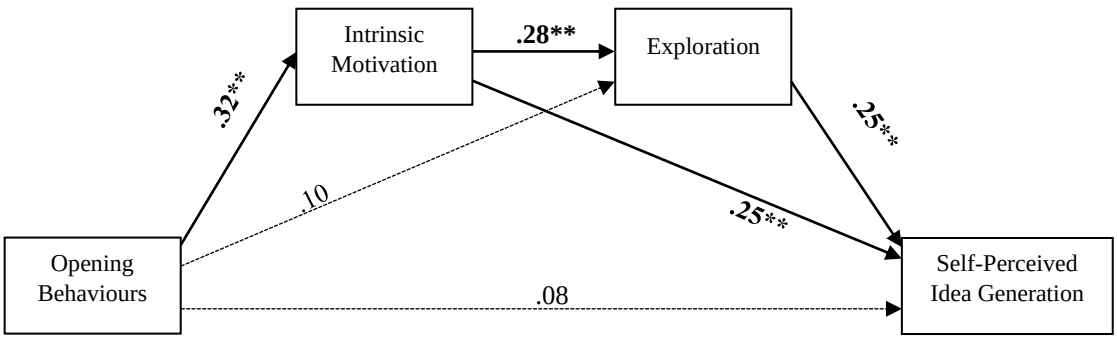
	Intrinsic Motivation (T1)	-.423**	.10	[-.613, -.235]			
	Openness	.274	.16	[-.035, .584]			
	Positive Affect	-.101	.10	[-.289, .087]			
	Creative Self-Efficacy	.011	.10	[-.189, .210]			
	Paradox Mindset	.102	.13	[-.165, .369]			
Model 3							
Exploration					.484	.235	.000
	Opening Behaviours (T1)	.096	.08	[-.070, .262]			
	Intrinsic Motivation (T1)	.284**	.10	[.083, .485]			
	Extrinsic Motivation (T1)	.090	.09	[-.092, .271]			
	Openness	.139	.16	[-.169, .447]			
	Positive Affect	.076	.09	[-.110, .262]			
	Creative Self-Efficacy	.022	.10	[-.174, .218]			
	Paradox Mindset	.247	.13	[-.016, .510]			
Model 4							
Idea Generation					.619	.383	.000
	Opening Behaviours (T1)	.075	.06	[-.050, .199]			
	Intrinsic Motivation (T1)	.248**	.08	[.093, .403]			
	Extrinsic Motivation (T1)	.110	.07	[-.025, .247]			
	Exploration	.247**	.07	[.109, .385]			
	Openness	-.106	.11	[-.337, .125]			

Positive Affect	.037	.07	[-.102, .176]
Creative Self-Efficacy	.207**	.07	[.061, .353]
Paradox Mindset	-.116	.10	[-.315, .083]

Indirect Effects	*β*	Boot *SE*	Boot 95% CI
Opening Behaviours→ Intrinsic Motivation→ Idea Generation	.10	.05	[.025, .208]
Opening Behaviours→ Extrinsic Motivation→ Idea Generation	.10	.02	[-.062, .013]
Opening Behaviours→ Exploration→ Idea Generation	.03	.03	[-.023, .098]
Opening Behaviours→ Intrinsic Motivation→ Exploration→Idea Generation	.03	.02	[.002, .079]
Opening Behaviours→ Extrinsic Motivation→ Exploration→Idea Generation	-.00	.01	[.-022, .005]
Total Indirect Effect	.12	.05	[.021, .224]

Note. $N = 122$; * $p < .05$; ** $p < .01$.

Figure 3.5. Diagram of the results of the serial mediation (Idea Generation)



The same hypothesis (H14) was also tested using the creativity outcome (experts' ratings). Analysis of this test was through the same process as the previous test and results can be seen below in Table 3.29. The fourth model that examined creativity as an outcome and was significant (R = .37, $p < 0.05$). The model showed that intrinsic motivation was a positive predictor of creativity [β = .31, 95% C.I. (.074, .537)] whereas positive affect was a negative predictor [β = -.22, 95% C.I. (-.428, -.013)]. The indirect effect was not significant, suggesting that a serial mediation does not exist, when this creativity outcome is used. In this case, H14 is not supported. A diagram that demonstrates the results of this model can be seen below in Figure 3.6.

Table 3.29. Serial Mediation Analysis Results –Creativity (CAT) as outcome.

Outcome	Predictor	β	SE	95% CI [LLCI, ULCI]	R	R^2	p
Model 1							
Intrinsic Motivation (T1)					.561	.315	.000
	Opening Behaviours (T1)	.322**	.08	[.170, .473]			
	Openness	.026	.15	[-.275, .326]			
	Positive Affect	.173	.09	[-.007, .353]			
	Creative Self-Efficacy	.379**	.09	[.198, .560]			
	Paradox Mindset	.008	.13	[-.252, .267]			
Model 2							
Extrinsic Motivation (T1)					.490	.249	.000
	Opening Behaviours (T1)	-.126	.08	[-.294, .041]			

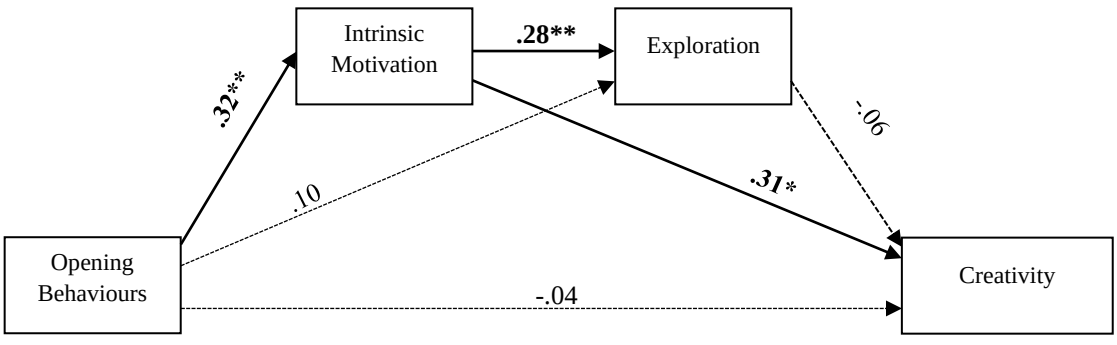
	Intrinsic Motivation (T1)	-.423**	.10	[-.613, -.235]			
	Openness	.274	.16	[-.035, .584]			
	Positive Affect	-.101	.10	[-.289, .087]			
	Creative Self-Efficacy	.011	.10	[-.189, .210]			
	Paradox Mindset	.102	.13	[-.165, .369]			
Model 3							
Exploration					.484	.235	.000
	Opening Behaviours (T1)	.096	.08	[-.070, .262]			
	Intrinsic Motivation (T1)	.284**	.10	[.083, .485]			
	Extrinsic Motivation (T1)	.090	.09	[-.092, .271]			
	Openness	.139	.16	[-.169, .447]			
	Positive Affect	.076	.09	[-.110, .262]			
	Creative Self-Efficacy	.022	.10	[-.174, .218]			
	Paradox Mindset	.247	.13	[-.016, .510]			
Model 4							
Creativity					.366	.134	.033
	Opening Behaviours (T1)	-.041	.09	[-.227, .146]			
	Intrinsic Motivation (T1)	.305*	.12	[.074, .537]			
	Extrinsic Motivation (T1)	.021	.10	[-.182, .224]			
	Exploration	-.061	.10	[-.267, .146]			
	Openness	.311	.17	[-.034, .656]			

Positive Affect	-.220*	.10	[-.428, -.013]
Creative Self-Efficacy	-.015	.11	[-.234, .203]
Paradox Mindset	.025	.15	[-.273, .323]

Indirect Effects	*β*	Boot *SE*	Boot 95% CI
Opening Behaviours→ Intrinsic Motivation→ Creativity	.10	.06	[.014, .236]
Opening Behaviours→ Extrinsic Motivation→ Creativity	-.00	.02	[-.039, .039]
Opening Behaviours→ Exploration→ Creativity	-.01	.02	[-.046, .020]
Opening Behaviours→ Intrinsic Motivation→ Exploration→ Creativity	-.01	.01	[-.033, .015]
Opening Behaviours→ Extrinsic Motivation→ Exploration→ Creativity	.00	.00	[-.004, .007]
Total Indirect Effect	.09	.05	[-.004, .203]

Note. $N = 122$; * $p < .05$; ** $p < .01$.

Figure 3.6. Diagram of the results of the serial mediation (Creativity)



The final test of H14 looks at the number of ideas that participants have generated. The serial mediation analysis using the PROCESS macro was followed here as well. The results of this

test can be seen below in Table 3.30. The fourth model of this analysis, which examined idea quantity as the outcome, was significant (R = .39, $p < 0.05$) and shows that opening leader behaviours were a negative predictor of idea quantity [β = -.82, 95% C.I. (-1.49, -.151)], but intrinsic motivation [β = .77, 95% C.I. (-.059, 1.61)] and openness to new experiences [β = 1.31, 95% C.I. (.072, 2.55)] were both positive predictors. The indirect effects showed that no significant mediators, thus suggesting that a serial mediation relationship does not exist when the quantity of ideas is used as the outcome. H14 is therefore not supported when idea quantity is used as the outcome.

Table 3.30. Serial Mediation Analysis Results –Idea Quantity as outcome.

Outcome	Predictor	β	SE	95% CI [LLCI, ULCI]	R	R^2	p
Model 1							
Intrinsic Motivation (T1)					.561	.315	.000
	Opening Behaviours (T1)	.322**	.08	[.170, .473]			
	Openness	.026	.15	[-.275, .326]			
	Positive Affect	.173	.09	[-.007, .353]			
	Creative Self-Efficacy	.379**	.09	[.198, .560]			
	Paradox Mindset	.008	.13	[-.252, .267]			
Model 2							
Extrinsic Motivation (T1)					.490	.249	.000
	Opening Behaviours (T1)	-.126	.08	[-.294, .041]			

	Intrinsic Motivation (T1)	-.423**	.10	[-.613, -.235]			
	Openness	.274	.16	[-.035, .584]			
	Positive Affect	-.101	.10	[-.289, .087]			
	Creative Self-Efficacy	.011	.10	[-.189, .210]			
	Paradox Mindset	.102	.13	[-.165, .369]			
Model 3							
Exploration					.484	.235	.000
	Opening Behaviours (T1)	.096	.08	[-.070, .262]			
	Intrinsic Motivation (T1)	.284**	.10	[.083, .485]			
	Extrinsic Motivation (T1)	.090	.09	[-.092, .271]			
	Openness	.139	.16	[-.169, .447]			
	Positive Affect	.076	.09	[-.110, .262]			
	Creative Self-Efficacy	.022	.10	[-.174, .218]			
	Paradox Mindset	.247	.13	[-.016, .510]			
Model 4							
Idea Quantity					.387	.150	.016
	Opening Behaviours (T1)	-.819*	.33	[-1.49, -.151]			
	Intrinsic Motivation (T1)	.773	.42	[-.059, 1.61]			
	Extrinsic Motivation (T2)	-.101	.37	[-.830, .629]			
	Exploration	-.493	.37	[-1.23, .250]			
	Openness	1.31*	.62	[.072, 2.55]			

Positive Affect	-.563	.38	[-1.31, .182]
Creative Self-Efficacy	.058	.40	[-.727, .843]
Paradox Mindset	.166	.54	[.903, 1.24]

Indirect Effects	*β*	Boot *SE*	Boot 95% CI
Opening Behaviours→ Intrinsic Motivation→ Idea Quantity	.25	.20	[-.042, .727]
Opening Behaviours→ Extrinsic Motivation→ Idea Quantity	.01	.06	[-.090, .158]
Opening Behaviours→ Exploration→ Idea Quantity	-.05	.07	[-.232, .040]
Opening Behaviours→ Intrinsic Motivation→ Exploration→ Idea Quantity	-.05	.04	[-.174, .014]
Opening Behaviours→ Extrinsic Motivation→ Exploration→ Idea Quantity	.01	.01	[-.012, .042]
Total Indirect Effect	.19	.19	[-.149, .614]

Note. $N = 122$; * $p < .05$; ** $p < .01$.

H15 states that *when taking part in idea implementation tasks, followers will demonstrate higher extrinsic motivation when their manager demonstrates closing behaviours.* As this hypothesis implies that closing behaviours will predict extrinsic motivation, a linear regression is needed. As before, I used a hierarchical linear regression to test this hypothesis, where I examine the four control variables in the first step, and I add the main predictor of closing behaviours in the second step. The results of this analysis can be seen below in Table 3.31. The first model was not statistically significant ($F(4,121) = 1.33$, $p > 0.05$). The adjusted R^2 indicated that only 1% of the variance in participants' extrinsic motivation can be explained by variance in the four control variables. The second model however, was statistically significant ($F(5,121) = 3.63$, $p < 0.01$) and showed that approximately 10% of the variance in intrinsic

motivation can be explained when introduced leaders' closing behaviours. This suggests that leaders' closing behaviours have an effect of about 10% on followers' intrinsic motivation. Closing behaviours were a significant predictor of extrinsic motivation ($\beta = .31$, $p < 0.01$). The model also indicated that creative self-efficacy was a negative predictor of extrinsic motivation ($\beta = -.24$, $p < 0.05$). Results suggest therefore that for every unit increase in leaders' closing behaviours, the participants' extrinsic motivation was increased by 0.34. Since closing leaders' behaviours (during the correct timing) are a positive predictor of follower extrinsic motivation, it can be concluded that H15 is accepted.

Table 3.31. Results of regression analysis – Extrinsic Motivation.

		Dependent variable: Extrinsic Motivation (T2)							
		Unstandardised Coefficients		Standardised Coefficients					
Step	***Predictor***	***B***	***SE***	***β***	***P***	***R^2***	***ΔR^2***	***R^2 change***	***F***
1						.043	.011	.043	1.33
	Positive affect	-.153	.103	-.139	.140				
	Openness	.268	.172	.172	.122				
	Creative self-efficacy	-.140	.103	-.154	.174				
	Paradox mindset	-.001	.146	-.001	.993				
2						.135	.098	.092	3.63**
	Positive affect	-.120	.098	-.109	.226				
	Openness	.323	.164	.201	.059				
	Creative self-efficacy	-.214	.100	-.235*	.035				
	Paradox mindset	.064	.141	.045	.652				

Closing Behaviours (T2)	.341	.097	.312**	.001

Note. $N = 122$; * $p < .05$; ** $p < .01$.

Hypothesis 16 stated that *when taking part in idea implementation tasks, followers' extrinsic motivation will mediate the positive relationship between their leaders' closing behaviours and their own exploitation.* As this was a mediation hypothesis, I have used the PROCESS macro for SPSS (Hayes, 2017). The results of this analysis can be seen below in Table 3.32. The mediation analysis presents the results in three models. As in previous hypotheses testing, I also added intrinsic motivation, alongside extrinsic motivation for comparison purposes. Before testing the mediation therefore, two regression models were run to explore the effect of leader closing behaviours on the two type of motivation. The first model examined extrinsic motivation as an outcome and it was significant ($R = .37$, $p < 0.01$). In particular, the model showed that closing behaviours were a positive predictor of extrinsic motivation [$\beta = .34$, 95% C.I. (.149, .533)]. Moreover, creative self-efficacy was a negative predictor of extrinsic motivation [$\beta = -.21$, 95% C.I. (-.412, -.016)]. The second model examined intrinsic motivation as the outcome and was also significant ($R = .60$, $p < 0.05$). It showed that closing leader behaviours were a negative predictor of exploitation [$\beta = -.20$, 95% C.I. (-.385, -.020]. The third model is a parallel mediation model, with extrinsic and intrinsic motivations mediating the effect of leader closing behaviours on follower exploitation**.** The third model which examined exploitation as the outcome was significant ($R = .47$, $p < 0.01$) and showed that intrinsic motivation was its only predictor [$\beta = .40$, 95% C.I. (.202, .607)]. The results of this analysis showed that the indirect effects of extrinsic motivation were not significant, suggesting that extrinsic motivation is not a significant mediator between leaders' closing behaviours and followers' exploitation. On the contrary, the indirect effects of intrinsic motivation were

significant, but in a negative direction [β = -.11, 95% C.I. (-.222, -.032)]. Hence, H16 is not supported.

Table 3.32. Mediation Analysis Results – Extrinsic Motivation.

Outcome	Predictor	β	SE	95% CI [LLCI, ULCI]	R	R^2	p
Model 1							
Extrinsic Motivation (T2)					.368	.135	.004
	Closing Behaviours (T2)	.341**	.10	[.149, .533]			
	Openness	.313	.16	[-.013, .639]			
	Positive Affect	-.120	.10	[-.315, .075]			
	Creative Self-Efficacy	-.214*	.10	[-.412, -.016]			
	Paradox Mindset	.064	.14	[-.215, .343]			
Model 2							
Intrinsic Motivation (T2)					.597	.356	.000
	Closing Behaviours (T2)	-.203*	.09	[-.385, -.020]			
	Extrinsic Motivation (T2)	-.324**	.08	[-.490, -.158]			
	Openness	.129	.15	[-.169, .428]			
	Positive Affect	.162	.09	[-.015, .339]			
	Creative Self-Efficacy	.257**	.09	[.074, .440]			
	Paradox Mindset	.106	.13	[-.146, .359]			
Model 3							

Exploitation					.487	.237	.001
	Closing Behaviours (T2)	.160	.11	[-.045, .365]			
	Extrinsic Motivation (T2)	.150	.10	[-.044, .343]			
	Intrinsic Motivation (T2)	.404**	.10	[.202, .607]			
	Openness	-.081	.17	[-.410, .248]			
	Positive Affect	.034	.10	[-.163, .231]			
	Creative Self-Efficacy	.191	.11	[-.016, .398]			
	Paradox Mindset	.030	.14	[-.248, .308]			

Indirect Effects	*β*	Boot *SE*	Boot 95% CI
Closing Behaviours → Extrinsic Motivation →Exploitation	.04	.03	[-.014, .117]
Closing Behaviours → Intrinsic Motivation →Exploitation	-.11	.05	[-.222, -.032]

Note. N = 122;
CI = Confidence Interval; LLCI = Lower-Level Confidence Interval; ULCI = Upper-Level Confidence Interval.
* p < 0.05; ** p < 0.01.

Hypothesis 17 states *that when taking part in idea implementation tasks, followers' extrinsic motivation will mediate the positive relationship between their leaders' closing behaviours and their own idea implementation behaviours.* As this was also a mediation hypothesis, the same process was followed. Results of this analysis can be seen in Table 3.33. The first two models of the results from this analysis are the same as the one from the previous hypothesis. The third model is a parallel mediation model, with extrinsic and intrinsic motivations mediating the effect of leader closing behaviours on follower idea implementation. The third model, which examined idea implementation as an outcome was significant (R = .72, $p < 0.01$). The model

shows that intrinsic motivation [β = .28, 95% C.I. (.141, .410], positive affect [β = .17, 95% C.I. (.035, .297)], and creative self-efficacy [β = .41, 95% C.I. (.267, .543)] were positive predictors of idea implementation. The indirect effects however were not significant, suggesting that extrinsic motivation is not a significant mediator between closing leader behaviours and follower self-perceived idea implementation. Intrinsic motivation was however a significant mediator but in a negative direction [β = -.09, 95% C.I. (-.163, -.034)]. Hence it can be concluded that H17 is not supported when the self-perceived measure of idea implementation is used.

Table 3.33. Mediation Analysis Results – Extrinsic Motivation.

Outcome	Predictor	β	SE	95% CI [LLCI, ULCI]	R	R^2	p
Model 1							
Extrinsic Motivation (T2)					.368	.135	.004
	Closing Behaviours (T2)	.341**	.10	[.149, .533]			
	Openness	.313	.16	[-.013, .639]			
	Positive Affect	-.120	.10	[-.315, .075]			
	Creative Self-Efficacy	-.214*	.10	[-.412, -.016]			
	Paradox Mindset	.064	.14	[-.215, .343]			
Model 2							
Intrinsic Motivation (T2)					.597	.356	.000
	Closing Behaviours (T2)	-.203*	.09	[-.385, -.020]			
	Extrinsic Motivation (T2)	-.324**	.08	[-.490, -.158]			

	Openness	.129	.15	[-.169, .428]			
	Positive Affect	.162	.09	[-.015, .339]			
	Creative Self-Efficacy	.257**	.09	[.074, .440]			
	Paradox Mindset	.106	.13	[-.146, .359]			
Model 3							
Idea Implementation					.727	.529	.000
	Closing Behaviours (T2)	.085	.07	[-.051, .221]			
	Extrinsic Motivation (T2)	.010	.07	[-.119, .139]			
	Intrinsic Motivation (T2)	.276**	.07	[.141, .410]			
	Openness	-.064	.11	[-.282, .155]			
	Positive Affect	.166*	.07	[-.035, .297]			
	Creative Self-Efficacy	.405**	.07	[.267, .543]			
	Paradox Mindset	-.025	.09	[-.210, .159]			

Indirect Effects	β	Boot *SE*	Boot 95% CI
Closing Behaviours → Extrinsic Motivation →Idea Implementation	.00	.03	[-.046, .067]
Closing Behaviours → Intrinsic Motivation →Idea Implementation	-.09	.03	[-.163, -.034]

Note. N = 122;
CI = Confidence Interval; LLCI = Lower-Level Confidence Interval; ULCI = Upper-Level Confidence Interval.
* p < 0.05; ** p < 0.01.

Hypothesis 17 was also examined using the experts' scores of implementation. The same process was followed as before, and results can be seen in Table 3.34. The third model is a

parallel mediation model, with extrinsic and intrinsic motivations mediating the effect of leader closing behaviours on follower implementation (as rated by the experts)**.** The model was not statistically significant and showed no significant predictors of implementation. The indirect effects were non-significant suggesting that extrinsic motivation is not a significant mediator between leaders closing behaviours and followers' implementation as rated by the experts. Similarly, intrinsic motivation, was also not a significant mediator. H17 is not supported therefore, when the raters' scores of implementation are used as the dependent variable.

Table 3.34. Mediation Analysis Results – Extrinsic Motivation.

Outcome	Predictor	*β*	SE	95% CI [LLCI, ULCI]	*R*	R^2	*p*
Model 1							
Extrinsic Motivation (T2)					.368	.135	.004
	Closing Behaviours (T2)	.341**	.10	[.149, .533]			
	Openness	.313	.16	[-.013, .639]			
	Positive Affect	-.120	.10	[-.315, .075]			
	Creative Self-Efficacy	-.214*	.10	[-.412, -.016]			
	Paradox Mindset	.064	.14	[-.215, .343]			
Model 2							
Intrinsic Motivation (T2)					.597	.356	.000
	Closing Behaviours (T2)	-.203*	.09	[-.385, -.020]			
	Extrinsic Motivation (T2)	-.324**	.08	[-.490, -.158]			

	Openness	.129	.15	[-.169, .428]			
	Positive Affect	.162	.09	[-.015, .339]			
	Creative Self-Efficacy	.257**	.09	[.074, .440]			
	Paradox Mindset	.106	.13	[-.146, .359]			
Model 3							
Implementation					.287	.082	.189
	Closing Behaviours (T2)	.189	.09	[-.018, .357]			
	Extrinsic Motivation (T2)	.017	.08	[-.145, .179]			
	Intrinsic Motivation (T2)	.126	.09	[-.044, .295]			
	Openness	.206	.14	[-.069, .481]			
	Positive Affect	-.053	.08	[-.218, .112]			
	Creative Self-Efficacy	-.115	.09	[-.288, .058]			
	Paradox Mindset	-.153	.12	[-.385, .079]			

Indirect Effects	β	Boot *SE*	Boot 95% CI
Closing Behaviours → Extrinsic Motivation → Implementation	.01	.03	[-.058, .074]
Closing Behaviours → Intrinsic Motivation → Implementation	-.05	.03	[-.113, .016]

Note. $N = 122$;
CI = Confidence Interval; LLCI = Lower-Level Confidence Interval; ULCI = Upper-Level Confidence Interval.
* $p < 0.05$; ** $p < 0.01$.

The last hypothesis, H18, stated that when taking part in idea implementation tasks, followers' extrinsic motivation and followers' exploitation will mediate the positive relationship between

their leaders' closing behaviours and their own idea implementation behaviours, thus leading to a serial mediation. Using the PROCESS macro (Hayes, 2017) I carried out a serial mediation analysis to test this hypothesis. For the first test, I used the self-perceived idea implementation of the followers. The results of this analysis can be seen below in Table 3.35. The final model which examined idea implementation as the outcome was significant (R = .74, $p < 0.01$) and showed four positive predictors of idea implementation. The model indicated that intrinsic motivation [β = .22, 95% C.I. (.082, .365)], exploitation [β = .13, 95% C.I. (.077, .313)], positive affect [β = .16, 95% C.I. (.032, .291)] and creative self-efficacy [β = .38, 95% C.I. (.243, 519)] were all significant predictors of follower idea implementation. The results of the indirect effects analysis however, showed that are no significant mediators, hence a serial mediation does not exist in this case. Therefore, it can be concluded that H18 is not supported when self-perceived idea implementation is used as the outcome. The serial mediation containing intrinsic motivation in place of extrinsic motivation was also not significant. The diagram in Figure 3.7 shows the results of this analysis.

Table 3.35. Serial Mediation Analysis Results – Idea Implementation as outcome.

Outcome	Predictor	β	SE	95% CI [LLCI, ULCI]	R	R^2	p
Model 1							
Extrinsic Motivation (T2)					.368	.135	.004
	Closing Behaviours (T2)	.341**	.10	[.149, .533]			
	Openness	.313	.16	[-.013, .639]			
	Positive Affect	-.120	.10	[-.315, .075]			

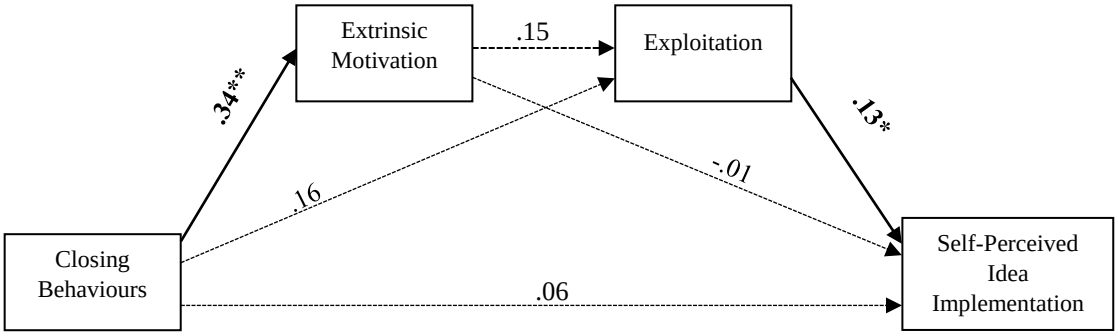
	Creative Self-Efficacy	-.214*	.10	[-.412, -.016]			
	Paradox Mindset	.064	.14	[-.215, .343]			
Model 2							
Intrinsic Motivation (T2)					.597	.356	.000
	Closing Behaviours (T2)	-.203*	.09	[-.385, -.020]			
	Extrinsic Motivation (T2)	-.324**	.08	[-.490, -.158]			
	Openness	.129	.15	[-.169, .428]			
	Positive Affect	.162	.09	[-.015, .339]			
	Creative Self-Efficacy	.257**	.09	[.074, .440]			
	Paradox Mindset	.106	.13	[-.146, .359]			
Model 3							
Exploitation					.487	.237	.000
	Closing Behaviours (T2)	.160	.10	[-.045, .365]			
	Extrinsic Motivation (T2)	.150	.10	[-.044, .344]			
	Intrinsic Motivation (T2)	.404**	.10	[.202, .607]			
	Openness	-.081	.17	[-.410, .248]			
	Positive Affect	.034	.10	[-.163, .231]			
	Creative Self-Efficacy	.191	.10	[-.016, .398]			
	Paradox Mindset	.030	.14	[-.248, .308]			
Model 4							
Idea Implementation					.739	.547	.000

Closing Behaviours (T2)	.065	.07	[-.071, .200]
Extrinsic Motivation (T2)	-.010	.06	[-.138, .119]
Intrinsic Motivation (T2)	.224**	.07	[.082, .365]
Exploitation	.128*	.06	[.007, .250]
Openness	-.053	.11	[-.269, .163]
Positive Affect	.162*	.07	[.032, .219]
Creative Self-Efficacy	.381**	.07	[.243, .519]
Paradox Mindset	-.029	.09	[-.211, .153]

Indirect Effects	β	Boot *SE*	Boot 95% CI
Closing Behaviours → Extrinsic Motivation → Idea Implementation	-.00	.03	[-.052, .061]
Closing Behaviours → Intrinsic Motivation → Idea Implementation	-.05	.03	[-.105, -.007]
Closing Behaviours → Exploitation → Idea Implementation	.02	.02	[-.010, .062]
Closing Behaviours → Extrinsic Motivation → Exploitation→ Idea Implementation	.01	.01	[-.003, .023]
Closing Behaviours → Intrinsic Motivation → Exploitation→ Idea Implementation	-.01	.01	[-.031, .001]
Total Indirect Effects	-.06	.04	[.145, .010]

Note. $N = 122$;
CI = Confidence Interval; LLCI = Lower-Level Confidence Interval; ULCI = Upper-Level Confidence Interval.
* $p < 0.05$; ** $p < 0.01$.

Figure 3.7. Diagram of the results of the serial mediation (Idea Implementation)



Hypothesis 18 was also tested using the implementation scores from the experts. The same process was followed as the previous test. The results from this test can be seen below in Table 3.36. The final model which examined implementation as the outcome of the potential serial mediation was not significant. The model showed no significant predictors of this outcome. The indirect effects of this relationship were also non-significant, which imply that a serial mediation does not exist in this case. Intrinsic motivation also showed no signs of being a significant mediator or serial mediator in this hypothesis. Hence, it can be concluded that H18 is not supported, even when the experts' implementation scores are used. Results from this test can also be seen visually in Figure 3.8.

Table 3.36. Serial Mediation Analysis Results – Implementation as outcome.

Outcome	Predictor	*β*	SE	95% CI [LLCI, ULCI]	*R*	R^2	*p*
Model 1							
Extrinsic Motivation (T2)					.368	.135	.004
	Closing Behaviours (T2)	.341**	.10	[.149, .533]			
	Openness	.313	.16	[-.013, .639]			

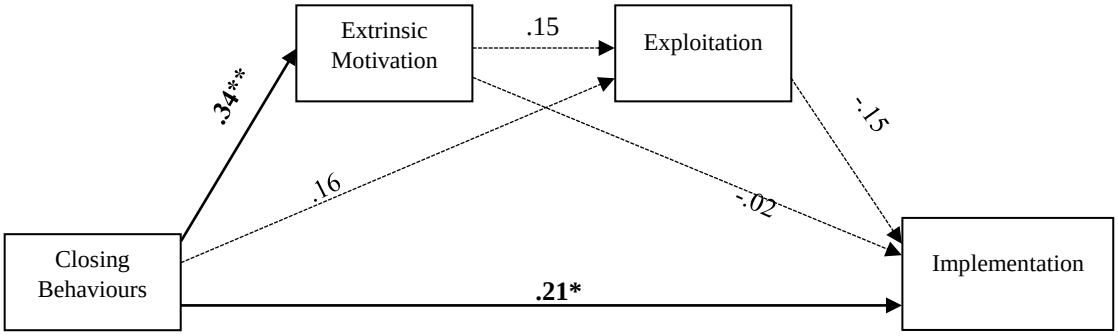
	Positive Affect	-.120	.10	[-.315, .075]			
	Creative Self-Efficacy	-.214*	.10	[-.412, -.016]			
	Paradox Mindset	.064	.14	[-.215, .343]			
Model 2							
Intrinsic Motivation (T2)					.597	.356	.000
	Closing Behaviours (T2)	-.203*	.09	[-.385, -.020]			
	Extrinsic Motivation (T2)	-.324**	.08	[-.490, -.158]			
	Openness	.129	.15	[-.169, .428]			
	Positive Affect	.162	.09	[-.015, .339]			
	Creative Self-Efficacy	.257**	.09	[.074, .440]			
	Paradox Mindset	.106	.13	[-.146, .359]			
Model 3							
Exploitation					.487	.237	.000
	Closing Behaviours (T2)	.160	.10	[-.045, .365]			
	Extrinsic Motivation (T2)	.150	.10	[-.044, .344]			
	Intrinsic Motivation (T2)	.404	.10	[.202, .607]			
	Openness	-.081	.17	[-.410, .248]			
	Positive Affect	.034	.10	[-.163, .231]			
	Creative Self-Efficacy	.191	.10	[-.016, .398]			
	Paradox Mindset	.030	.14	[-.248, .308]			
Model 4							

Implementation					.332	.101	.096
	Closing Behaviours (T2)	.212*	.09	[.041, .383]			
	Extrinsic Motivation (T2)	.038	.08	[-.123, .200]			
	Intrinsic Motivation (T2)	.184*	.09	[.006, .363]			
	Exploitation	-.145	.08	[-.298, .008]			
	Openness	.194	.14	[-.078, .466]			
	Positive Affect	-.048	.08	[-.211, .115]			
	Creative Self-Efficacy	-.087	.09	[.-261, .086]			
	Paradox Mindset	-.148	.12	[-.378, .081]			

Indirect Effects	β	Boot *SE*	Boot 95% CI
Closing Behaviours → Extrinsic Motivation → Implementation	.02	.03	[-.045, .080]
Closing Behaviours → Intrinsic Motivation → Implementation	-.04	.03	[-.108, .003]
Closing Behaviours → Exploitation → Implementation	-.03	.02	[-.080, .011]
Closing Behaviours → Extrinsic Motivation → Exploitation→ Implementation	-.01	.01	[-.030, .004]
Closing Behaviours → Intrinsic Motivation → Exploitation→ Implementation	.01	.01	[-.002, .045]
Total Indirect Effects	-.07	.05	[-.158, .022]

Note. $N = 122$;
CI = Confidence Interval; LLCI = Lower-Level Confidence Interval; ULCI = Upper-Level Confidence Interval.
* $p < 0.05$; ** $p < 0.01$.

Figure 3.8. Diagram of the results of the serial mediation (Implementation)



Overall, the results from this study were mixed. By using two measures to assess the participants creativity and implementation outcomes, I was able to get a better understanding of which construct show promise for future research, and which might need further examination. The table below (see Table 3.37) shows all the hypotheses and their results.

Table 3.37. Results of all hypotheses.

Hypothesis No.	**Hypothesis.**	**Result** (Self-perceived)	**Result** (CAT)	**Outcome**
1	*When taking part in idea generation tasks, followers will demonstrate higher exploration when their manager demonstrates opening behaviours.*	Accepted	*N/A*	**Full Support**
2	*When taking part in idea generation tasks, followers will demonstrate higher idea generation behaviours when their manager demonstrates opening behaviours.*	Accepted	-Not Supported (NS) - Not Supported (NEG)	**Partial Support**
3	*When taking part in idea generation tasks, followers' exploration will mediate the positive relationship between their leaders' opening behaviours and their own idea generation behaviours.*	Accepted	- Not Supported (NS) - Not Supported (NS)	**Partial Support**

4	*When taking part in idea implementation tasks, followers will demonstrate higher exploitation when their manager demonstrates closing behaviours.*	Not Supported (NS)	*N/A*	**No Support**
5	*When taking part in idea implementation tasks, followers will demonstrate higher idea implementation behaviours when their manager demonstrates closing behaviours.*	Not Supported (NS)	Not Supported (NS)	**No Support**
6	*When taking part in idea implementation tasks, followers' exploitation will mediate the positive relationship between their leaders' closing behaviours and their own idea implementation behaviours.*	Not Supported (NS)	Not Supported (NS)	**No Support**
7	*Follower ambidexterity is higher when the leader demonstrates temporal flexibility in line with innovation stages than when they don't.*	Not Supported (NS)	*N/A*	**No Support**
8	*Follower innovative work behaviours is higher when the leader demonstrates temporal flexibility in line with innovation stages than when they don't.*	Not Supported (NS)	Not Supported (NS)	**No Support**
9	*The positive effect of the leaders' opening behaviours during the idea generation phase on employee ambidexterity, is stronger when the leaders' closing behaviours during the idea implementation phase are high.*	Not Supported (NS)	*N/A*	**No Support**
10	*The positive effect of the leaders' opening behaviours during the idea generation phase on follower IWB, is stronger when the leaders' closing behaviours during the idea implementation phase are high.*	Not Supported (NS)	Not Supported (NS)	**No Support**

11	*When taking part in idea generation tasks, followers will demonstrate higher intrinsic motivation when their manager demonstrates opening behaviours.*	Accepted	*N/A*	**Full Support**
12	*When taking part in idea generation tasks, followers' intrinsic motivation will mediate the positive relationship between their leaders' opening behaviours and their own exploration.*	Accepted	*N/A*	**Full Support**
13	*When taking part in idea generation tasks, followers' intrinsic motivation will mediate the positive relationship between their leaders' opening behaviours and their own idea generation behaviours.*	Accepted	- Accepted - Not Supported (NS)	**Partial Support**
14	*When taking part in idea generation tasks, followers' intrinsic motivation and followers' exploration will mediate the positive relationship between their leaders' opening behaviours and their own idea generation behaviours, thus leading to a serial mediation.*	Accepted	- Not Supported (NS) - Not Supported (NS)	**Partial Support**
15	*When taking part in idea implementation tasks, followers will demonstrate higher extrinsic motivation when their manager demonstrates closing behaviours.*	Accepted	*N/A*	**Full Support**
16	*When taking part in idea implementation tasks, followers' extrinsic motivation will mediate the positive relationship between their leaders' closing behaviours and their own exploitation.*	Not Supported (NS)	*N/A*	**No Support**
17	*When taking part in idea implementation tasks, followers' extrinsic motivation will mediate the positive relationship between their leaders' closing behaviours and their own idea implementation behaviours.*	Not Supported (NS)	Not Supported (NS)	**No Support**

18	*When taking part in idea implementation tasks, followers' extrinsic motivation and followers' exploitation will mediate the positive relationship between their leaders' closing behaviours and their own idea implementation behaviours, thus leading to a serial mediation.*	Not Supported (NS)	Not Supported (NS)	**No Support**

Note.
Result (Self-perceived) = self-reported measures,
Result (CAT) = consensual assessment technique scores. Hypotheses involving idea generation were assessed using CAT creativity scores and idea quantity scores. Hypotheses involving idea implementation were assessed using CAT implementation scores. Outcome = The overall outcome of the hypotheses based on all tests. NS = Not Significant, NG = Significant but Negative Direction.

3.4.2. Supplementary Analysis

Further analysis was conducted to find whether some constructs can have a relationship with ambidextrous leadership or innovation. The first variable that is examined is paradox mindset. Due to its past significant relationships with innovation (Liu, Xu & Zhang, 2020; Miron-Spektor et al., 2018), paradox mindset is examined for main effects on innovative work behaviours through self-assess measures as well as the experts' scores.

To test whether paradox mindset is positively related with innovation, a hierarchical linear regression is used where in the first step three control variables are used, and in the second step, the paradox mindset is used. The results of this table can be found below in Table 3.38. The first model was significant ($F(3,121) = 22.79$, $p < 0.01$) suggesting that over 35% of the variance in IWB can be explained by the variance of the three control variables. Specifically, positive affect ($\beta = .19$, $p < 0.05$), and creative self-efficacy ($\beta = .56$, $p < 0.01$) were both positive predictors of IWB. The second model was also significant ($F(4,121) = 16.95$, $p < 0.01$), however the change was not significant. Introducing paradox mindset in the model made surprisingly no difference at all (0% change), however the variable was not significant. Positive affect ($\beta = .19$, $p < 0.05$), and creative self-efficacy ($\beta = .56$, $p < 0.01$) were both positive

predictors of IWB. It can be said therefore that paradox mindset does not significantly predict self-perceived innovative work behaviours of the followers.

Table 3.38. Results of regression analysis: Innovative Work Behaviours.

Dependent variable: IWB

		Unstandardised Coefficients		Standardised Coefficients					
Step	***Predictor***	***B***	***SE***	***β***	***P***	***R^2***	***ΔR^2***	***R^2 change***	***F***
1						.367	.351	.367	22.79**
	Positive affect	.159	.064	.189*	.014				
	Openness	-.042	.105	-.035	.688				
	Creative self-efficacy	.392	.062	.557**	.000				
2						.367	.345	.000	16.95**
	Positive affect	.159	.064	.188*	.015				
	Openness	-.043	.108	-.036	.692				
	Creative self-efficacy	.391	.064	.556**	.000				
	Paradox mindset	.002	.092	.002	.980				

Note. $N = 122$; * $p < .05$; ** $p < .01$.

The same test was conducted with the CAT score of innovation. The results of this analysis were not significant in either model. The change in variance was about 0% and no variables

were significant in predicting Innovation in either model. Results from this analysis can be seen below in Table 3.39.

Table 3.39. Results of regression analysis: Innovation.

Dependent variable: Innovation (CAT)

		Unstandardised Coefficients		Standardised Coefficients					
Step	***Predictor***	***B***	***SE***	***β***	***P***	***R^2***	***ΔR^2***	***R^2 change***	***F***
1						.047	.022	.047	1.92
	Positive affect	-.115	.074	-.143	.124				
	Openness	.217	.122	.191	.078				
	Creative self-efficacy	.003	.072	.005	.963				
2						.050	.018	.004	1.55
	Positive affect	-.109	.075	-.136	.146				
	Openness	.234	.125	.205	.064				
	Creative self-efficacy	.017	.075	.026	.818				
	Paradox mindset	-.071	.107	-.069	.507				

Note. $N = 122$; * $p < .05$; ** $p < .01$.

I also wanted to examine whether individuals who experience a state of flow are more creative, as shown by past studies (MacDonald et al., 2006; Schutte & Malouff, 2020; Zubari & Kamal 2015a, 2015b). A hierarchical linear regression was used with the control variables during the first step and the predictor of flow in the second step. As Flow was linked with creativity, then

the dependent variables used are the creativity related ones. The first test examined whether flow predicts followers' self-perceived idea generation. The results of this analysis can be seen below in Table 3.40. The first model was significant (F (4,121) = 6.06, $p < 0.01$) indicating that about a 17% of variance in idea generation can be explained by the variance in the four control variables. Creative self-efficacy was a strong positive predictor of idea generation (β = .34, $p < 0.01$). The second model was also significant (F (5,121) = 8.07, $p < 0.01$) and suggested that variance in flow can explain nearly 9% of the variance in idea generation. The model indicated that flow is a strong positive predictor of idea generation (β = .36, $p < 0.01$). Hence it can be said that flow predicts idea generation of the followers.

Table 3.40. Results of regression analysis: Idea Generation.

Dependent variable: Idea Generation

		Unstandardised Coefficients		Standardised Coefficients					
Step	***Predictor***	***B***	***SE***	***β***	***P***	***R^2***	***ΔR^2***	***R^2 change***	***F***
1						.172	.143	.172	6.06**
	Positive affect	.099	.078	.110	.208				
	Openness	-.033	.130	-.026	.803				
	Creative self-efficacy	.289	.078	.338**	.000				
	Paradox Mindset	.006	.111	.005	.955				
2						.258	.226	.086	8.07**
	Positive affect	.048	.075	.053	.527				

	Openness	.070	.127	.055	.584
	Creative self-efficacy	.140	.084	.188	.100
	Paradox mindset	-.054	.107	-.047	.612
	Flow	.485	.132	.363**	.000

Note. $N = 122$; * $p < .05$; ** $p < .01$.

The same test was also conducted using the CAT outcomes. The results from this analysis can be seen below in Table 3.41. The results of this analysis were insignificant all round, suggesting that no variables are significant enough to predict the creativity of the followers as rated by the experts.

Table 3.41. Results of regression analysis: Creativity (CAT).

Dependent variable: Creativity

		Unstandardised Coefficients		Standardised Coefficients					
Step	***Predictor***	***B***	***SE***	***β***	***P***	R^2	ΔR^2	R^2 ***change***	***F***
1						.074	.042	.074	2.34
	Positive affect	-.175	.104	-.155	.095				
	Openness	.313	.174	.195	.074				
	Creative self-efficacy	.084	.104	.090	.420				
	Paradox Mindset	.026	.148	.018	.863				
2						.077	.037	.002	1.92

Positive affect	-.186	.106	-.165	.082
Openness	.335	.179	.209	.064
Creative self-efficacy	.052	.119	.056	.661
Paradox mindset	.013	.150	.009	.933
Flow	.104	.186	.061	.578

Note. $N = 122$; * $p < .05$; ** $p < .01$.

Finally, flow was also examined as a predictor of the quantity of ideas that participants came up with during the experiment. The results of this analysis can be seen below in Table 3.42. The results did not indicate any significant changes and there were no significant variables that predicted idea quantity. Overall, it can be said that flow does predict self-perceived idea generation outcomes, but it was not significant when visible outcomes of creativity were assessed such as idea quantity, novelty, feasibility etc.

Table 3.42. Results of regression analysis: Idea Quantity

Dependent variable: Idea Quantity

		Unstandardised Coefficients		Standardised Coefficients					
Step	***Predictor***	***B***	***SE***	***β***	***P***	R^2	ΔR^2	R^2 ***change***	***F***
1						.079	.048	.079	2.52*
	Positive affect	-.508	.375	-.124	.178				
	Openness	1.23	.628	.212	.052				

	Creative self-efficacy	.400	.375	.118	.289				
	Paradox Mindset	-.138	.535	-.026	.797				
2						.082	.042	.002	2.06
	Positive affect	-.470	.383	-.115	.222				
	Openness	1.16	.646	.199	.076				
	Creative self-efficacy	.511	.429	.150	.236				
	Paradox mindset	-.093	.543	-.018	.865				
	Flow	-.363	.671	-.059	.590				

Note. $N = 122$; * $p < .05$; ** $p < .01$.

It is important however to also examine whether leaders' opening behaviours can enable followers to experience a state of flow. As opening behaviours are related with idea generation and creativity outcomes, and flow is also related with the same outcomes, it can be said that opening behaviours may predict followers' flow. The following analysis uses a hierarchical linear regression to examine whether leaders' opening behaviours can predict flow. The results of this analysis may be seen in Table 3.43. The first step includes the four control variables, while the second step includes the leaders' opening behaviours (during the creativity task). The first model is significant ($F (4, 121) = 15.33$, $p < 0.01$) and shows that 34% of the variance in flow can be explain by the variance in the four control variables. More specifically, positive affect ($\beta = .16$, $p < 0.05$), and creative self-efficacy ($\beta = .55$, $p < 0.01$), were positive predictors of flow. On the other hand, openness to new experiences was a negative predictor of flow ($\beta = -.22$, $p < 0.05$). The second model indicated that leaders' opening behaviours were a strong positive predictor of flow, as expected ($\beta = .21$, $p < 0.01$). The R^2 change suggests that more than 4% of the variance in flow can be explained by the leaders' opening behaviours. This

finding further enhances the positive effects that opening behaviours have on follower outcomes, as evidenced through the main analysis

Table 3.43. Results of regression analysis: Flow

Dependent variable: Flow

		Unstandardised Coefficients		Standardised Coefficients					
Step	***Predictor***	***B***	***SE***	***β***	***P***	***R^2***	***ΔR^2***	***R^2 change***	***F***
1						.344	.321	.344	15.33**
	Positive affect	.105	.052	.157*	.046				
	Openness	-.211	.087	-.222*	.017				
	Creative self-efficacy	.307	.052	.552**	.000				
	Paradox Mindset	.125	.074	.145	.094				
2						.286	.359	.042	14.58**
	Positive affect	.097	.050	.145	.058				
	Openness	-.208	.084	-.219*	.015				
	Creative self-efficacy	.325	.051	.583**	.000				
	Paradox mindset	.092	.073	.107	.209				
	Leaders Opening Behaviours (T1)	.120	.042	.209**	.006				

Note. $N = 122$; * $p < .05$; ** $p < .01$.

The last part of supplementary analysis examines an important part of overall ambidexterity. The theory of ambidextrous leadership (Rosing et al., 2011), as well as other studies (Rosing

& Zacher, 2017) argue that the interaction between the followers' exploration and exploitation will lead to their innovative outcomes. In this test, I am examining this proposition, by using a hierarchical linear regression model to test whether employee ambidexterity positively predicts followers' IWB. The first test which was significant (F (4, 121) = 16.95, $p < 0.01$) showed that nearly 35% of variance in IWB can be explained by the control variables, where positive affect ($\beta = .19$, $p < 0.05$) and creative self-efficacy are both positive predictors ($\beta = .56$, $p < 0.01$). The second model was also significant (F (6, 121) = 18.52, $p < 0.01$) and suggest that exploration and exploitation correspond for a further 13% explanation in variance of IWB, with exploration being a highly significant and positive predictor of IWB ($\beta = .31$, $p < 0.01$), while exploitation was not significant. The last model examines the interaction between exploration and exploitation (mean-centred) as a potential predictor of followers' IWB. The model although significant did not indicate that employee ambidexterity was a significant predictor of IWB. Hence, it can be argued that the interaction between the followers' exploration and exploitation is not significant in predicting the IWB. The results of this analysis can be seen below in Table 3.44.

Table 3.44. Results of regression analysis – Innovative Work Behaviours.

Dependent variable: Innovative Work Behaviours

		Unstandardised Coefficients		Standardised Coefficients					
Step	***Predictor***	***B***	***SE***	***β***	***P***	***R^2***	***ΔR^2***	***R^2 change***	***F***
1						.367	.345	.367	16.95**
	Positive affect	.159	.064	.188*	.015				
	Openness	-.043	.108	-.036	.692				

	Creative self-efficacy	.391	.064	.556**	.000				
	Paradox mindset	.002	.092	.002	.980				
2						.491	.465	.125	18.52**
	Positive affect	.122	.059	.144*	.040				
	Openness	-.080	.098	-.066	.418				
	Creative self-efficacy	.340	.060	.484**	.000				
	Paradox mindset	-.076	.085	-.070	.371				
	Exploration	.241	.063	.309**	.000				
	Exploitation	.093	.059	.126	.118				
3						.492	.461	.001	15.79**
	Positive affect	.123	.059	.146*	.039				
	Openness	-.073	.100	-.061	.463				
	Creative self-efficacy	.341	.061	.484**	.000				
	Paradox Mindset	-.077	.085	-.071	.369				
	Exploration	.232	.067	.297**	.001				
	Exploitation	.092	.059	.125	.120				
	Employee Ambidexterity	-.018	.042	-.031	.669				

Note. $N = 122$; * $p < .05$; ** $p < .01$.

The same test was conducted using innovation (CAT) as an outcome. This analysis however indicated no significant results, suggesting that exploration, exploitation and their interactive

effect does not predict innovation, as rated by the experts. The results of this analysis can be seen below in Table 3.45.

Table 3.45. Results of regression analysis – Innovation (CAT)

Dependent variable: Innovation (CAT)

		Unstandardised Coefficients		Standardised Coefficients					
Step	***Predictor***	***B***	***SE***	***β***	***P***	R^2	ΔR^2	R^2 ***change***	***F***
1						.050	.018	.050	1.55
	Positive affect	-.109	.075	-.136	.146				
	Openness	.234	.125	.205	.064				
	Creative self-efficacy	.017	.075	.026	.818				
	Paradox mindset	-.071	.107	-.069	.507				
2						.051	.002	.001	1.03
	Positive affect	-.107	.076	-.133	.163				
	Openness	.236	.127	.207	.066				
	Creative self-efficacy	.023	.078	.034	.772				
	Paradox mindset	-.066	.110	-.064	.547				
	Exploration	-.012	.082	-.017	.880				
	Exploitation	-.014	.076	-.020	.852				
3						.064	.007	.013	1.12
	Positive affect	-.101	.076	-.126	.185				
	Openness	.260	.128	.228*	.045				
	Creative self-efficacy	.024	.078	.036	.761				

Paradox Mindset	-.069	.110	-.067	.530
Exploration	-.047	.086	-.064	.584
Exploitation	-.015	.076	-.022	.843
Employee Ambidexterity	-.069	.054	-.124	.206

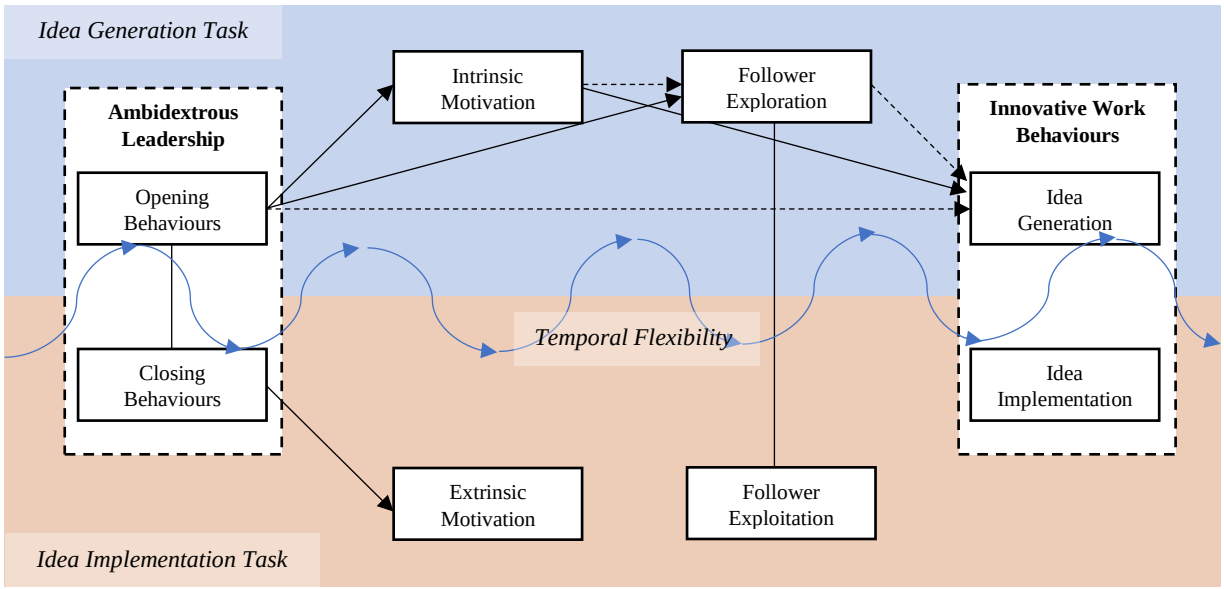
Note. $N = 122$; * $p < .05$; ** $p < .01$.

3.5. Discussion

The aim of this study was to examine thoroughly the ambidextrous theory of leadership for innovation (Rosing et al., 2011) through an experimental design. The reason this method was selected was that it enabled me to manipulate the variables of interest as well as examine participants' outcomes through two ways, self-perceived innovation outcomes and objective innovation outcomes. An important element of the theory is temporal flexibility, which assumes that leaders should use opening behaviours during times that require explorative activities and behaviours and closing behaviours during times that require exploitative activities and behaviours. No study in the past has examined this theoretical element separately. Hence it is the first study that shows evidence on the effect of the two sets of leaders' behaviours on two separate innovations stages: idea generation and idea implementation. This study argued the importance of time and leaders' awareness of when to employ each set of behaviours. The hypotheses set were an overall examination of the theory, including the effectiveness of the ambidextrous leaders' behaviours to enhance followers' innovation, the importance of time and the correct timing of each set of behaviours, as well as additional factors that could potentially explain this theory.

This experimental study has yielded mixed results. The figure below demonstrates the model tested with the results (see Figure 3.9). First of all, it has confirmed multiple hypotheses, primarily regarding the effectiveness of the leaders' opening behaviours. Leaders' opening behaviours, portrayed during the creativity task, as suggested by the theory (Rosing et al., 2011), positively predicted exploration of the followers (H1). This result indicates that leaders who engage in opening behaviours during the right time can facilitate their followers' exploration, even after important creativity-related variables have been accounted for. This finding is also consistent with the theory, as well as past studies that evidenced that opening behaviours of a leader can predict the followers' exploration (Alghamdi, 2018; Rosing et al., 2016).

Figure 3.9. Visual representation of the results.



Note. The relationships in the blue rectangle are hypothesised to exist during idea generation tasks, while the relationships in the orange rectangle are hypothesised to exist during idea implementation tasks. Full lines indicate full support. Dotted lines indicate partial support. No lines indicate no support.

H2 was also supported and suggests that leaders' who engage in opening behaviours when the task involves creativity will lead to increasing the followers' self-perceived idea generation

outcomes, even after controlling for positive affect, creative self-efficacy, openness, and paradox mindset. Mascareño et al. (2021) also found that leaders' opening behaviours lead to increased follower idea generation, however, their study did not take timing into consideration. Hence, this finding makes this study the first to find evidence that opening behaviours during the right timing can promote the followers' idea generation. The hypothesis however was not supported when the creativity scores obtained by the CAT were used as the outcome. This might indicate that leaders' opening behaviours might make the followers better and more confident about their creative outputs, without necessarily producing more ideas or more creative outcomes. In fact, the analysis showed that, surprisingly, opening behaviours was a significant but negative predictor of the quantity of ideas that participants generated during the creativity task. This might also suggest that too much flexibility might not be good for creativity, and some constraints might help followers focus and perform better (An et al., 2018; Baker & Nelson, 2005; Garud & Karnoe, 2003; Harisson, Mason & Girling, 2004; Ohly & Fritz, 2010; Senyard et al., 2014; Vanacker et al., 2011; Wu, Liu & Zhang, 2017). Even though the creativity task had some constraints, such as time pressure and limited resources, it is possible that the opening behaviours of the leader reduced their significance by allowing the participants to do as they see fit and provide them with encouragement to experiment without worries.

Another novel finding of this study is study is the support for H3, which suggested that exploration can act as a mediator between leaders who engage in opening behaviours during the right time, and followers' idea generation. Exploration is what is theoretically suggested to be the primary mediator between leaders' behaviours and followers' behaviours (Rosing et al., 2021), yet this is the first study that examines idea generation as its outcome. Studies have shown that exploration is an outcome of opening behaviours and that it can lead to innovation (Alghamdi, 2018; Oluwafemi et al., 2020; Zacher et al., 2016). However, this study is the first

to examine opening behaviours portrayed during the correct timing and using only the first stage of innovation (idea generation) as the outcome, instead of the entire concept of innovation. H3 was not supported though, when the CAT creativity outcomes were used, suggesting that exploration may not be a good indicator of creative performance, but rather a feeling of being more creative, due to the flexible nature of exploration.

H4 suggested that closing behaviours portrayed during the right time (implementation tasks) will increase the followers' exploitation. Rosing and her colleagues (2011) suggested when leaders focus on routines, penalising of mistakes, and sticking to plans, followers are likely to exploit their current skills and knowledge, focus on execution and refinement and do not engage with experimentation. Past studies have also evidenced that closing leader behaviours can predict exploitation (Klonek et al., 2020; Zacher & Rosing, 2015; Zacher et al., 2016). Those studies, however, did not take timing into account, like this study has. Nonetheless, the analysis from this study has shown that there is no significant effect. As the only difference between this study and the other studies is the timing of the behaviours, it can be suggested that closing behaviours might be effective for exploitation when they are used at a different time. For example, in real-case scenarios, the implementation phase takes significantly longer than 10 minutes and involves many activities. While the theory does not distinguish between those activities, it claims that closing behaviours are beneficial for implementation tasks overall. It could be, therefore, that closing behaviours may promote exploitation on certain activities (i.e., activities that can be undertaken successfully through subject knowledge and experience).

Similarly, a non-significant result was found when assessing H5. H5 suggested that leaders who engage in closing behaviours during implementation tasks can facilitate their followers' idea implementation. Mascareño et al. (2021) found that leaders' closing behaviours would moderate the relationship between idea generation and idea implementation, insofar that idea implementation of the followers was higher when closing behaviours were also high. No other

study has examined the direct effect from of closing behaviours on follower idea implementation, especially when considering the timing as well. Hence, although this was the first study to test that, results were not significant in predicting that. Even when the CAT measures of implementation were used, H5 was still not significant. The fact that neither the self-perceived outcomes nor the CAT implementation outcomes were significant, might have to do with closing behaviours. Closing behaviours on their own can be perceived as negative behaviours, hence it could be that followers are more hesitant to respond to them. When followers perceive their leader as controlling and demanding, they might correlate the leader's behaviours to those of a negative leader (i.e., dark leadership), which can be harmful for innovation (Holten & Bøllingtoft, 2015; Lopes Henriques, Curado, Mateus Jerónimo & Martins, 2019). Moreover, the theory does suggest that opening and closing behaviours should be used in juxtaposition. Hence the negative effect of closing behaviours could become less prominent when it is combined with opening behaviours which are positive and motivational behaviours.

Based on the non-significant results of H4, H5, it was expected that H6 would also be non-significant, suggesting that exploitation is not a significant mediator between closing leaders' behaviours (during idea implementation) and the followers' idea implementation behaviours. Although multiple explanations could be given, such as the irrelevance of time or the lack of opening behaviours to complement the closing behaviours, another reason that closing behaviours do not seem to have a significant effect on expected outcomes, could be because of a methodological problem. The operationalization of the closing behaviours is based on the table of behaviour characteristics from the paper of Rosing et al. (2011). The authors simply stated what behaviours can be considered as "closing", but they never developed a scale or validated a potential measure. All the studies that followed up since then on ambidextrous leadership have been using that table as a guide and each bullet point as an item. Therefore, it

could be a problem of the scale, as closing behaviours might differ from field to field or person to person, hence the same items might not be applicable or appropriate for every situation.

H7 and H8 focused on the random allocation of the participants in the experimental groups. The hypotheses assumed that participants who were allocated in the ambidextrous leadership group, would portray the highest ambidexterity (H7) and innovative work behaviours (H8) compared to the participants who were allocated in the opening leadership group, closing leadership group and ambidextrous leadership during the wrong times group. The results for both hypotheses were non-significant suggesting that the followers' outcomes were not significantly different between the four groups. In essence, the results of H7 and H8 disprove the importance of temporal flexibility. The outcome of H8 in particular was not consistent with the results of the experimental design study of Gerlach and her colleagues (2020). They found that when leaders use opening behaviours during creativity tasks and closing behaviours during implementation tasks, can lead to innovative performance. Although this outcome was unexpected there might be a few reasons why results were not significant. First of all, analysis was based on the allocation of the participants across the experimental groups and not based on the perception of the participants about their leaders' behaviours. If theory is correct, then this could mean that the manipulation was not successful. However, initial analysis showed that the validity of the manipulation was successful and that participants clearly observed the difference between opening behaviours and closing behaviours. In situations where the leader demonstrated opening behaviours, participants scored opening behaviours significantly higher than closing behaviours, and in situations where the leader demonstrated closing behaviours, participants scored closing behaviours significantly higher than opening behaviours. This suggests that, although the vignettes were successful, the expected effect on the followers' ambidexterity and innovation outcomes was not as hypothesised nor was it consistent with the theory. Another reason could be that since this was a fictional scenario, participants had no real

benefits, nor consequences if they did not follow their leaders' instructions. Hence, even though they correctly spotted their leaders' behaviours, it might not have had a strong impact on them to make them perform more innovatively. It could be suggested, therefore, that the effects of ambidextrous leadership on followers' ambidexterity and innovation may be stronger in natural settings, where participants are familiar with their leader, hence knowing that their job safety and relationship with their leader might be at stake, if they did not follow the leaders' direction. This is a very important finding, as it may expose flaws of the theory. As Rosing et al., (2011) translated a macro theory to micro (i.e., from organisational ambidexterity to individual ambidexterity) they failed to take into account other factors. While ambidexterity can be effective at a greater level (e.g., organisational), individual ambidexterity and trying to influence individual behaviours may carry way more challenges (Cowen et al., 2022). The theory fails to acknowledge the followers' preferences. Followers may have different needs, traits, leader prototypes, leader expectations etc., hence expecting that everyone will react the same way to leader behaviours is not theoretically sound (Lambert et al., 2012). Last but not least, one of the most important reasons why results were not as expected may be strongly attributed to the small sample size. The post-hoc power analysis indicated that each experimental group should have at least a sample size of 70 participants, not 30. As each group had less than half the required participants, it is logical that a strong effect would not be able to have been produced, as well as any significant results found should be used with caution.

H9 and H10 were based on the theoretical assumption that the interactive effect between opening and closing behaviours will be beneficial for employee ambidexterity, as well as follower innovation. Studies showed that the interaction between opening and closing leader behaviours significantly predict the interaction between followers' exploration and exploitation (Oluwafemi et al., 2020). However, the result from this study was not consistent with the theory or past findings and showed that ambidextrous leadership was not a significant predictor of

employee ambidexterity. Unlike the study by Oluwafemi et al. (2020), this study took temporal flexibility into consideration and captured the variables of interest during the correct timing as suggested by the theory. The interaction between leaders' opening behaviours during the idea generation task and closing behaviours during the idea implementation task was expected to predict the interaction between followers' exploration and exploitation. As the predicting variable was based on how followers perceived their leader during the correct times, and not based on group allocation, then the lack of an established relationship between leader and follower is not to blame for the non-existence of the hypothesised relationship. It is possible that the theory of ambidextrous leadership is flawed, or it might only work in certain situations as some suggested (Gerlach et al., 2021). Another reason, as aforementioned, might the operationalization of the ambidextrous leadership behaviour constructs, as these have never been validated before. Similarly, H10, which stated that ambidextrous leadership during the correct timing will predict the innovative behaviours of the followers, was not supported. Although leaders' opening behaviours during the correct timing, were a significant predictor of the followers' IWB, the interaction between them and closing behaviours was not significant. This result was not consistent with the theory or past studies which found that the interaction between opening and closing behaviours can predict followers' innovation (Alghamdi, 2018; Zacher & Rosing, 2015; Zacher & Wilden, 2014), but it is important to consider the fact this is the first study that tested temporal flexibility as well, and not only the interaction between opening and closing behaviours, or the nature of the task. The study by Gerlach and her colleagues (2020) was the most similar study that tested this hypothesis. They examined whether requirements for innovation played a role for innovative performance and their results were significant. They found that opening leader behaviours can have a positive effect on innovative performance only during situations that requires creativity, while closing behaviours can have a positive effect on innovative performance only during situations that

require implementation. While their study considers the nature of the task, as this study has, it does not examine the interactive effect between the two. It is still a possibility that although opening and closing behaviours could have separate effects on innovation, their interaction during the correct timing might not be as effective as theoretically proposed (Rosing et al., 2011). Although this study was not consistent with past findings, further recent experimental design studies also found mixed results (Gerlach et al., 2021; Klonek et al., 2020).

Nonetheless, the fact that opening behaviours were a predictor of IWB might suggest that they are more effective than closing behaviours or ambidextrous behaviours. This also aligns with the findings of Klonek et al. (2020) who found that opening leadership is as effective as ambidextrous. It is possible therefore that the issues with this result are due to the closing behaviours, their effect, as well as operationalization, as most hypotheses involving closing behaviours were not significant.

The next set of hypotheses involved the role of intrinsic motivation during idea generation tasks. Intrinsic motivation is considered a key component of creativity, but it has never been examined alongside opening behaviours so far. This is the first study that examined followers' intrinsic motivation in the ambidextrous leadership field. H11 suggested that during creativity tasks, leaders' opening behaviours can increase followers' intrinsic motivation. The analysis found support for this hypothesis. This was not an unsurprising outcome, as opening behaviours are motivational, encouraging and provide the followers with autonomy and flexibility. It is expected therefore that when followers perceive their leader as supportive, and encouraging during an idea generation task, which is an interesting process by nature, are more likely to feel intrinsically motivated to engage with it. Studies in the past showed that positive leader behaviours have the ability to increase their followers' intrinsic motivation (Minh-Duc & Huu-Lam, 2019; Piccolo & Colquitt, 2006; Shin & Zhou, 2003; Yidong & Xinxin, 2013).

H12 that suggested that followers' intrinsic motivation would mediate between their leaders' opening behaviours and their own exploration, was also supported. Exploration is characterised by engagement with activities such as risk taking, experimenting with new methods and techniques as well as thinking outside the box. All these behaviours are similar to creativity behaviours, and since past research has shown that intrinsic motivation is a key predictor of creativity (De Jesus et al., 2013; Gehart & Fang, 2015; Hennessey & Amabile, 1998) it was not surprising that this hypothesis was fully supported. This finding is also something novel from this study, as studies in ambidextrous leadership so far examined the direct effect of opening behaviours on exploration (Alghamdi, 2018; Zacher et al., 2016), but no study has tested whether a different mechanism might explain that relationship.

This study also found strong support for H13, which stated that intrinsic motivation is a positive mediator between leaders' opening behaviours and followers' idea generation outcomes during creativity tasks. This finding is one of the most important contributions of this study, as it shows that intrinsic motivation can also act as a strong mediator between opening behaviours and its related outcome. As explained, intrinsic motivation is a strong predictor of creativity (De Jesus et al., 2013; Gehart & Fang, 2015; Hennessey & Amabile, 1998), hence it was expected that positive leader behaviours, would instil intrinsic motivation within the followers, which would then increase their idea generation behaviours. Analysis showed that not only self-perceived idea generation outcomes were higher, but also the creativity outcome as measured by the experts. Hence, it can be said that subjectively, as well as objectively, intrinsic motivation is an important and significant mediator between leaders' opening behaviours and followers' creative outcomes.

Another great and novel finding of this study is the support for a serial mediation relationship (H14). It was found that during idea generation tasks, leaders' who portray opening behaviours can instil intrinsic motivation within their followers, which will make them engage with more

explorative behaviours, thus demonstrating higher idea generation outcomes. This relationship was only supported by the self-perceived outcome and not through the outcome of the CAT. This could be due to the individuals having a positive mindset, hence perceiving themselves differently than what their actions show. The fact that results from most of the tested hypotheses found strong support for self-perceived idea generation outcomes, but limited support for objective measures, might indicate that when it comes to creativity, self-perception might not always reflect the true outcome. One might feel supported by their leader or feel confident in their creative abilities and think they have done well in the task, however the outcomes regarding the quantity and quality of the ideas they generated may not reflect their thoughts and feelings. Nonetheless, it is the first study that found partial support for a serial mediation relationship in the ambidextrous leadership literature.

The next and final set of hypotheses involved the effect of extrinsic motivation during idea implementation tasks. It was argued that closing behaviours would be an outcome of closing behaviours, as leaders' who engage in closing behaviours during implementation tasks, are more likely to increase their followers' extrinsic motivation (H15) as such behaviours are not as supportive as opening behaviours and they demand adherence to rules, routines, and plans. As they strip the followers from their autonomy and flexibility, followers are less likely to experience an intrinsic motivation in order to engage with their activities. H15 stated that during idea implementation tasks, leaders who engage in closing behaviours will predict their followers' extrinsic motivation. This hypothesis was supported, suggesting that leaders' closing behaviours have the capacity to increase their followers' extrinsic motivation, during situations that focus on implementation of ideas. This is also a novel finding from this study, which has never been examined before in the ambidextrous leadership literature. Another take-out from this study is that this relationship (H15) is the only hypothesis involving closing behaviours that was supported. The remaining hypothesis suggesting mediation or serial

mediation relationships between closing relationships and implementation outcomes were not significant in either way of measurement (self-perceived or CAT).

The fact that closing behaviours were found to be a significant predictor of extrinsic motivation, a concept never been examined alongside them before, but not significant in predicting concepts such as implementation and exploitation, which have been found numerous times to be outcomes (Alghamdi et al., 2018; Klonek et al., 2020; Mascareño et al., 2021; Zacher et al., 2016), might suggest three possible explanations. Firstly, it could be that the timing of closing behaviours is irrelevant. Studies that have found that closing behaviours can predict idea implementation or exploitation did not take the nature of the task into account (Alghamdi, 2018; Mascareño et al., 2021) and those who did take the situation into account used questionable measures of implementation (e.g., number of mistakes made by the participant) (Gerlach et al., 2020a). Second, it could suggest that closing behaviours are simply not effective for exploitation, or implementation, thus implying flaws of the ambidextrous leadership theory (Rosing et al., 2011). Lastly, it could be due to a methodological issue, for example the operationalisation of closing behaviours or even the implementation task itself. It can be argued that both idea generation and idea implementation tasks were developed through a rigorous process that involved, piloting trials, feedback, and assessments from supervisors, to ensure that they truly reflect the opposing nature of creativity and implementation in the workplace. Nonetheless, it can still be a possible limitation of the study, thus affecting the data and showing non-significant results for most hypotheses related to closing behaviours.

The supplementary analysis also showed some interesting findings. First of all, after examining the role of flow, it can be said that it plays a big role in followers' creativity as it was found to be both a predictor and an outcome. As expected, due to its strong association with creativity (Cseh et al., 2015; Schutte & Malouff, 2020; Zubair & Kamal, 2015a, 2015b), flow was found to be increasing the followers' idea generation outcomes. Individuals who enter a state of flow,

are more absorbed and focus into their craft, thus making them producing novel ideas at a faster rate. Opening leader behaviours were found to be a strong predictor of flow. Followers, whose leader engages in opening behaviours, are more likely to experience flow, due to their leaders' encouragement, motivation and provision of autonomy and flexibility. It can be suggested therefore, that since opening behaviours increases flow, and flow increases idea generation, then it is possible that flow may also act as another potential mediator between opening behaviours and idea generation, in addition to exploration and intrinsic motivation that were found through this study. However, it should be noted that flow has shown some problems with discriminant validity, as it was found to be related with idea implementation. Hence, any significant results produced using the flow scale, need to be addressed with caution. Future studies may also benefit from establishing that flow is indeed distinct from any other innovation-related concepts.

Another important finding is the effect of the followers' ambidexterity. Theory suggests that followers' exploration and exploitation will interact thus increasing the innovation of the followers (Rosing et al., 2011). The study of Zacher et al. (2016) as well as the study by Rosing and Zacher (2017) found that the interactive effect of exploration and exploitation will increase the followers' innovation outcomes. The supplementary analysis from this study however failed to confirm such past findings. Employee ambidexterity was not significant in predicting either the followers' self-perceived innovative work behaviours, or the innovation as rated by the experts (CAT). Exploration, on the other hand, was found to increase the overall innovative work behaviours of the followers, while exploitation was not significant. As exploitation was not a predictor of innovative work behaviours it can be argued that exploration has a stronger effect on overall innovation, than exploitation or employee ambidexterity.

Despite the proposed conceptual model being not fully confirmed, many interesting findings were found through this study. Firstly, opening behaviours seem to be more associated with

the innovation process than closing behaviours. This finding is also consistent with Klonek et al. 's (2020) finding who found that opening leadership behaviours are as effective as the overall ambidextrous leadership behaviours. Moreover, this study found strong evidence regarding the role of motivation in this theory, as an outcome of ambidextrous leaders' behaviours as well as a mediator between leaders' behaviours and followers' innovative outcomes. Nevertheless, the key hypotheses examining temporal flexibility and the effectiveness of switching between opening and closing leaders' behaviours during the correct times, were not confirmed.

3.5.1. Contributions

This study has multiple theoretical and practical contributions. In terms of the theory, results from this study were mixed. Some findings confirmed parts of the ambidextrous leadership theory, while others did not. The most important contribution of this study is that it challenges the theory. The ambidextrous leadership theory (Rosing et al., 2011) claimed that temporal flexibility is a key part of it. Innovation processes are characterised by different stages, thus requiring different needs. Rosing and her colleagues (2011) argued that in order for a leader to be successful in innovation they should be able to switch flexibly between opening and closing behaviours to match the demanding situations of creativity and implementation. This is the first study that examined this proposition. Through a rigorous experimental design, participants entered various experimental groups, and all of them undertook a creativity task, followed by an implementation task. According to the theory, if the participants had a leader who engaged in opening behaviours during the creativity and then quickly switched to closing behaviours during the implementation, then they would demonstrate the highest innovative outcomes, compared to the other experimental groups. Results showed no significant differences between

the groups, suggesting that a flexible switching of the behaviours to match the situation at hand might not be necessary for the theory to be effective. Previous theories have found that the interaction between opening and closing can increase followers' innovation (Alghamdi, 2018; Zacher & Rosing, 2015; Zacher & Wilden, 2014) other studies have shown that leaders should align their behaviours based on the nature of the task (Gerlach et al., 2020a), while others found mixed results for the effectiveness of the interaction of opening and closing behaviours (Klonek et al., 2020; Gerlach et al., 2021). Yet, this is the first study, which uses an experimental design to examine the entirety of the theory, including the separate effects of opening and closing behaviours, as well as their interaction; the separate effects of exploration and exploitation, as well as their interaction; the nature of the task; the ability of leaders to switch flexibly; as well as separate outcomes of innovation such as idea generation and implementation, through two methods of measurement, which included self-perceived and expert-rated measures. This holistic methodological approach to examine the theory, provides not only new insight on understanding the theory, but also further contributions to ambidextrous leadership literature, as only a handful of experimental studies have been conducted thus far.

Another great contribution of this study is the evidence for the mediating effect of motivation. In particular, this study has found strong support for the role of intrinsic motivation, which can provide further explanation as a key component in the relationship between opening behaviours and followers' creativity. One of the aims of this thesis is to understand why and how a relationship between ambidextrous leaders' and followers' innovation works. This study found that intrinsic motivation plays a significant role during creativity tasks, as an outcome of opening behaviours, a mediator between them and idea generation as well as exploration, and a serial mediator leading to idea generation through exploration. Leaders' closing behaviours on the other hand, found to increase extrinsic motivation as suspected. This is not only a novel

output of this study, but the first study that examines motivation in the ambidextrous leadership literature.

An important observation from this study is that even though many hypotheses have been supported when using the self-assessed outcomes, nearly none have been supported when using the measures from the CAT. One explanation could be that opening and closing behaviours only affect the feelings and perceptions of the followers, by making them believe they are more innovative, without actually affecting tangible outcomes of creativity and implementation such as quantity of ideas, novelty of ideas, feasibility of ideas, following rules and protocols, sticking to plans, and avoiding errors.]It should be noted that a rigorous process was undertaken to create the CAT evaluation tool. The creativity and implementation items were developed based on the conceptual definitions of creativity and implementation, the specific tasks designed for the experiment, as well as suggestions from other creativity and innovation studies that used CAT and have developed similar measures (Baer & McKool, 2009; Hennessey, 1994; Hickey, 2001; Kaufman, Baer, & Cole, 2009). The tool has undergone a series of changes and adaptations after feedback from supervisors, colleagues as well as reflective evaluations based on results from the pre-test (pilot). If the first assumption is correct therefore, then ambidextrous leadership theory does not have a positive influence on followers' tangible innovation outcomes, but rather on their self-perceived innovation outcomes. Moreover, the fact that this study has found that opening behaviours decrease the number of ideas that participants come up with, provides further support for this assumption.

This study has some novel contributions for practice as well. First of all, managers and workplace leaders who deal solely with creativity demands and are required to produce creative outcomes, then engaging with opening behaviours is a good idea. By being encouraging, motivational, flexible and provide the subordinates with autonomy and freedom to experiment and make mistakes, then subordinates self-perceived creativity and innovation will increase.

Although deploying opening behaviours may not lead to tangible outcomes of innovation, it certainly has more benefits to it. By engaging in opening behaviours, leaders are able to increase their followers' intrinsic motivation, as well as flow. Intrinsic motivation has multiple benefits, not just for creativity, but for overall performance too (Cerasoli, Nicklin, & Ford, 2014; Gehart & Fang, 2015), while being absorbed in a state of flow, can make them more engaged and committed to produce better outcomes (Demerouti, 2006; Fullagar, Knight & Sovern, 2013). However, particitioners should also note that although this study has shown many follower benefits, it did not show that opening behaviours would improve the number of ideas that subordinates generate.

During tasks that focus on implementation, workplace leaders are only encouraged to engage in closing behaviours, if opening behaviours fail. Closing behaviours may increase extrinsic motivation of the subordinates, hence having rewards in place might benefit the process. As the overall ambidextrous leadership style was not confirmed, then based on the findings of this study, it would not be advised to adopt it. Switching between opening and closing behaviours seems to not have a strong effect on innovation, even when the nature of the task is taken into account. The findings from this study show great support for the benefits of opening behaviours, hence the main takeaway would be that supportive and encouraging behaviours have significantly positive effects on the followers overall.

3.5.2. Limitations

Like all studies, this one has faced challenges and has limitations. First, a key potential methodological limitation of this study is the operationalisation of the ambidextrous leadership

scale. The items used for the concepts of leaders' opening and closing behaviours may not truly capture the nature of the tasks for this experimental study. Opening and closing behaviours might look differ between situations and rely on further factors to work. The utilisation of the behaviours based on the description provided in the paper of Rosing and her colleagues (2011) may not constitute a valid way of measurement of the concept. Yet, every researcher so far that measured ambidextrous leadership, simply used the descriptions of the behaviours as items for each behaviour set, without adapting them to the situation, nor ensuring they represent exactly the construct for their occasion. Although they maybe efficient tin describing the behaviours, they might not be effective in capturing it appropriately. For instance, the same items could also reflect transformational and transactional leadership to some extent (Rosing et al., 2011), and they could still produce the same results as ambidextrous leadership. Moreover, items may have different meanings depending on the job sector. For example, "*encouraging experimentation*" (opening behaviour) in engineering projects might lead to inventions, but in a chemistry project it might lead to human injuries or potentially casualties. Hence, a validated scale that measures opening and closing behaviours is needed in the ambidextrous leadership literature, which will allow researchers to use it successfully based on each situation, without having to convert behaviour descriptions into items every time that ambidextrous leadership needs to be measured. Klonek et al. (2020) also believe that failure to support the theory through their experiments, may not only be due to issues with the theory, but also issues with the operationalisation of the ambidextrous leadership construct.

Second, regarding the CAT, although successfully executed, their correlations with their self-perceived counterparts were not as high as expected, which might have played a role in reaching significant results during hypotheses testing. It was observed that while the self-perceived idea generation of the participants was correlated with the assessors' creativity scores, the self-perceived idea implementation of the participants was not correlated with the

assessors' implementation scores. The overall innovation as rated by the assessors was only correlated with the self-perceived idea generation of the participants and not their overall innovative work behaviours. It can be said therefore that the implementation assessment tool that was developed for this study, although capturing the requirements of the task, did not seem to reflect the nature of the self-perceived implementation outcomes. Self-perceived idea implementation focused on whether the participant feel like they have turned their ideas into reality, whereas the implementation plan assessment tool, was very specific and assessed whether they followed every instruction that the leader has given them or not. Although the two measurements capture more niche aspects of creativity and implementation, their results in hypotheses testing were not as expected. However, since this is the only study so far that used two methods of measuring creativity and implementation, it can be argued that it can be in fact a strength rather than a limitation, as it does not rely on self-rating only, as prior research has (Alghamdi, 2018; Zacher & Rosing, 2015; Zacher & Wilden, 2014).

This study has closely followed the definitions and characteristics of all concepts explained in the theoretical paper by Rosing et al., (2011), and the scales chosen for capturing ambidextrous leadership, follower ambidexterity and innovation have been used priorly numerous times, thus making its design methodologically accurate. However, it must be mentioned that the scales used were designed to capture those concepts in natural workplace settings and not laboratory settings. This could also have affected the findings of this study and one of the reasons that not all results were as expected. Designing hypothetical scenarios and running simulations in laboratory settings does not reflect the complexity that goes on in natural work environments, and it does not consider the numerous moving pieces that can impact cause-effect relationships. Hence, it would be better if ambidextrous leadership theory is also examined through studies in natural settings as it can show different outcomes compared to what this study has found.

Moreover, as pointed out by Klonek et al. (2020), the ambidextrous leadership style lacks clarity regarding the time or frequency of the portrayal of each set of behaviours, hence they argued that more research is needed to distinguish when each behaviour should be portrayed. This study investigated this exact issue, since the theory, although it urges the importance of time, is vague regarding the actual portrayal of these behaviours. It is a paradox itself to consider innovation as a cycle and a linear process simultaneously. For simplicity purposes, I have chosen the latter, as the experiment would be significantly larger if participants had to engage with more tasks and transition between idea generation and idea implementation tasks every ten minutes. Therefore, some would argue that this could be considered a key limitation of this study, as there is only one transition between opening and closing leader behaviours. A possible explanation for the results of this study is that time should also be considered in-between the tasks. In this case, participants only had ten minutes to switch from an idea generation task to an idea implementation task. In real life scenarios, this transition might take days, weeks, or even months depending on the size of the project (Rosing et al., 2018) and, also, implementation tasks take significantly longer than idea generation tasks. The fact that this study only lasted for about an hour, might suggest that ambidextrous leadership may not work for short projects, but only for projects that last a longer period. It can be argued for example that eight minutes is not an adequate amount of time to effectively engage in implementation successfully. Yet, the theory does not make a claim on the amount of time that each task takes, and thus implies that both creativity and implementation require an equal amount of time to be completed, whereas in reality, implementation of ideas is a significantly larger task (Lager, 2010). Therefore, time, pace and timing need to be addressed further in future research and as a separate dimension to help us understand its role in the ambidextrous leadership theory.

Experimental designs are also not without their flaws. When conducting laboratory experiments, no matter how much thought goes behind the designing, there are always things that are out of the researchers' control. In this case, it was even more difficult, as the adaptation from face-to-face experiment to an online experiment, has impacted the study in many ways. First, I lost control of the environmental factor. Participants have undertaken the experiment, at their own time, in their own place, hence it was not possible to assess how their environment played a role. Some individuals might have undertaken the study from a tablet, while others could have used a big desktop. Some of them might had to work in a room where the temperature was not ideal (e.g., too hot, or too cold). Some others might had to work under lots of noise, while others probably worked in total silence. These and many other factors may have influenced the results, which can be considered as limitations of online experiments.

But all kinds of experiments share one limitation, which this study explained priorly. Experiments are not strong enough to test mediation relationships (Podsakoff & Podsakoff, 2019). According to Spencer et al. (2005) measuring the mediator at the same time as the outcome variable may prime participants to respond positively to both. As such designs tend to measure both mediators and outcomes at the same time and using the same source, they may also be exposed to common method biases (Podsakoff et al., 2003; Podsakoff et al., 2012). Further researchers therefore posit that indirect effects that are found through experiments that test mediation models, may not imply causation, even when the effect is significant (Judd et al., 2001; Kenny, 2008; MacKinnon, 2008). Podsakoff and Podsakoff (2019) propose that serial experimental designs where each causal relationship is tested separately is actually more effective. Future studies therefore that use experimental designs should measure potential mediators in a series of experiments, rather than one.

Yet, I would argue that one of the most important limitations of this study, is the small sample size. Each experimental group includes approximately 30 participants. Ideally, the larger the

sample the more likely that the effect will be valid (Shen et al., 2011). In this case, the G*Power analysis indicated that a sample of at least 280 participants would have been ideal to produce better effects, and make all significant results of this study full-proof. This means that each group should have 40 participants more. Due to lack of funds, I could not afford to recruit more participants, which in retrospect has been proven detrimental to the validity of the results of this study. Nonetheless, previous experimental design studies with very similar approaches to this one (e.g., Gerlach et al., 2020a, 2021; Klonek et al., 2020) had significantly larger sample sizes (approx., 350), and yet, they have still found mixed results, suggesting that a larger sample size may not necessarily imply significant results, but rather show more trustworthy results.

3.5.3. Suggestions for Future Research

Although some findings from this study were not significant, they could still have a significant impact on the ambidexterity theory of leadership for innovation (Rosing et al., 2011). The findings regarding temporal flexibility may reveal something about the nature of ambidextrous leadership behaviours suggesting they might only be applicable to certain situations, where people are more familiar with the context, as well as their leader as a person. Behaviours are interpreted and perceived differently depending on the relationship one has with the other person as well as how well they know them (Hughes, Rigtering, Covin, Bouncken & Kraus, 2018; Xerri, 2013). Research around social influence suggests that even if followers do not agree with the leaders' attitudes or behaviours, they may still end up having an attitude change over time, if their leaders use tactics to gain their trust (Fisher, 1986; Van Maanen, 1976). If the relationship between leader and follower is especially at the early stages, followers tend to try meeting their leaders' expectations without resistance, no matter how confusing they may seem, and eventually, over time their attitudes become similar as those of their leaders (Williams, 2004). Followers who already have an established relationship with them however

might act differently. For example, when a follower has been with a leader for ten years, and suddenly notice that their leader portrays ambidextrous behaviours, then they might act differently depending on the quality of the relationship (LMX). Followers, with high levels of LMX might be more understanding of their leaders' behaviours, as they are open to communication, and they trust each other. On the other hand, followers with low levels of LMX might resist to respond to such inconsistent behaviours, as they might not understand why their leader acts that way, thus not having an attitude or behaviour change. Or they may even choose to increase their behavioural variance, instead of reducing it, to prove the leader that their approach is not effective. In such cases , the relationship between a leader and a follower should be considered. In this experiment, the participants had no prior relationship with the leader, as this person was fictional, and therefore had no additional benefits to follow their direction and guidance.

A theoretical implication from this study is that the theory could be extended to include more forms of communication between leaders and followers. This is particularly important, as ever since the Covid-19 pandemic has begun, many leader-follower dyads communicate through emails, video chats or online messaging and not necessarily face to face, where the follower is able to see the body language or perceive the vibe of the leader (Schyns & Mohr, 2004). In this study, for example written communication was used through emails. Had I used an actor in a video, or face-to-face interaction, results might be different (e.g., see Klonek et al., 2020; Gerlach et al; 2020; 2021). It can be therefore argued that ambidextrous leadership depends not only on the quality of LMX but also on the tenure of the relationship or the method of communication. Hence, future research could benefit if dyadic relationships could be assessed by examining how an organic workplace relationship between a leader and a follower might impact the relationship between ambidextrous leadership and follower innovation. Moreover,

the context would be another area of exploration, as not all industries deal with innovation projects where employees have to work on generating new ideas and implementing them.

Last but not least, future research would also benefit if it investigated the concept of time around ambidextrous leadership. Different stages of innovation require different amount of time. Examining how often leaders' change their behaviours, or whether one set of behaviours lasts longer than the other is something worth looking at through a longitudinal study. Longitudinal studies, especially if they are conducted in natural settings, and capture the effects in real time, might provide a better understanding not only of the ambidextrous leadership concept, but also the innovation stages.

Overall, evidence from this study and other recent studies (see Gerlach et al., 2021) point towards the theory of ambidextrous leadership being invalid. Shall the findings from this study are replicated using other designs in natural settings (e.g., surveys, observations, interviews etc.) then a return to the original theoretical framework is suggested to further understand the role of leaders in stimulating innovation and balance arguments as leaders may stifle innovation. Moreover, individual characteristics, traits, cognitions and affect, of both leaders and followers, are completely ignored in this theory (Rosing et al., 2011) and studies should examine these factors as moderators, in addition to further interpersonal elements as suggested.

Chapter 4: *Study 2*. Pursuing innovation day-to-day: Examining the role of ambidextrous leadership in facilitating follower innovation through an experience sampling method

4.1. Introduction

Innovative work behaviours (IWB) have been defined as the intentional introduction and initiation of novel ideas in regard to products, services or methods (de Jong & Den Hartog, 2007). Despite having similar descriptions to innovation as a whole (Anderson et al., 2004), IWB focuses on the various behaviours that employees portray in their workplace which are part of the innovation cycle. Therefore, IWB are not one type of monotonous behaviours that followers portray once. Innovation and IWB include multiple behavioural aspects, such as idea generation, championing, promoting, evaluating, and implementing (De Jong & Den Hartog; Janssen, 2000), all of which may occur in a non-linear process. Moreover, each stage of the innovation process is not instantaneous or stable, as it may change and evolve over time (Pitariu & Ployhart, 2010), hence one's ability to portray all sorts of innovative behaviours may even fluctuate on a daily basis (Orth & Volmer, 2017). Innovation research so far was dominated by cross-sectional studies which examine between-person variance and how individual differences affect one's innovation levels. This study investigates IWB through a longitudinal design and examines factors which can affect one's ability to innovate at their full capacity.

Although multiple longitudinal studies demonstrated how different factors can affect individual innovation over time, such as affect (Madrid et al., 2014) or job autonomy (Orth & Volmer, 2017), a primary and consistent influencing factor is leadership. Past studies have shown strong effects of leadership on employee outcomes, especially at the within-person level (Breevart et al., 2014; Hetland et al., 2018; Zacher & Wilden, 2018), thus assessing leadership behaviours

is the main concept of interest. In particular, this study focuses on ambidextrous leadership. Ambidextrous leadership has been defined as one's ability to portray two contradictory sets of behaviours (opening & closing) and flexibility to switch between the two when the situation demands it (Rosing et al., 2011). Opening behaviours are motivational and aim to increase the followers' behavioural variance and make them engage with new behaviours, explore alternative routes and try out new methods. Closing behaviours aim to reduce behavioural variance of the followers, by controlling their behaviours, establishing specific routines, and penalising mistakes and errors. The ambidextrous leadership theory was first proposed by Rosing and her colleagues (2011) and suggests that in order to match the idiosyncratic nature of innovation, leaders must be able and quick to adapt to situations and portray behaviours that enable their followers to either focus in generating ideas and maximising creative outcomes, or focus on execution and implementation of ideas. It is suggested that leaders who are able to portray both sets of behaviours at high levels, can facilitate their followers' explorative and exploitative behaviours, which can lead to higher innovation. The interplay therefore between opening and closing is expected to be the ideal leadership style for leaders whose aim is innovation and more innovative results. Various studies so far have supported the theory (Alghamdi, 2018, Zacher et al., 2016; Zacher & Wilden, 2014), while some others have found mixed results (Gerlach et al., 2021; Klonek et al., 2020).

This study employs an experience sampling method, also known as diary study, in order to assess the effects of ambidextrous leadership on follower innovative behaviours. Minimal attempts have been made to examine this leadership style at the within-person level in depth using diary studies (Gerlach et al., 2020b; Zacher & Wilden, 2014), which is what this study aims to achieve. Building on findings and limitations of study 1, this study examines the effects of ambidextrous leadership on followers IWB at the within-person level. In this paper, I test the theoretical model that I developed for this research project and test its validity through a

longitudinal design and a rigorous quantitative methodological approach. Diary studies allow researchers to assess daily (or weekly) fluctuations in behaviours over time and have a high ecological validity (Fisher & To, 2012). Although various daily diary studies have been conducted so far that examine leadership as a predictor (e.g., Klasmeier & Rowold, 2022; Rodriguez-Carvajal et al., 2019; Tims, Bakker & Xanthopoulou, 2011) or creativity and innovation as an outcome (e.g., Binnewies & Wornlein, 2011; Chi, Liao & Chien, 2021; Ohly & Fritz, 2010), not many studies exist that examine leadership and its effects on innovation, through a daily diary study (Zacher & Wilden, 2014).

This study therefore has various contributions. First, it is the only study in existence (so far) that assesses longitudinally the effects of the standalone behaviours of ambidextrous leadership (opening and closing) on the two main stages of the followers' innovative work behaviours (creativity and implementation) and in a field setting. Studies so far have looked at the interplay between the two leader behaviours primarily (Gerlach et al., 2020b; Zacher & Rosing, 2015; Zacher & Wilden, 2014), yet not many have tested their individual effects according to the assumptions of the theory (Mascareño et al., 2021), and none of them have looked at them longitudinally. Moreover, a design as such allows me to use cross-lagged time analysis which may indicate whether leader opening and closing behaviour have an effect that lasts more than one day. Studies in the past have evidenced that various leadership styles can have a lasting effect (i.e., Geibel, Rigotti & Otto, 2022; Laschinger & Fida, 2014), however, none of them have examined ambidextrous leadership, which is very important as ambidextrous behaviours are contradictory and may have opposite effects.

Second, I build on the self-determination theory of motivation (Ryan & Deci, 2020), and, more particularly, the taxonomy of motivation, by examining the roles of intrinsic and extrinsic motivation in the ambidextrous leadership theory, which again is a novel aspect in the ambidextrous leadership literature. Motivation has been long examined and evidenced as a key

aspect of creativity and innovation (Dewett, 2007; Eisenberger, Shanock 2003, Fischer, Malycha & Schafmann, 2019; Hennessey & Amabile, 1998), hence examining its role in the ambidextrous leadership theory process is a significant contribution towards the theory.

Third, I assessed ambidextrous leadership and its effects in natural settings, which enables me to have a better look at the relationships between leaders and followers (i.e., LMX) and key aspects of them (i.e., trust) and examine how such conditions can influence the relationship between leaders' behaviours and follower outcomes. It is common in leadership literature that leader behaviours may not always have the desired effect on follower behaviours, and certain conditions need to be in place for the effect to be both strong and in the intended direction.

The first condition that I am examining for moderating effects is LMX. The theory of LMX, which suggests that leaders form unique relationships with each of their followers (Graen & Uhl-Bien, 1995), may explain how leaders' opening and closing behaviours are perceived by subordinates in both the in-group (high LMX) or out-group (low LMX), and how such varied perceptions may influence their reactions to the leader's behaviour, i.e., the follower-related leadership outcomes. As each follower has a different relationship with their leader, it is highly likely that the leaders' behaviours can be perceived differently between individuals. Employees behavioural reactions therefore may be contingent on the LMX quality that the employee has with their supervisor. Various studies have shown that LMX may alter the intended effect of different relationships (e.g., Niu, Yuan, Qian & Liu, 2018). For example, Aryee, Walumbwa, Zhou and Hartnell (2012) found that the quality of LMX moderates the relationship between a followers' work engagement and their innovative behaviours. This occurs as individuals in high LMX relationships perceive their environment as supportive and therefore they are more inclined to respond positively to a positive context, and thus approach their tasks more innovatively. When it comes to ambidextrous leader behaviours, a high-quality LMX may help the situation regarding the paradoxical and possibly confusing nature of those behaviours and

allow the followers to shine, thus making the effect on the followers' outcomes stronger. When a relationship is of high quality, followers know and trust their leaders' methods and techniques, thus they would not question any behaviours that would not align with the idea of a prototype leader. On the other hand, employees who have lower quality LMX, may perceive these mixed signals as confusing which may prevent them from responding to them as intended. These followers may interpret the ambidextrous behaviours by the leader as lack of competence and therefore direction, thus not responding to them. It is therefore important to understand how LMX, as a condition, can alter the intended effect of leaders' ambidextrous behaviours on followers' innovation.

Another construct that I am using in this study is trust towards the supervisor. Unlike the first study which was a hypothetical scenario, the participants of this study do have a real-life relationship with their leader, as it is conducted in natural settings. In every relationship, trust is one of the core values (McAllister, Lewicki, & Chaturvedi, 2006). When individuals feel their leader can be trusted, they are more likely to follow them and their instructions (Burke et al., 2007). Similar to LMX, I argue that different individuals will respond in different ways to their leaders' ambidextrous behaviours, depending on the amount of trust they have towards them. The level of trust, therefore, that people have towards their supervisor can be another condition that moderates the relationship between ambidextrous leadership behaviours and the followers' innovation outcomes. The study by Neeraj (2009) for example, showed that the effect of transformational leadership on the followers' job satisfaction, was stronger when the followers had higher trust in their leader compared to those who had lower levels of trust. This shows that trust can be an important condition that can make the effects of leaders' behaviours on follower outcomes stronger.

For the case of ambidextrous leadership, I argue that individuals who have high trust towards their leader, might justify all of their leaders' behaviours no matter how confusing or

contradictory they may seem. It can be assumed that there is probably a long-established relationship between the two parties, where the leader has earned the trust of their subordinate through their honesty, openness and transparency. On the other hand, when followers have little-to-no trust towards their supervisor, it is possible that even high levels of leaders' opening behaviours might be perceived as dubious, thus making them hesitate to respond to them as theory intended.

As trust goes both ways, feeling trusted by the leader is also examined for moderation effects. Subordinates who feel trusted by the leader may be more likely to respond to the leaders' behaviours as theorised, compared to those who do not feel that their leader trusts them, as the contradictory nature of the leaders' behaviours may be confusing. In the following section (Hypotheses Development) I argue about how individuals who feel trusted by their leader could respond to ambidextrous behaviours in a positive way. Such individuals may not perceive occasional negative leader approaches (i.e., closing behaviours) as a bad sign, as the leader has already shown them that the two of them are in a trusting and positive work relationship.

The reason such concepts are assessed now but have not been assessed in the first study (experiment) is because the experiment was in a simulated environment and participants had no relationship with the leader, as the leader was fictional. In these natural settings, I am able to assess these conditions, as studies show that they not only have moderating effect in leadership behaviours and follower outcomes, but they also have strong associations with follower creativity and innovation (e.g., Basu & Green, 1997; Lau et al., 2007; Scott & Bruce, 1994; Volmer, Spurk & Niessen, 2011). Understanding the conditions that are conducive to effective ambidextrous leadership is crucial for theoretical and practical implications. In order to be able to make claims about the effectiveness (or ineffectiveness) of ambidextrous leader behaviours, for example, whether they are effective in the same way for everyone, or whether further concepts such as LMX or feeling trusted are conditions that need to be in place for

ambidextrous leadership to be effective, then moderation analysis using individual differences of followers is needed.

Finally, important managerial practices are being suggested, which highlight key findings such as the importance of opening leader behaviours for followers' innovative work behaviours and intrinsic motivation. The study's mixed results challenge the theory, as it found no evidence that the interplay between leader opening and closing behaviours can facilitate follower innovation from day to day, but numerous other findings provide strong evidence to suggest that the ambidextrous leadership theory may need to be re-evaluated.

This chapter follows the structure of a traditional empirical paper. The next section consists of the literature review which focuses on daily leadership research and its importance and the use of diary studies as a crucial method of researching leadership. Moreover, I discuss the concept of dynamic leadership behaviours and why they are important in this research, and I argue for the case of ambidextrous leadership as a dynamic process. Additionally, this section includes the hypotheses development where arguments are made for each hypothesis proposed. The next section consists of the methodology, which explains in depth the process and rationale for all decisions made about the proposed method, the sample, the procedure and the measures used. The following section includes the results, which explains the statistical analysis undertaken to answer the hypotheses proposed, as well as supplementary analysis which focuses on the cross-lagged and time-lagged effects of ambidextrous leadership. Finally, the last section includes the discussion where I explain the findings in depth, I state the theoretical and practical contributions, as well as the limitations of this study and some recommendations for future research.

4.2. Literature Review

In the past few years, a trend has emerged in leadership literature to explore the daily behaviours of leaders and their effects on the followers. Most followers tend to have a basic understanding of their leader's style; however, it has been evidenced that when a more thorough examination is conducted on a daily basis, then daily leader behaviours do not match the general leadership style (Hoption, 2016). This suggests that leaders' behaviours are dynamic and fluctuate over time, due to various situational, personal, or environmental factors (McClean et al., 2019). The literature review section of this chapter captures the importance of investigating daily leadership behaviours, its benefits and how other scholars have examined this phenomenon. I also discuss the fundamentals of dynamic leadership and how leaders' behaviours fluctuate depending on various situations. I make the case for ambidextrous leadership as a dynamic leadership style, essential for facilitating innovation as it is a paradoxical process. Lastly, I develop hypotheses which aim to test daily ambidextrous leadership and its effects on daily follower outcomes.

4.2.1. Daily Leadership

Daily leadership refers to the leadership behaviours that leaders portray on each day. For instance, a leader might be transformational one day, and abusive the next. Leadership behaviours were originally treated as stable over time (Lord et al., 2017). It was assumed that once a leader was classed into a category based on their behaviours, then it meant that they would portray those characteristics and behaviours every day. But past research failed to understand that leaders are humans too, with feelings, emotions, bad days, good days, personal issues and environmental factors, all of which could affect their leadership performance.

Extensive research in the past decade indicated that leaders' behaviours vary at the within-level, from day-to-day (Breevaart et al., 2014; Johnson et al., 2012, Nielsen & Cleal, 2011) and more recently, scholars have urged for more studies that capture leader/follower behaviours and interactions in real settings (Hemshorn de Sanchez, Gerpott & Lehmann-Willenbrock, 2022).

It is important to examine leadership on a daily basis and assess the extent to which leader behaviours fluctuate from day to day and how that affects employee outcomes, as it is an area that has been ignored for a long time. Examining daily leadership behaviours can offer a range of benefits. Keleman, Matthews and Breevaart (2020) have identified three main advantages that studies on daily leadership can provide.

First, researchers are able to examine leadership behaviours at the within-person level, which can provide insight into the daily behaviours of their leaders instead of their overall leadership style. Leaders can be overall transformational, but on a daily basis may demonstrate some transactional behaviours as well (Breevaart et al., 2014). It is likely therefore that between-person studies show different results compared to the within-person studies. At the between-person level, literature might suggest that negative leadership behaviours are never beneficial (Mackey et al., 2021), however, at the within-person level, they might help initiating structure (Liao et al., 2018). It is crucial therefore that leadership styles are captured like so, in order to fully understand concepts and styles of leadership and challenge pre-existing assumptions (Dalal, Bhave & Fiset, 2014).

Second advantage is that daily studies in leadership may provide additional insight by assessing the time factor, meaning that they can examine the duration of the effect of the behaviours. For instance, some studies found that leaders behaviours may have a strong effect and influence the followers even the following days. For instance, a study showed that abusive supervision

may have a beneficial effect on follower engagement the next day, but a detrimental effect after a few days (Qin et al., 2018). Another study showed that engaging leadership predicted follower autonomy even one year later (Nikolova et al., 2019). Further studies demonstrated the effect that time can have on leadership behaviours (Bakker et al., 2022; Kuonath et al., 2017). This shows that leadership behaviours can have an unknown lasting effect, which has to be taken in consideration, especially in regard to practical implications. Moreover, through daily studies one can control daily factors that could influence the behaviours of both leaders and followers, such as daily interactions between the two parties (e.g., Ford et al., 2018; Stocker et al., 2014). When examining effects of short-term processes, one may also be able to find patterns that may explain the daily behaviours of the leader. For example, a study showed that leaders who reported lower sleep quality in the morning, were more abusive on that day (Barnes et al., 2015).

Third advantage is that by conducting daily studies in leadership, one may collect data in natural settings as they occur. When leaders and followers have to report each other's behaviours, then data could be biased for two main reasons. First would be the time factor; when individuals are asked to report leaders' behaviours in general or during the last six months then data might not be as accurate dule to memory failure, or distorted perceptions of past occurrences (Beal et al., 2005; Hoffman & Lord, 2013). When collecting data on a daily basis and individuals are asked about behaviours and feelings that occurred today, then it is less likely that they forgot what happened and how that affected them (Hansbrough et al., 2015). The second factor would be the natural context, which can capture quality data that cannot otherwise be acquired. For instance, one may measure real relationships and connections between leaders and followers, compared to hypothetical scenarios through experimental designs (Keleman et al., 2020). When something goes wrong in a relationship, it can have a strong effect on the parties for the whole day or even the entire week. Consequently, when the

data are collected close to the occurrence of the situation, the better, as they are more authentic and less likely to suffer from biases.

The main method researchers use to capture daily data is through experience sampling methods, or "diary studies". This method allows researchers to capture data as they occur (Uy, Foo & Aguinis, 2010). When using diary studies, researchers can ask participants to measure their leaders' behaviours on a daily basis for a set number of days, thus giving them the opportunity to capture daily fluctuations and their effects on follower behaviours or outcomes (Fisher & To, 2012). This happens through short and quick questionnaires which measure the same variables every day, in order to examine any potential patterns. An event-based sampling study which belongs in the experience sampling methodology category, is when researchers collect data only when a specific situation occurs (Uy et al., 2010).

The last decade has seen a big rise of diary studies in the leadership literature (Kelemen et al., 2020; Ohly & Gochmann, 2017). The increasing popularity of diary studies can be accounted to the fact that leaders' (as well as followers) behaviours, thoughts, feelings, and attitudes are not stable over time and can fluctuate (Kelemen et al., 2020). Therefore the use of daily assessments to measure them has become a very useful method in leadership literature as it challenges the assumptions that leadership behaviours are stable over time and in fact it might change over time due to different external factors or situations (Dóci, Stouten, & Hofmans, 2015; Klaussner, 2014).

Multiple studies in the past decade have examined various leadership styles and behaviours through diary studies and assessed how daily leaders' behaviours affect the followers. In regard to abusive supervision, the study by Barnes et al., (2015) demonstrated that lack of sleep can influence leaders negatively and make them engage in daily abusive behaviours towards their followers which consequently had a negative impact on their work engagement. Butts, Becker

and Boswell (2015) collected data once a day for seven consecutive days and found that the relationship between affective tone produced in electronic communication modes and follower anger was strongest when leaders were high in abusive supervision. Another study found that family-work conflicts may enhance the daily abusive behaviours of a leader (Courtright et al., 2016). The daily diary study of Foulk et al. (2018) also demonstrated the negative influence of abusive supervision. After collecting data thrice a day for ten days, they found that psychological power made leaders more abusive, which had a subsequent negative effect on them being able to relax at home. The study by Liao et al. (2018) found that daily abusive supervision led to guilt, by assessing their behaviours twice a day for ten days. Tariq and Ding (2018) found that daily abusive supervision led to decreased job performance. Vogel and Mitchell (2017) found that daily abusive supervision led to a decrease in follower self-esteem and an increase workplace deviance.

Other scholars have focused on the daily effects of transformational leadership. Bono and her colleagues (2007) found that daily transformational leadership can have a positive effect on the followers' daily emotions during the day. Breevaart and her colleagues (2014) found that daily transformational leadership positively affected follower work engagement, while Diebig, Bormann and Rowold (2017) found that it increases team cooperation, which subsequently decreases followers' stress. Further daily diary studies found that leaders who portray daily transformational behaviours can increase their followers positive job attitudes through a fulfillement of their psychological needs (Hetland et al., 2015), as well as their daily job crafting (Hetland et al., 2018). Daily transformational leadership was also found to predict followers' personal initiative (Kuonath et al., 2017), job satisfaction (Myrden & Kelloway, 2015) and daily work engagement (Myrden & Kelloway, 2015; Tims et al., 2011).

Studies on supportive leadership have also demonstrated strong effects from day to day. Amabile and her colleagues (2004) found that supportive leadership behaviours affected

followers' feelings and perceptions which then had a positive effect on their creativity. Leaders who provide developmental feedback to their followers can positively affect their mood, which may also increase their creativity (Christensen-Salem et al., 2018). Goh, Ilies and Wilson (2015) found that when followers receive daily support from their leader, minimises the negative relationship between their workload and their work-family conflict. An event-based sampling study which belongs in the experience sampling methodology category, is when researchers collect data only when a specific situation occurs (Uy et al., 2010). The event-based sampling study by Stocker and her colleagues (2014) showed that followers demonstrated high levels of serenity on days when their leader showed appreciation for them. Support for creativity on a daily level can also have a positive effect on follower creative process engagement (To et al., 2012). When leaders also supported their followers through daily coaching, it made them more positive (Xanthopoulou et al., 2012)

Only two studies however have been conducted so far that examine ambidextrous leadership through diary studies. The first study was by Zacher and Wilden (2014), where they collected daily data from 113 employees for five consecutive days, and they have found that the interactive effect of both sets of leaders' daily behaviours can facilitate follower innovation. The second diary study was on a weekly basis (Gerlach et al., 2020b). Although their findings suggest that both opening and closing behaviours predict daily follower innovation performance, they did not find support that the interplay between the two behaviours can facilitate innovation. Moreover, the two diary studies by Rosing and Zacher (2017) on individual ambidexterity, demonstrated that individuals' engagement with exploration and exploitation varies not only across days, but weeks as well. Their results indicate that when both exploration and exploitation were high, then their innovative performance was also high. In addition, the researchers suggest that employees may still perform innovatively by focusing only on exploration, indicating that exploitation might not have a strong effect on overall

innovation as exploration. The multilevel structure of dairy studies therefore provides the researchers with the opportunity to examine not only the between-subject differences but the within-subject differences too, which can demonstrate whether effects can differ depending on the time, not only the person. The present study improves the design of the past two studies as it examines separately the main effects of leaders' daily opening and closing behaviours on the followers' daily idea generation and idea implementation behaviours, as well as their interactive effect.

4.2.2. Dynamic Leadership

It is evident therefore that leadership behaviours are dynamic, despite the vast majority of research considered leader behaviours as something that is stable over time (Day, 2014). This means that leaders do not portray the same exact behaviours every day for their entire careers. Leader behaviours change for various reasons. First of all, leaders might have undertaken leadership development training or learned new skills (Antonakis, Fenley & Liechti, 2011; DeRue & Wellman, 2009; Dragoni et al., 2009). Second, leaders may adapt their behaviours based on the situation (Nielsen & Cleal, 2011; Rosen et al., 2019; Sherf et al., 2019). Third, leader behaviours may even be affected by exogenous factors, such as family conflict or daily affect (Courtright et al., 2016). The underlying assumption therefore that dominated leadership literature for decades is false. Leadership behaviours are not stable over time but dynamic, and in order to fully understand them, further research has to be conducted longitudinally that assess the changes over short periods of time (Hiller et al., 2011).

The concept of dynamism has different definitions across multiple literatures. Oxford Languages (2022) defines dynamic as a "process or system that is characterised by constant change, activity, or progress". Roe (2008) refers to it as "…the overall shape of the

phenomenon as it unfolds over time" (p.42). Teece, Pisano and Shuen (1997) define it as "…situations where there is rapid change…" (p.512). Schöner and Thelen (2006) posit that dynamic refers to a process that may "…evolve gradually over time…which may be nonlinear" (p.278). McClean, Barnes, Courtright and Johnson (2019) referred to it as the frequency and magnitude of a phenomenon that changes over time. These, and many other definitions have something in common; *time* and *change.* Leadership can be considered a dynamic process therefore, as it changes over time. Dynamic leadership is defined as the "*degree and pattern by which leader behaviour changes over time*" (p.7) (McClean et al., 2019).

Dynamic leader behaviours may be found in different ways. McClean et al. (2019) identified that changes in leader behaviours can be classed in three categories: a) Shift, b) Growth and Decay, and c) Ebb and Flow.

Within the ***Shift*** domain, McClean et al., (2019) argue that leaders' behaviours are dynamic, when there is a shift in behaviours, usually from time one to time two. These shifts could include interventions or isolated events (trigger events) that cause that change in leader behaviours (Gardner et al., 2005; Zohar, 2002). These types of studies however do not treat time as a predictor of leadership, but instead they suggest that change can happen quickly. Cooper, Scandura and Schriesheim (2005) for example found that trigger events such as leader development intervention can have a strong effect on leaders, thus making them switch their behaviours. The triggers that cause this shift in leader behaviour change have been classed in three categories (McClean et al., 2019).

The first type is the experiential triggers, which can occur organically through various work experiences such as a promotion, or a career change (Benjamin & O'Reilly, 2011), training and development (Antonakis et al., 2011). These events may have an influence on their self-identity and self-efficacy as leaders, which can make them change their behaviours based on their new

perceptions of themselves (Black & Earnest, 2009; DeRue & Ashford, 2010; Komives et al., 2005; Lester et al., 2011). Events such as executive training may also have a strong positive effect on leaders' behaviours. For instance, graduates of MBA programmes seem to enter the programmes with a self-oriented mindset, but by the end of it, their attitudes have turned into those of a transformational leader and focused on the development of their followers (Benjamin & O'Reilly, 2011). Engaging in the leadership process, practising the craft, setting goals and trying to develop themselves are also triggers of leader behaviour change (Antonakis et al., 2011; Atwater, Roush & Fischthal, 1995; Parry & Sinha, 2005).

The second type of triggers is referred to as interactional triggers (McClean et al., 2019). Receiving feedback was also closely associated with a change in leader behaviours (Antonakis et al., 2011; Atwater et al., 1995; Atwater et al., 2000; DeRue et al., 2012). When leaders receive constructive feedback, such as part of a training, or even receiving negative feedback, then it can operate as a trigger, enabling them to change their behaviours. The interactions may also come in the form of coaching and mentoring. Leaders who actively try to better themselves, through mentorship or coaching programmes may shift behaviours for the better, which can lead to higher performance as well as self-efficacy (Antonakis et al., 2011; Lester et al., 2011; McKenna & Davis, 2009; Waldman et al., 2012).

The third type of triggers are called the conditional triggers (McClean et al., 2019). These triggers are effective only when supplementary conditions are met. For example, for individuals who attended one leader workshop, the workshop did not act as a trigger to shift their behaviours, however those who attended the second leader workshop, or any follow-up workshops, portrayed changes in their behaviours (Antonakis et al., 2011; Barling et al., 1996; Dvir et al., 2002; Seifert & Yukl, 2010). Furthermore, individual differences and characteristics may also play a role in behaviour change. For instance, when leaders are open to new experiences (DeRue et al., 2012) or when they seek negative feedback (Lester et al., 2011),

shows that they are more open to change their behaviours. Therefore, when such characteristics are considered, in conjunction with a trigger event, such as coaching or leadership training, then leaders may show a change in behaviour.

In addition to the three triggers, further factors that should be considered is the time-lag between these events. This would clarify whether changes in leaders' behaviours are due to a particular triggering event, or whether something else intervened in-between (McClean et al., 2019). Triggers events may also suffer from short-term effect. The duration of the effects should be reviewed through longitudinal studies as they may deteriorate over time and the leader changes back to their initial behaviours.

Additional factors that can cause leader behaviour change can be classed under the ***Growth and Decay*** category of studies (McClean et al., 2019). This group of studies suggests that change in leader behaviour is a long term and gradual process. One of the most common ways a leader may change their behaviours over time, is organically through their job. When an individual has been in a leadership role for a long time, the experience they accumulate over time, helps them adjust their behaviours to become more effective (Mumford et al., 2000). In the study by Hirst et al. (2004), the findings show that new leaders are more likely to learn new things about leadership than experienced leaders, suggesting that the position of a leader (senior vs. junior) plays a significant role into the behaviours leaders portray. Using tenure or seniority to capture leader behaviour change however, neglects to assess the types of experiences the leaders have been through (Dragoni et al., 2009). Hence, it is important to understand that time is not the real factor that provokes behaviour change, but it is the experiences that leaders go through over time. In order for leaders to be effective and gain the necessary skills to survive they have to go through challenging such experiences, dealing with unfamiliar situations, creating change or making important decisions (McCauley et al., 1994).

Not only the experiences but the interactions leaders have with others play a crucial role in the long-term change in behaviours as well. Leaders who engage in quality interactions with various stakeholders over the years are more likely to want to maintain good relationships, or emerge as influential leaders (Badura et al., 2018; Bauer & Green, 1996; Buengeler, Homan & Voelpel, 2016; Kwok et al., 2018). Hence, the cumulative interactions that leaders have with others may affect how they and their behaviours are perceived (Buengeler et al., 2016).

The traits that leaders possess may also be a factor in their behaviour change over time. Although some traits may inhibit growth and encourage development such as charisma or boldness, other traits may have a negative effect in the long run, such as chronic scepticism (Harms, Spain & Hannah, 2011). Another study also found an association between positive traits such as intelligence and self-efficacy and long-term leader effectiveness (Foti & Hauenstein, 2007). Furthermore, a study by DeRue and Wellman (2009) showed that individuals high on learning goal orientation aided their personal growth and helped them develop critical leadership skills quickly. Johnson et al. (2018) as well as Day and Sin (2011) also found that learning goal orientation can be beneficial for leaders and their change in behaviours over time.

It has been also suggested that additional factors need to be considered such as the trajectory of the effect in regard to time or the trend (McClean et al., 2019). The effect of an intervention for example, may not only have a positive or negative trajectory, but may also have a "discontinuous" trajectory, where the effect is temporary (Getha-Taylor et al., 2015; Thomas, Jules & Light, 2012). Moreover, the trend is also a factor worth examining as most studies under the growth and decay umbrella tend to examine linear trend over time, whereas further trends exist such as deceleration, where the effect appears quickly but then remains stable for some time (e.g., Nahrgang et al., 2009), or even a logistic trend where the effect requires a

longer period of time to appear but once it does, it accelerates at a faster level (e.g., Zhao et al., 2016)

The final category of changing behaviours amongst leaders could be classed under ***Ebb and Flow*** (McClean et al., 2019). Unlike shift or growth and decay, this group focuses on momentary events that can have an immediate effect on leader behaviour change and could usually make them last for a short-term period before reversing. Studies as such can explain non-linear effects, where leaders may switch through variety of behaviours during a day, week or month. These short-term fluctuations in leader behaviours can be also referred to as daily leadership. Understanding therefore that dynamic leadership goes hand in hand with daily leadership is crucial, not only because of the rise in diary studies, but because of the findings. Multiple scholars agree that a large proportion of the variance in leader behaviours can be explained at the within-person level, rather than the between-person (Breevaart, et al., 2014; Johnson, Lanaj & Barnes, 2014; Kelemen et al., 2020; Liao et al., 2018; Rosen et al., 2019). Consistency amongst leader behaviours is important, as it can create a solid picture of the leader that followers can stand behind or not. Portraying inconsistent behaviours on a daily basis, might confuse the followers. In fact, various studies show that followers prefer their leaders to show consistent behaviours as it was found to lead to leader effectiveness and well-being (Johnson et al., 2012; Matta et al., 2017; Winkler et al., 2015). These sudden switches in leader behaviours could be due to either personal factors or situational factors.

Self-regulation theory, which can explain the conscious management and control of ones' behaviours (Carver & Scheir, 2001; Lord et al., 2010) could be used to explain some of the personal factors involved in these sudden leader behaviour changes. Some studies have shown that cognitive resources can have a serious impact on behaviours. When cognitive resources are running low, leaders may portray more abusive behaviours (Barnes et al., 2015; Courtright et al., 2016; Mawritz et al., 2017), but when on higher levels, they can contribute to behaviours

which can be supportive, productive, and ethical (Gabriel et al., 2018; Lin & Johnson, 2015; Lin et al., 2016). Abusive supervision was also demonstrated by leaders who focused on their psychological powers (Foulk et al., 2018). Further studies have shown that the short-term psychological states of leaders, such as positive or negative affect, may influence their daily behaviours (Berson et al., 2015; Scott, Colquitt & Paddock, 2009; Scott et al., 2014). In regard to stable traits that leaders may possess, such as holistic thinking (see Zhang et al., 2015), leaders may find it appropriate to look at all alternative options before making a decision, thus engaging in paradoxical behaviours, that contradict each other.

Last but not least, leaders may portray changes in their behaviours due to situational factors. According to contingency leadership theories, leaders should use behaviours that fit the situation. Leaders may adjust their behaviours according to the tasks (Rosing et al., 2011), the performance phase (Farh & Chen, 2018), or the experience level of their subordinates (Lorinkova, Pearsall & Sims, 2013).

Situational factors may also include influences from outside the workplace. For instance, Barnes et al. (2015) showed that daily sleep deprivation can promote the abusive behaviours of a leader. Similarly, Lanaj et al. (2014) found that sleep quality also affect the engagement of the leaders with their work. Family stress and conflict at home may also be influence daily leader behaviours in a negative way, as Courtright et al. (2016) found that when that happens, leaders portray higher abusive behaviours at work.

Nonetheless, leaders are not the only active agents in these situations. Leadership is a dyadic process and followers do play a role in it and have the capacity to influence leaders' behaviours as well. For example, when the relationship quality between leaders and followers is not high, leaders may portray abusive behaviours (Mawritz et al., 2017; Wee et al., 2017). Moreover,

when followers portray avoidant behaviours, or deviant, may affect their leaders negatively, leading them to use abusive behaviours (Lian et al., 2014; Simon et al., 2015).

The last factor that could make leaders portray fluctuations in their daily behaviours is work. Depending on the task or the activity, leaders may choose to portray different behaviours to maximise performance. For example, a study showed that during challenging activities, leaders were using more transformational behaviours (Nielsen & Cleal, 2011). When there are some important demands that require focused attention, leaders were found to use fewer positive behaviours and higher initiating structure behaviours (Rosen et al., 2019; Sherf et al., 2019). Findings from another recent study suggested that leaders used a combination of different contradictory behaviours (i.e., transformational, transactional) when there was time pressure and upcoming deadlines (Clark & Waldron, 2016).

McClean et al. (2019) posit that ebb and flow studies could benefit from two further factors: stability and cyclicality. They authors claim that studies that examine fluctuations over time could benefit from examining the frequency and amplitude of the effect as well. However, it should be noted, that leaders who portray behaviours through a high amplitude and a high frequency (i.e., behaviours at high intensities and shorter periods of time), may cause their followers anxiety due to this sudden and inconsistent approach. Cyclicality may be observed through portrayal of the same patterns over a period. For instance, a leader may portray higher levels of transformational behaviours during the beginning of each week, before slowly going back to normal by the end of the week.

The ebb and flow area of studies is where ambidextrous leadership fits in. Ambidextrous leadership is classed as a dynamic situational process as the theory of ambidextrous leadership (Rosing et al., 2011) suggests that leaders should follow an *ad-hoc* approach, meaning that they have to adjust their behaviours depending on the situation and the nature of the task. Leaders

may show high levels of opening behaviours but low levels of closing behaviours one day, and high levels of closing behaviours but low levels of opening behaviours the next. Moreover, as innovation is a non-linear process consisting of different stages, each stage might require a different amount of time, thus making time, an important factor for this theory.

4.2.3. Ambidextrous Leadership

This leadership style is the only one that was designed as a dynamic process. The reason this style can be classed as dynamic can be explained by its initial aim. It was designed with the aim to facilitate innovation. Most leadership styles are too broad, as they are initially identified and then examined for effects on various employee and organisational outcomes. The ambidextrous leadership style is the only one that has a set outcome (innovation) as its aim. Innovation is not a linear process, and its various stages contradict each other. One may start an innovation project by brainstorming ideas and end up filling monotonous company forms. The in-between stages may not be distinct, and due to the process being non-linear, it is extremely hard for leaders to know the exact time of these changes, hence difficult for them to plan about the timing that each event occurs (Rosing et al., 2011). It is suggested therefore that this variable of time should be considered, and leaders should be ready to switch behaviours as soon as the situation requires it.

In order for the leaders to be effective in their pursuit for innovation they need to know two things. The type of the task is being undertaken at each time, and the type of behaviours that need to be portrayed for each type of task. This situational leadership approach aims to maximise the efforts of the leaders in their goal for innovation, by enabling them to use the best (according to research) behaviours for each stage of the innovation.

When the task is about creativity, meaning followers have to come up with novel and useful ideas (Amabile, 1997), leaders should use opening behaviours. This group of behaviours are motivational, encouraging and provide autonomy and flexibility to the followers without repercussions. Opening behaviours are meant to encourage the followers to engage with explorative behaviours, which will facilitate their innovation. When the task is focused on implementation, meaning followers have to implement or execute the new idea and make it work (Hammond et al., 2011), then it is suggested that leaders use closing behaviours. This group of behaviours are restrictive, controlling and monitoring, as they meant to disallow the followers from experimenting and trying out new methods, but to exploit their current skills and knowledge in order to turn the idea into reality. Followers' exploitation was suggested that it leads to innovation as well. However, since innovation is already a concept with multiple phases, Rosing and her colleagues (2011) recommended that the focus should be on the two most important parts; idea generation (or creativity) and idea implementation.

Since ambidextrous leadership is not a traditional style with stable behaviours, it was suggested that a longitudinal approach would be the most appropriate to accommodate the needs of this theory and assess whether leaders are able to switch their behaviours flexibility to match the situation (Rosing et al., 2011). Currently, only two studies have examined the concept of ambidextrous leadership and its effects on follower innovation (Gerlach et al., 2020b; Zacher & Wilden, 2014), yet neither of them deconstructed the concept of innovation in order to assess whether opening behaviours are associated with idea generation and whether closing behaviours are associated with idea implementation. The present study tests the theory of ambidextrous leadership for innovation longitudinally, by deconstructing both concepts and examining further concepts which have been found to play a role in facilitating innovation such as LMX (Clegg et al., 2002; Tierney et al., 1999), motivation (de Jesus et al., 2013; Hennessey & Amabile, 1998) and trust (Xie et al., 2018). A longitudinal approach is the most appropriate

to examine daily fluctuations of leaders' behaviours, as well as their effect on daily outcomes of employee behaviours.

4.2.4. Hypotheses Development

This study's primary focus is to deconstruct the ambidexterity theory of leadership for innovation and test its proposed relationships through an experience sampling method. Although some of the proposed hypotheses have already been tested through past studies (i.e., Gerlach et al., 2020b; Mascareño et al., 2021; Zacher et al., 2016; Zacher & Wilden, 2014) it is still important to look at those relationships on a daily level in order to understand fluctuations of leaders' behaviours, as well as further factors that may be influencing these relationships. Ambidextrous leadership is considered a dynamic leadership style (Gibson & Birkinshaw 2004; O'Reilly & Tushman 2008), whose behaviours are not consistent and fluctuate over time, hence examining its theory through a longitudinal lens can provide some insight to its effect over a longer period. The theory assumes that leaders should act independently of their personal issues. But leaders are also humans, not robots, and have feelings, problems, good days, and bad days as everyone else. Hence, it is very logical that their behaviours will fluctuate, as one may not be able to portray the same levels of opening or closing behaviours every time is required.

Opening leader behaviours were clustered as a set of behaviours that aim to increase variance of the followers' behaviours (Rosing et al., 2011). When leaders portray opening behaviours, such as allowing their followers to experiment with different ideas, providing them flexibility, autonomy, and encouragement to take risks, then followers are more likely to take advantage of the opportunity and engage in new behaviours, break up their routines and think freely without constraints (Rosing et al., 2011). Employees who perceive their leader as someone who

encourages them to make mistakes and will not penalise them for any errors, then they might not be afraid to think outside the box, come up with new ideas to problems and use new techniques they wanted to try. Leaders' behaviours have been found in the past to be detrimental to their followers' performance (Jung & Avolio, 1999; McColl-Kennedy, & Anderson, 2002; Ogbonna & Harris, 2000) and especially creative performance (Elkins & Keller, 2003; Shin & Zhou, 2003; Wang & Rode, 2010;), regardless of skills, experience, or background. If followers interpret their leaders' behaviours as an invitation to be creative, then they are highly likely to result in a greater number of ideas, and engagement with new techniques and practices. Followers tend to respond to their leaders' behaviours and act based on how they perceive them (Cropanzano & Mitchell, 2005). The role of the employee is to complete their work tasks, but their perception of their leader's behaviours can influence the way those tasks are undertaken and completed (Alheet, Adwan, Areiqat, Zamil & Saleh,2021). Hence, when a leader portrays such behaviours, which can be classed as positive and ideal, as they focus more on the employee than the task (Bass & Stogdill, 1990; Judge, Picollo & Ilies, 2004) then followers are more likely to respond to them in a positive way, due to a sense of obligation and reciprocity (Cropanzano & Mitchell, 2005). Although the main theoretical framework suggests that opening behaviours work in conjunction with closing behaviours to foster innovation, it does not make any claims that this set of behaviours may not be used independently to enhance creativity of the followers (Mascareño et al., 2021; Rosing et al., 2011). Creativity refers primarily to the production of new and useful ideas (Amabile et al., 1996; Janssen, 2001; De Jong & Den Hartog, 2010) hence expecting that opening behaviours of the leaders will improve followers' idea generation, is not peculiar, as idea generation is considered the first stage of innovation (Scott & Bruce, 1994).

Opening behaviours are likely to fluctuate from day to day, as it is not possible for individuals to maintain the same levels of energy and portray the same behaviours every day. Workplace

leaders can experience daily struggles like any individual, such as, low mood (Lanaj & Jennings, 2020), mental health issues like stress and anxiety (Barling & Cloutier, 2017), family issues at home (Ten Brummelhuis, Haar & Roche, 2014), financial issues, grief etc. It is therefore nearly impossible to expect that leaders may maintain the same level of energy, enthusiasm, and excitement to portray high opening behaviours at the same levels every time. Opening behaviours are motivational, and it can be difficult for leaders to fake being motivational when they are not feeling well. Nonetheless, it is expected that when leaders' opening behaviours are on high levels, then they can promote the followers' creativity. The same arguments can also be made for the followers, however. Followers are not mindless robots who will respond blindly to every behaviour portrayed by their leader. They tend to match the leaders' energy and enthusiasm (Damen, Van Knippenberg, & Van Knippenberg., 2008; Kouzes & Posner, 1990; Venus, Stam, & Van Knippenberg, 2013), thus when the leader portrays only 50 percent opening behaviours, then creativity levels will also be at medium levels. Followers also may experience difficult days, negative emotions, and personal problems; thus, it could also be argued that leaders' behaviours may not be as effective due to other unforeseen circumstances which are out of the leaders' control. The level of follower creativity will most likely match the level of leaders' opening behaviours. For these reasons, it can be hypothesised therefore:

Hypothesis 1. *Leaders' daily opening behaviours will have a positive influence on the employees' daily idea generation.*

Follower ambidexterity refers to the ability of the followers to engage in a contradictory repertoire of behaviours, similar to ambidextrous leadership. The two sets of behaviours and actions are exploration and exploitation (March, 1991). Follower exploration refers to a

specific set of behaviours and actions where they engage with experimentation and use new methods and techniques to solve problems and relevant work issues, while exploitation focuses on using one's current knowledge, skills and abilities to achieve a goal (March, 1991). Although the ultimate outcome of opening behaviours is to facilitate the creativity of their followers, Rosing and her colleagues (2011) claim that leaders' opening behaviours aim to foster exploration of the followers, which is considered a key ingredient in their efforts to improve creativity. By using opening behaviours, the leaders, aim to increase their followers' variance of behaviours by encouraging them and motivating them to experiment with new methods and techniques. Since opening leader behaviours focus on encouraging, motivating, and allowing followers to use different or new ways to accomplish tasks, it can be said that the leaders opening behaviours can play a positive role on the followers' levels of exploration. Employees who perceive their leaders' behaviours as opening and respond to them, they are actively engaging in exploration.

Past studies have found that opening leader behaviours predict follower exploration (Alghamdi, 2018; Klonek, Gerpott, & Parker, 2020; Zacher et al., 2016), confirming therefore propositions by Rosing and her colleagues (2011) suggested in their review and meta-analytic paper in The Leadership Quarterly. But most importantly, they theorised that exploration is the main mediator that drives followers to be creative. Their theoretical framework suggests that when leaders use opening behaviours, they will enable their followers to engage in explorative behaviours and activities, such as experimentation, trial and thinking outside the box which will ultimately improve their creativity and their idea generation outcomes. Studies have also confirmed that exploration is a key part of the process between leaders' opening behaviours and employee creativity, thus providing further evidence to the theory and past propositions (Alghamdi, 2018; Klonek et al., 2020; Zacher et al., 2016). Similar to follower creativity, employees may also exhibit different levels of exploration on a daily level. When leaders

portray opening behaviours that may vary from 0 percent to 100 percent within a period of one week, then followers are likely to engage more with exploration on days when the leader portrays very high levels of opening behaviours, compared to days when they portray less. Based on the theory, and various evidence from other studies, it can be hypothesised that:

Hypothesis 2. *Leaders' daily opening behaviours will have a positive influence on the employees' daily exploration.*

Hypothesis 3. *Employee exploration will mediate the relationship between leaders' daily opening behaviours and employees' daily idea generation.*

Multiple studies in the past have found that positive leadership behaviours (e.g., transformational) are beneficial for the followers' intrinsic motivation (Chen, Li, & Tang, 2009; Shin & Zhou, 2003; Wang, Kim & Lee, 2016; Zhang & Bartol, 2010). It is worth mentioning that no other study has examined the effects of opening leaders' behaviours, or even ambidextrous leaders' behaviours, on the motivation of the followers (Mavros, 2022; Study 1), hence looking at these from a direct relationship perspective and on a daily level might give an indication as to why and how this leadership style has been found effective in facilitating creativity of the followers.

Transformational leadership was suggested to be strongly related with opening leadership behaviours due to their similarities (Rosing et al., 2011; Zacher & Rosing, 2015). Leaders who use transformational behaviours, aim to motivate, inspire, and influence their followers to better themselves and achieve a higher level of performance (Bass & Avolio, 1990). Similarly, leaders' opening behaviours can be comparable to transformational, as these include motivation, encouragement and error and mistake allowance, which enable the followers to

think outside the box and generate new and better ideas and provide them with a sense of autonomy and satisfaction (Gerlach, Hundeling & Rosing, 2020; Tung, 2016). Since transformational leaders have been found to facilitate the followers' intrinsic motivation, it is logical to predict that leaders' opening behaviours can also facilitate to followers' intrinsic motivation.

Intrinsic motivation is one of the most important antecedents of creativity (Hennessey & Amabile, 2010; Sternberg, 2009). Amabile and her colleagues (2018) argued that intrinsic motivation along with expertise and creative thinking skills are the necessary components for creativity. Moreover, a variety of studies have further found significant positive relationships between intrinsic motivation and creativity (Amabile, Hill, Hennessey & Tighe, 1994; Choi, 2004; de Jesus, Rus, Lens & Imaginário, 2013; Fischer, Malycha, & Schafmann, 2019).

Intrinsic motivation can be a significant factor which can explain why opening leaders' behaviours lead to employee creativity, hence it is important to examine its mediating effects.

When employees feel that they enjoy what they are doing and find intrinsic meaning in their work, they are more likely to be more creative and generate more ideas (de Jesus, Rus, Lens & Imaginário, 2013). It can be argued, that when leaders use positive behaviours which can stimulate their followers' intrinsic motivation, they can make them more creative. Multiple studies so far, have shown, for example, the positive influence of transformational leadership behaviours on the followers' intrinsic motivation, as well as creativity, mediated by intrinsic motivation (Charbonneau, Barling, & Kelloway, 2001; Chen, Li, & Tang, 2009; Jensen & Bro, 2018; Laksmana & Riana, 2020; Shafi, Lei, Song & Sarker, 2020). It is highly likely then that if leaders use opening behaviours with the aim to promote creativity, then they are promoting intrinsic motivation first, to make the followers genuinely interested about the work. That

follower excitement may then be transformed to higher creativity, as they will know that they have no limits to what they can do.

But it is also likely that the relationship between opening leaders' behaviours and creativity goes even further to form a serial mediation with intrinsic motivation and exploration. The theory (Rosing et al., 2011) suggests that follower exploration is the key mediator, something that is hypothesised prior. Yet, as argued, it can be that leaders' opening behaviours lead to the followers' intrinsic motivation which can make them engage with explorative behaviours behaviour showcasing higher creative outcomes. Some scholars claim that there is a positive relationship between intrinsic motivation and exploration (Amabile, Hill, Hennessey & Tighe, 1994; Gilson & Madjar, 2011). Izard (1977) suggested that intrinsic motivation does not only intensify an individual's focus and attention toward a work task, but it can also promote the exploration of new situations and challenges. Moreover, self-determination theory (Deci & Ryan, 1985; Ryan & Deci, 2000) also posits that the two are also closely related and that exploratory behaviours are normally intrinsically motivated. Gilson and Madjar (2011) found that intrinsic motivation is a strong predictor of radical creativity as well, which can be defined as generating new ideas, taking risks, and engage in experimentation (Gilson, D'Innocenzo, & Moye, 2012). Although the description sounds very similar with exploration, it is not suggested that the two concepts are the same. It is argued that the cognitive processes that can be found amongst intrinsic motivated individuals are the same ones that can promote individuals to experiment with new ideas and take risks (Perry-Smith & Shalley, 2014; Unsworth, 2001). Individuals who are motivated intrinsically, show a tendency to examine new opportunities and look for alternative solutions (Pittman, Emery & Boggiano, 1982).

The close link between transformational leadership and opening leadership also suggests that a closer connection between intrinsic motivation and exploration might exist. Since inspirational motivation (dimension of transformational leadership) can stimulate generation

of new ideas of the followers, and intellectual stimulation (dimension of transformational leadership) can encourage them to think out the box and engage with new activities and behaviours, then it can be argued the two are related (García-Morales et al., 2012; Si &Wei, 2012). Although it is hypothesised that opening behaviours can lead directly to both intrinsic motivation and exploration, it is also worth examining a serial mediation where intrinsic motivation leads to follower exploration before facilitating their creative outcomes. It is possible that opening behaviours are motivational and provide autonomy to the followers, thus allowing them to engage with explorative behaviours.

Intrinsic motivation may also change from day to day. Motivation is a cognitive state, and therefore, depending on the tasks that individuals engage with (Bidee et al., 2017) or their mood on each day (Vandercammen, Hofmans, & Theuns, 2014) intrinsic motivation may fluctuate daily. Taking everything in consideration, it is hypothesised:

Hypothesis 4. *Leaders' daily opening behaviours will have a positive influence on the employees' daily intrinsic motivation.*

Hypothesis 5. *Employee daily intrinsic motivation will mediate the relationship between leaders' daily opening behaviours and employees' daily idea generation.*

Hypothesis 6. *Employee daily intrinsic motivation (mediator 1) and employee daily exploration (mediator 2) will serially mediate the positive relationship between leaders' daily opening behaviours and employee daily idea generation.*

Unlike opening leader behaviours, closing leader behaviours aim to decrease the variance of the followers' behaviours and narrow down their behavioural repertoire. Closing behaviours were defined by Rosing et al. (2011) as a set of behaviours which include monitoring and

controlling of the process, taking corrective action when needed, establishing routines, sticking to the agreed plans, and penalising errors and mistakes. Such behaviours are likely to push the followers towards a more cautious state of mind and will make them take responsibility of their actions. When employees observe that their leaders' behaviours do not allow them to be flexible and autonomous, they are more likely to follow the rules, stick to what they know and do not try to experiment with new ideas or engage with new practices. Acknowledging that their mistakes and errors will be penalised, and sanctions might apply, followers under closing leadership might provide them with a clear path and focus on completing what is expected of them in the same way that it has always been done (Mascareño et al., 2021). It would be fair to class such leadership behaviours under task-orientated leadership, as they are not concerned about building trust and support with the followers (Bowers & Seashore, 1966; Misumi & Peterson, 1985), but focus on the successful completion of the project, the achievement of the overall goal (Bowers & Seashore, 1966; Cartwright & Zander, 1960; Indvik, 1986) and the establishment of structure (Hemphill, 1950).

Although it is important to consider that each person might perceive such behaviours differently, multiple studies have shown that closing behaviours are effective in getting followers to implement their ideas successfully (Gerlach et al., 2020b; Mascareño et al., 2021; Zacher et al., 2016; Zacher & Wilden, 2014). The ambidextrous theory of leadership for innovation suggests that closing behaviours should be used in conjunction with opening behaviours to improve follower innovation. However, as aforementioned, each set of behaviours aims at a different outcome. As opening leader behaviours focus on creativity which, as defined, is idea generation (Amabile et al., 1996); closing leader behaviours focus on idea implementation (Rosing et al., 2011). As innovation involves both creativity and implementation, it is theoretically sound for leaders to use not only opening behaviours to enhance creativity but closing behaviours too, to facilitate implementation (Rosing et al.,

2011). By using such behaviours, leaders, expect from the followers to take off their thinking hats, and focus on the more practical and technical part of the process, which is turning the idea into reality. During the implementation process, there is no spare time for experimentation, or risk-taking, but the focus is entirely on the execution of the idea which can be the actual production of a new product or adoption of a new technology or procedure (Janssen, 2001; De Jong & Den Hartog, 2010; Perry-Smith & Mannucci, 2017). Followers may observe their leaders' behaviours and realise that this not the time to experiment as they are aware that mistakes and errors will not be taken lightly, hence following the established routines and plans, followers will focus on implementing the idea(s), through its facilitation by their leaders' closing behaviours. Unlike opening behaviours, closing behaviours are quite negative and their daily portrayal can be tiring, even for the leaders. As these behaviours demand lots of energy, mental capacity, and focus, it could be impossible for leaders to maintain the same levels of energy and therefore portray the same levels of closing behaviours on a daily level. Hence it is argued that leaders' closing behaviours can fluctuate on a daily level. It can be hypothesised that:

Hypothesis 7. *Leaders' daily closing behaviours will have a positive influence on the employees' daily idea implementation.*

Exploitation refers to one's ability to gain learning, not through new methods and experimentation, but through refinement, selection and reuse of existing knowledge and established routines (Baum, Li & Usher, 2004). March's (1991) take on exploitation is that it focuses on choice and implementation of ideas while aiming for efficiency and productivity. Hunter, Jayne and Cushenbery (2017) claim that these behaviours focus on a constant improvement of methods and ways that are already successful and align with the overall aims

of the organisation. The definitions of exploitation are quite similar and tend to agree that existing knowledge and reduction of behavioural variance are key aspects of it. The ambidexterity theory of leadership for innovation posits that the aim of closing leaders' behaviours is to facilitate innovation through the followers' engagement with exploitative behaviours (Rosing et al., 2011). When leaders use closing behaviours, they aim to reduce the variance in their followers' behaviours and make them stick to the plans and use their current knowledge and skills to achieve the final goal. The fact that closing leader behaviours focus so much on sanctioning errors and penalising mistakes emphasizes the importance that followers need to be on track with everything, stick on the agreed plans and do not engage with any experimentation or new learning. In situations therefore where followers need to exploit their current knowledge and skills to implement the idea, then closing behaviours are necessary, as these will make them focus on the important aspects of the implementation stage such as focus on goals, producing consistent results and reaching the deadlines (Rosing et al., 2011; Zacher & Wilden, 2014). Exploitation shares similarities with idea implementation, as the term "implementation" can be found within the definitions of exploitation (see March, 1991). It is therefore logical for the two to be correlated, and for closing behaviours to lead directly to exploitation, as well as directly and indirectly to idea implementation. Previous studies have also found that closing leader behaviours lead to follower exploitation, which can also act as a mediator between leader behaviours and follower innovation (Alghamdi, 2018; Rosing & Zacher, 2017; Zacher et al., 2016).

Exploitation is also something that can fluctuate on a daily basis. Due to the idiosyncratic nature of innovation, followers tend to switch back and forth between exploration and exploitation. These switches could be anything from daily, to weekly, to monthly depending on the stage of the project at hand. Followers' engagement with structure and established routines can be also magnified on days when their leader is being more demanding and

punishing. It is therefore possible to suggest that this study will find similar results on a daily level:

Hypothesis. 8. *Leaders' daily closing behaviours will have a positive influence on the employees' daily exploitation.*

Hypothesis 9. *Employee daily exploitation will mediate the positive relationship between daily leaders' closing behaviours and daily employees' idea implementation.*

Extrinsic motivation refers to the type of motivation that individuals have when they are not intrinsically motivated to do something, but rather they engage with the task due to external factors, either to gain a reward or avoid some form of punishment (Amabile et al., 2018). Extrinsic motivation has been studied in creativity research as well and it has been shown that it can have a positive influence on innovation (George & Zhou, 2002; Taggar, 2002). The present study argues that extrinsic motivation is more related with closing leader behaviours and idea implementation, than opening leader behaviours and idea generation. Closing behaviours are quite controlling and demanding, try to enforce a specific way of working on the followers and take away their autonomy (Mascareño et al., 2021; Rosing et al., 2011). Due to closing behaviours sharing similarities with task-orientated leadership approaches (House, 1971; Misumi & Peterson, 1985), it might be more likely that followers respond to them because they perceive them as part of their job duties and responsibilities, and they aim to avoid any negative criticism if they decide not to engage. Selart, Nordström, Kuvaas and Takemura (2008) for example, claim that extrinsic rewards that are based on performance might decrease the intrinsic interest of people to engage and perform highly with creative activities. Since creativity focuses on idea generation, by definition, it can be assumed that extrinsic motivation might have a different effect for idea implementation. For example, Eisenberger and Rhoades

(2001) assert that organisations that reward their employees who engage with implementation of innovative work process through monetary or other means, might make them more extrinsically motivated. Hammond et al., (2001) meta-analysis showed that extrinsic motivation was positively correlated with innovative performance, which is a very good indication that although it might not be as strong as intrinsic motivation, it is still significant and positive. Since innovation consists of both creativity and implementation, it can be argued that extrinsic motivation might have a stronger effect on implementation rather than idea generation. When adding leaders' closing behaviours to the mix, it can be argued that the leaders' behaviours may promote extrinsic motivation in followers which can then facilitate idea implementation.

But it might also be suggested that a serial mediation exists, which can provide some explanation as to how closing behaviours lead to idea implementation. Although theory, and past studies (Rosing et al., 2011; Zacher et al., 2016) claim that follower exploitation is the linking concept, there might be further factors before that. For example, if leaders' closing behaviours promote the extrinsic motivation within the followers, then extrinsic motivation might push the followers toward using behaviours and activities that they are familiar with. When individuals do not intrinsically enjoy what they are doing, they are less likely to go out of their way to experiment with novel methods and try out new processes and techniques, rather, they may stick to their comfort zone and engage with their existing skills and knowledge. Gilson and Madjar (2011) found that extrinsic motivation is related with more pre-established and secure practices which are similar and closely linked to incremental creativity. Incremental creativity can be defined as behaviours that are closely associated with the use and application of existing methods and processes (Gilson, et al.,2012), which sounds quite similar to the description of exploitation. Although, it is not argued that incremental creativity and exploitation are the same concepts, it is suggested that they two share many similarities.

Through closing behaviours, leaders can sanction errors and penalise mistakes, hence followers need to pay attention in order to avoid potential punishments, which acts as an extrinsic motivator, thus potentially increasing their extrinsic motivation, and using only behaviours and activities that they have been asked to use and exploit their skills and knowledge. It is thus expected that extrinsic motivation, can lead to follower exploitation, before facilitating their implementation outcomes.

Extrinsic motivation, like intrinsic motivation, may also fluctuate on a daily level. When individuals perceive some daily tasks as boring, unexciting, monotonous or even effortless, then they are more likely to be extrinsically motivated in order to carry them out. This could be due to the task being part of their job role, thus leaving them with no choice (lack of autonomy), due to the behaviours of the leaders being demanding (closing behaviours) or even due to unsafety of the job and fear of replacement. It is likely, therefore, that on days when leaders portray high closing behaviours, followers may perceive that as a sign that a task is not as exciting or challenging, hence only extrinsic motivation would help them carry on.

Therefore, it is hypothesised that follower extrinsic motivation will not only be an outcome of leaders closing behaviours, but it can also mediate positive relationship between leaders' closing behaviours and followers' idea implementation as well as lead to idea implementation, through a serial mediation process.

Hypothesis 10. *Leaders' daily closing behaviours will have a positive influence on the employees' daily extrinsic motivation.*

Hypothesis 11. *Employee daily extrinsic motivation will mediate the positive relationship between daily leaders' closing behaviours and daily employees' idea implementation.*

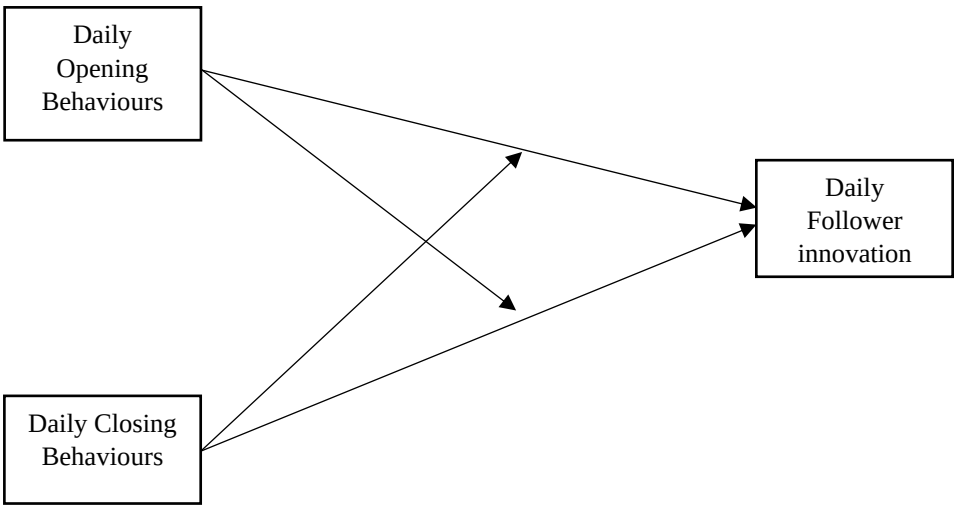
Hypothesis 12*. Employee daily extrinsic motivation (mediator 1) and employee daily exploitation (mediator 2), in serial, will mediate the positive relationship between leaders' daily closing behaviours and employee daily idea implementation.*

Ambidexterity in the context of this study refers to one's ability to portray contradictory behaviours (Rosing et al., 2011; Quinn, 1988). In this case, leaders should portray both sets of behaviours at high levels to be as effective as possible. The ambidexterity theory of leadership for innovation claims that in order for leaders to be successful in their pursuit of follower innovation then a balanced engagement with both opening and closing behaviours is necessary (Rosing et al., 2011). As the two sets of behaviours are contradictory, they should be used under different circumstances. When the situation (i.e., a work task, a project etc.) requires creative outputs (as in generating new ideas) then leaders need to portray opening behaviours in order to facilitate their followers' explorative behaviours and idea generation outcomes. On the other hand, when the situation is implementation-focused then leaders need to demonstrate closing behaviours, in order to reduce the variance within their followers' behaviours, make them exploit their current skills and knowledge and engage with idea implementation. Theory suggests that when leaders portray both of these behaviours, then follower innovation will be at its highest. The interaction therefore between leaders opening and closing behaviours will be a significant predictor of the followers' innovative behaviours. For this study, innovative work behaviours are the mean of follower self-reported idea generation and idea implementation. As the theory suggests that interaction between the two will facilitate their followers' innovation, it is crucial to test it (see Figure 4.1). Multiple studies in the past have evidenced that the interaction between opening and closing leader behaviours predicts follower innovation (Alghamdi, 2018; Klonek et al., 2020; Zacher et al., 2016; Zacher & Rosing, 2015). The daily diary study by Zacher and Wilden (2014) has also shown that the interaction of the

leaders' daily behaviours predicts the employees' daily innovative performance. It is therefore expected that this study will show similar results and demonstrate that the multiplicative interaction between these two leader behaviours will be a positive predictor of the followers' daily innovative work behaviours.

Projects include tasks which may alternate between idea generation and implementation in short amounts of time, hence, opening and closing behaviours could co-exist in the same day. Within a working day, it is possible that a leader may portray both high and high closing behaviours. This is also because the two behaviours are not the ends of the same continuum. Each behaviour is a different set and thus both may co-exist independent of each other. During a working day, followers may need to engage with tasks that require implementation, as well as tasks that require idea generation. As both opening and closing leadership behaviours are needed, then it is possible that a leader may portray both on the same day. Similarly, there are days when the idea generation tasks might not be as many as the implementation tasks. During those days, the leader may exhibit fewer opening behaviours compared to closing behaviours. It is important therefore to understand that not only leaders' behaviours may fluctuate from day to day, but their effect on the followers may also be different. It is argued, based on the theory, that followers' innovative work behaviours are at the highest on days when both sets of leaders' behaviours are high.

Figure 4.1. The interactive effect of ambidextrous leadership on innovation (Rosing et al., 2011)



Hypothesis 13. *The interplay between the leaders' daily opening and closing behaviours will predict the employees' daily self-reported innovative behaviours, such that the employees' innovative behaviours are highest when both daily opening and closing behaviours are high.*

4.2.4.1. The Moderating Role of Leader-Follower Relationships

Relationship dimensions always play an influential role in leader-follower relationships. A relationship is built on communication, reciprocated actions, mutual respect and understanding. These dimensions of relationship between leaders and followers play a key role in not only the followers' performance, but their creativity as well. For instance, when followers believe that their engagement with the innovation process will be seen and valued, then they are more likely to do it (Clegg, Unsworth, Epitropaki & Parker, 2002). Moreover, Scott and Bruce (1994) also argue that the relationship quality between leaders and followers (LMX) can play a crucial role

in innovation, as it can set climate of support for innovation, thus improving followers' innovative behaviours. The study of Tierney, Farmer and Graen (1999) also found that LMX was related to employee creative performance. Another study shows that followers in high quality relationships (LMX) were also found to be more committed to their organisation and supported by their leader, which made them more innovative (Basu & Greem, 1997). Janssen and Van Yperen (2004) found through their study that LMX was also related to innovative job performance. Trust in leadership also has a positive effect in follower innovation, as found by Novitasari et al. (2021), and Awaja, Awaja and Raju (2018).

Moreover, these factors can only be examined in natural settings, with real dyads. Examining these factors is also crucial because study 1 (the experiment) has raised it as a potential limitation, due to the study's inability to work in natural settings. This study therefore looks at two important dimensions that are likely to play a role in the relationship between ambidextrous leadership and follower innovation: the quality of the relationship between leaders and followers, and the feeling of trust.

LMX as a Moderator

Portraying a paradoxical set of behaviours on a daily basis might come with challenges. Followers tend to observe their leaders' behaviours, then try to understand them and make sense of them before responding back with their own behaviours (Manz & Sims, 1981). For example, followers who do not know their leader's approach very well, might perceive their paradoxical behaviours as confusing, or abnormal (Fürstenberg, Alfes, & Kearney, 2021; Zhang, Waldman, Han & Li, 2015). It is natural for individuals to expect some form of consistency from their leader (Shao, Nijstad, & Täuber, 2019). When followers perceive their leaders' behaviours as consistent, then they are more likely to recognise and reward them as they reflect the leader's true identity and core values (Gardner, Avolio & Walumbwa, 2005).

When there is no consistency amongst leaders' behaviours however, it is highly likely for the followers to misinterpret them, not act on them, or even cause them distress (Harmon-Jones, 2000). This can have a serious impact on leader-follower interactions and might increase uncertainty about the overall organisational culture and environment. For example, the study by De Cremer (2003) shows that followers perceive their inconsistent leader behaviours as less fair, increasing their sense of uncertainty about their relationship with the leader, and making them believe that it was a sign of being expendable. Some employees might have been working with their leaders for a number of years, whereas some others might have only joined the company. Leader-follower relationships therefore could vary and could affect the effect of ambidextrous leadership.

LMX had multiple definitions and conceptualisations over the years. The construct is built on social exchange theory (Cropanzano & Mitchell, 2005) and it assumes that each leader develops a different and unique relationship with each follower, which is based on reciprocity (Graen &Uhl-Bien, 1995). When the relationship between followers and leaders is of high quality, it means that the communication between the two is also good (Henderson et al., 2009). Multiple studies have shown that high quality relationships (high LMX) have much better effect on employee outcomes, including innovative behaviour (Basu & Green, 1997; Scott & Bruce, 1994), creativity ratings (Tierney et al., 1999), creative work involvement (Volmer, Spurk & Niessen, 2011) and innovative job performance (Janssen & Van Yperen, 2004). Moreover, the studies by Clegg et al., (2002) and Mascareno et al., (2020) suggest that LMX is related to innovation only when that is examined from a multidimensional perspective (i.e., creativity and implementation).

On the other hand, if relationships between leaders and followers are of low quality, for instance due to leader and follower not getting along, or due to follower being very new in the job or company, then portrayal of ambidextrous behaviours might have some challenges. It is

likely that for followers who observe the leader portraying inconsistent behaviours on a daily basis, might seem confusing or even scary, hence be hesitant to act on them. If the relationship is of low quality, then communication could also be low (Cogliser et al., 2009) hence followers may not understand why the leader changes their behaviours and leadership style so often. When followers in low quality relationships perceive that their leader is acting paradoxically, they might be more sceptical and hesitant to change their methods of working, as they could assume that their leader is unstable. Hence, they could play it safe by not changing their attitudes towards working and not responding to or acting on their leaders' paradoxical behaviours.

Consequently, if the relationship between leader and follower is of high quality, it is more likely that the follower knows and understands what their leader is doing and trusts that their methods and techniques are effective and for the best (Martin et al., 2016). It is therefore logical for them to follow their manager's lead and act on those paradoxical behaviours as expected. The meta-analysis' findings of Rosing et al. (2011) also suggest that LMX is something worth considering, as it has shown many correlations with innovation. The authors suggest this could be due to the leader approach (i.e., behaviours), hence it would be interesting to examine how do the ambidextrous behaviours (which are contradictory by nature) interact with the LMX quality. On the other hand, followers with low quality relationships, are likely to be confused with such behaviours, and not understanding what the leader is trying to achieve, hence they would be less likely to respond to them. I therefore hypothesise that:

Hypothesis 14. *The positive effect of leaders' daily ambidextrous behaviours on the employees' daily innovative behaviours will be moderated by LMX, so that the positive effect will be stronger when the LMX is high.*

Trust as a Moderator

Although LMX can generally address multiple relationship dimensions such as communication, respect, commitment, loyalty, organisational citizenship behaviour, the concept of trust is of great importance, hence it is worth examining it as a standalone factor. The more the two parties interact, the more the trust between them evolves (Mayer et al., 1995). One might argue that LMX and trust overlap, as one of the characteristics of high LMX is high trust (Dienesch & Liden, 1986; Graen & Uhl-Bien, 1995). However, LMX, which is based on social exchange theory, focuses on the quality of the relationships through reciprocity and the exchange of actions and behaviours (Cropanzano & Mitchell, 2005). Followers who believe that their working relationship between themselves and their leader is of high quality and is based on mutual respect and understanding, then the leader will reciprocate by providing them support, and treat them with honesty and respect. This relationship will then continue growing, until it matures and reaches its full potential. Hence, trust can be considered one of those feelings that could lead to LMX, as well as be part of LMX.

Trust was defined as one's willingness to act and be vulnerable to another person's words or actions (Mayer, Davis & Schoorman, 1995; McAllister, 1995). When followers trust their leaders, they do not question their behaviours or motives as they probably believe that their leaders' actions are for everyone's' benefit (Burke et al., 2007). Rousseau et al. (1998) argue that trust is an emergent state as followers develop trust in their leader over time and is based on positive expectations as well as past experiences (Jones & George, 1998). For example, a longitudinal study by Chen, Lam and Zhong (2010) shows that followers who trusted their supervisor in time 1, have shown higher levels of LMX in time 2. Trust can also be seen as an inherent trait (Rotter, 1967) or a process (Khodyakov, 2007). However, trust can also exist outside of a relationship too (Burke et al., 2007). Followers do not necessarily need to have a great relationship with their leader to trust them. Sometimes trust can exist when followers

recognise and appreciate the level of expertise their leader brings on the table and acknowledge that he/she is competent at their job (Burke et al., 2007). Hence, under ambidextrous leadership, followers may question the paradoxical behaviours at first, but, since there is trust, it is highly likely that they will respond to them, as expected, and follow their leader's guidance and direction, no matter whether the relationship is of high or low quality. When leaders, therefore, portray ambidextrous behaviours and actions on a daily basis, it is likely that followers who have higher trust in the leader, will also demonstrate higher innovation, compared to followers who have lower levels of trust. If followers do not trust their leader however, then they are less likely to respond to the leaders' inconsistent behaviours, thus leaders' efforts would lead to no effect. It is hypothesised that:

Hypothesis 15. *The positive effect of leaders' daily ambidextrous behaviours on the employees' daily innovative behaviours will be moderated by trust in the supervisor, so that the positive effect will be stronger when the trust in the supervisor is high.*

Trust works both ways. Recent studies argue that trust in leadership cannot fully explain the quality of relationships between leaders and followers (Korsgaard, Brower & Lester, 2014; Lester & Brower, 2003). Followers seek reassurance that their feelings are reciprocated by their leader. It is therefore important to understand the employees' perceptions of feeling trusted by their leaders too. Felt trust is defined as the perception of an individual that is trusted by other people (Skiba & Wildman, 2019), and feeling trusted by the supervisor is the employee perception that their leader trusts them. Byun et al. (2017) for example, found that followers' perceived LMX can be positively affected when they know that their leader trusts them. It has been suggested that a key predictor of feeling trusted by the leader is when he/she provides the follower with autonomy, enough decision-making and trusts them to undertake risky tasks and

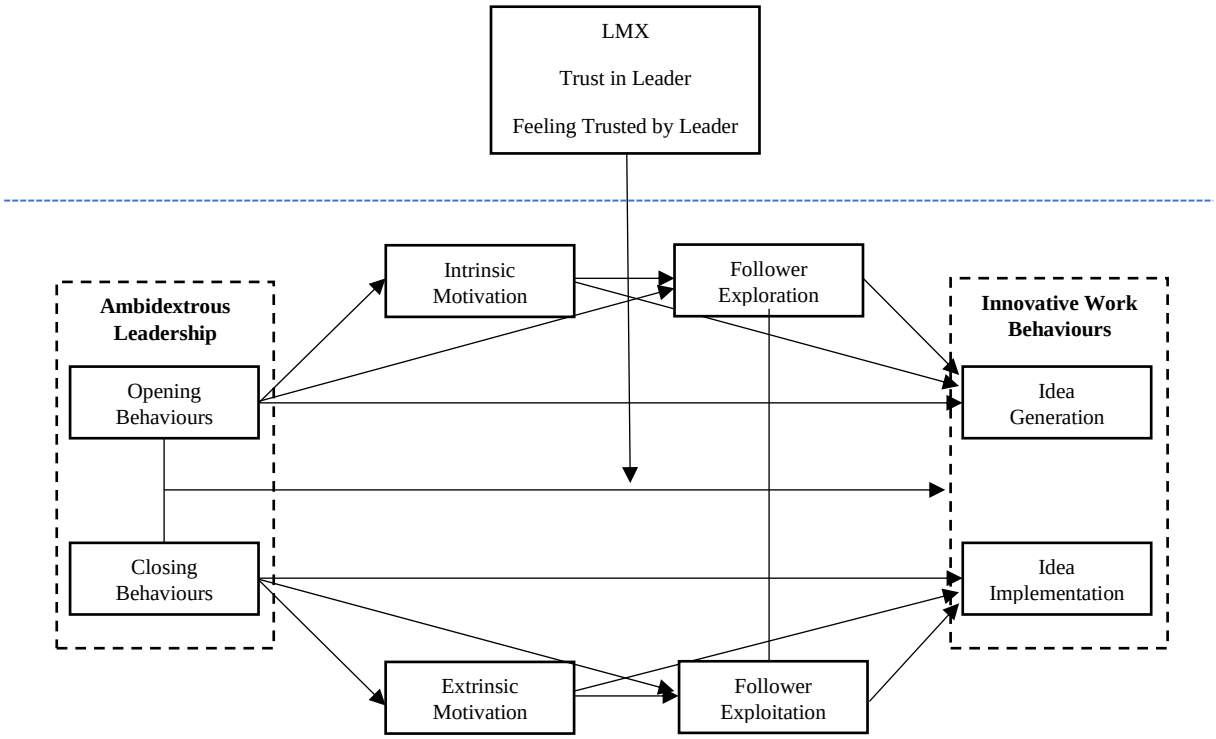
challenges (Lau et al., 2007). When employees perceive that their leader trusts them, this can have a positive influence on their performance, employee self-efficacy and loyalty (Deng & Wang, 2009; Lau et al., 2007; 2014). Moreover, employees who feel trusted by their supervisor, feel a higher sense of responsibility hence they are more likely to engage with their workload and tasks (Salamon & Robinson, 2008). When leaders place trust in their employees, it shows them that they are valued which can be empowering and make them engage with difficult tasks and further challenges (Kahn, 1990; Mishra & Mishra, 2012; Pfeffer & Jeffrey, 1998). In the context of ambidextrous leadership, feeling trusted by the supervisor might play an important role. Leaders who portray ambidextrous behaviours might be faced with reluctance and avoidance by the employees. However, if the employees already feel that their supervisor trusts them and has shown that in the past multiple times, then they are more likely to be vulnerable and follow their leader's guidance and direction without pushback. When employees feel that they are trusted by their leader, they are likely to perceive the ambidextrous behaviours as normal. They understand that their leader trusts them anyway, hence switching between opening and closing behaviours, might not have a negative effect on them. Closing behaviours in particular, are quite controlling and demanding (Rosing et al., 2011), hence when there is no felt trust, employees' confidence and performance may decrease, as the followers may assume that the reason their leader portrays closing behaviours is because the leader does not trust them. Hence, it can be argued that when employees feel trusted by their leader, they are more likely to respond positively to daily portrayal of ambidextrous behaviours by their leader, and thus show higher levels of innovative work behaviours compared to followers who do not feel trusted. On the contrary, when the trust levels are low, then it can be argued the ambidextrous leadership might have a different effect, which may depend on other factors (e.g., follower personality, attitudes, expectations etc.). For instance, such followers might perceive these behaviours as a sign of no trust towards them, hence they might either go above and beyond

with their tasks to gain their trust, or they might not respond to them at all out of confusion. It is difficult to assess such assumption as further factors need to be considered. It is therefore hypothesised that:

Hypothesis 16*. The positive effect of leaders' daily ambidextrous behaviours on the employees' daily innovative behaviours will be moderated by the feelings of trust by the supervisor, so that the positive effect will be stronger when the feelings of trust are high.*

The hypotheses of this study are not independent from the research, as they do respond to the conceptual model that was developed in Chapter 2. The figure (4.2) below demonstrates the relationships that are being examined through this study. The model distinguishes between relationships that are tested at the between-subject level and those tested at the within-subject level.

Figure 4.2. Conceptual model tested in this study.



Note. The dotted line demonstrates the level of analysis. Variables above the dotted line denote that they are measured at the between-subject level, whereas variables below the dotted line denote that they are measured at the within-subject level.

The table below (see Table 4.1) displays a summary of the proposed hypotheses.

Table 4.1. Hypotheses' overview.

Hypotheses	
1	*Leaders' daily opening behaviours will have a positive influence on the employees' daily idea generation.*
2	*Leaders' daily opening behaviours will have a positive influence on the employees' daily exploration.*
3	*Employee exploration will mediate the relationship between leaders' daily opening behaviours and employees' daily idea generation.*
4	*Leaders' daily opening behaviours will have a positive influence on the employees' daily intrinsic motivation.*
5	*Employee daily intrinsic motivation will mediate the relationship between leaders' daily opening behaviours and employees' daily idea generation.*
6	*Employee daily intrinsic motivation (mediator 1) and employee daily exploration (mediator 2), in serial, will mediate the positive relationship between leaders' daily opening behaviours and employee daily idea generation.*
7	*Leaders' daily closing behaviours will have a positive influence on the employees' daily idea implementation.*
8	*Leaders' daily closing behaviours will have a positive influence on the employees' daily exploitation.*
9	*Employee daily exploitation will mediate the positive relationship between daily leaders' closing behaviours and daily employees' idea implementation.*
10	*Leaders' daily closing behaviours will have a positive influence on the employees' daily extrinsic motivation.*
11	*Employee daily extrinsic motivation will mediate the positive relationship between daily leaders' closing behaviours and daily employees' idea implementation.*

12	*Employee daily extrinsic motivation (mediator 1) and employee daily exploitation (mediator 2), in serial, will mediate the positive relationship between leaders' daily closing behaviours and employee daily idea implementation.*
13	*The interaction between the leaders' daily opening and closing behaviours will predict the employees' daily self-reported innovative behaviours, such that the employees' innovative behaviours are highest when both daily opening and closing behaviours are high.*
14	*The positive effect of leaders' daily ambidextrous behaviours on the employees' daily innovative behaviours will be moderated by LMX, so that the positive effect will be stronger when the LMX is high.*
15	*The positive effect of leaders' daily ambidextrous behaviours on the employees' daily innovative behaviours will be moderated by trust in the supervisor, so that the positive effect will be stronger when the trust in the supervisor is high.*
16	*The positive effect of leaders' daily ambidextrous behaviours on the employees' daily innovative behaviours will be moderated by the feelings of trust by the supervisor, so that the positive effect will be stronger when the feelings of trust are high.*

4.3. Method

This study aims to further assess the ambidextrous leadership theory from a different perspective. Contrary to the experiment, this design is longitudinal and thus able to capture the fluctuations of the leaders' behaviours over a period. The theory suggests that both behaviours should be portrayed at high levels for the innovation outcome of the followers to be at its highest levels (Rosing et al., 2011). The most appropriate method that provides the researcher the capacity to capture these fluctuations is an experience sampling method (ESM) (Larson & Csikszentmihalyi, 2014), or, as it also known as, a "diary study" (Bolger, Davis & Rafaeli, 2003). The main purpose of an ESM is to examine the subjective experiences of individuals interacting in their natural setting (Csikszentmihalyi, Larson & Prescott, 1977). The ESM involves a systematic process of obtaining the same self-reported information from the participants over a long period of time (Csikszentmihalyi & Larson, 2014). Designing an ESM

depends on the research question and the aims; thus, the data collection could occur daily, weekly, or even monthly, as well as from once a day at a specific time (fixed schedules), to multiple times a day after particular events have occurred (event-based designs). In any case, the decision should be theoretically guided, as it could cause issues if the spacing of the intervals is too short or too long. The consideration of how often data collection should occur is crucial in this method as it could lead to biased data if participants forgot what happened or even responded out of impulse due to an intense situation. In general, this method looks into the daily lives and daily experiences of individuals and can examine their feelings, attitudes and behaviours throughout an average day, week or month. A key benefit of the ESM is its longitudinal characteristics, as it does not rely on data that have been collected at one time point, but rather collects the same data, over a period of time, for a more accurate representation of the causal relationships, and therefore the results. Moreover, this method obtains almost immediate responses from the individuals, thus eliminating the need of them to recollect accurately any particular incidents and situations that they have experienced in the near past.

As discussed in the literature review, this method has seen a big rise in popularity. Multiple publications in the last decade have used diary studies to assess leader behaviours and their fluctuations (Kelemen et al., 2020). Using this method therefore, participants were able to reflect on their working day and rate their leaders' behaviours. Past research has found that ambidextrous leaders' behaviours of a leader may fluctuate from day to day (Zacher & Wilden, 2014), as well as from week to week (Gerlach et al., 2020b), hence it is necessary to examine the aspect of timing of these behaviours. This research examines time but from a different point of view. Unlike the experiment in Study 1, this study's focus is not temporal flexibility, but investigates the daily fluctuations of leaders' behaviours as well as the frequency of the switch from opening to closing behaviours. There are multiple reasons why using an experience sampling method to further assess this theory is crucial to understand the ambidextrous

leadership concept. Firstly, the longitudinal nature of the ESM provides more substantial data that allows a more thorough analysis for this theory which is heavily reliant on the element of time. Secondly, the natural settings of the study, can provide different data for investigation compared to the lab-made settings of the experiment. Due to the natural settings of this study, I had the opportunity to assess phenomena which I could not in the previous study and were classed as limitations. For example, the relationship quality between a leader and a follower (LMX) was found multiple times to play a key role in facilitating innovation. Factors therefore such as quality of relationship between leaders and followers as well as trust were also examined. There are three main research goals that may be achieved by this method, according to Bolger, Davis and Rafaeli (2003). Through diary studies, one may obtain reliable information at the person level, within-person changes over time, as well as assess causal relationships between these within-person changes and the individual differences.

This method therefore complements the first study which used an experimental design, as it also looks at the aspect of time again, but in terms that a cross-sectional study cannot. While the experiment manipulated the ambidextrous leadership behaviours and examined whether they should be portrayed during specific situations, this study investigates a more natural context by examining how often a change (switch) between these two sets of leadership behaviours, occurs within a period of one week. By conducting a daily diary study, participants were able to rate their leaders' behaviours on a daily basis, as well as self-report their outcomes of motivation, ambidexterity and innovation. This study does not investigate whether the leaders' behaviours are being portrayed during idea generation or idea implementation tasks but focuses entirely on understanding how these leadership behaviours fluctuate from day to day as well as their relationship with the employee outcomes, in real-life scenarios.

Therefore, the method used for this study focuses on four objectives:

1) To assess the effect of daily leaders' behaviours and daily followers' innovative behaviours. Past research has shown that ambidextrous behaviours do fluctuate from day to day (Zacher & Wilden, 2014), hence this study aims to examine whether followers are aware of leaders switching from opening to closing behaviours and vice versa, by examining standalone behaviours and their effects on specific outcomes of follower idea generation and idea implementation.

2) To explore the theory in a natural setting with real leader-follower dyads. The real-life settings in various industries may provide not only information on the occurrence of these behaviours but also on the innovation process and its components of idea generation and idea implementation.

3) To examine the role of the relationship between leaders and followers (LMX) and whether these relationships and their aspects (e.g., trust) affect the impact that the ambidextrous behaviours may have on the followers.

It is worth mentioning that this study was initially planned to be conducted locally, by recruiting individuals and leaders from high-tech companies of the South Yorkshire area. The initial proposal suggested a weekly diary study, as a recent weekly diary study on ambidextrous leadership has showed mixed results (Gerlach et al., 2020b) hence further weekly diary studies were recommended. However, due to the ongoing pandemic, and further time and funding restrictions, this study was conducted entirely online by recruiting people who met set criteria and through a longitudinal design on a daily basis for one week instead of a weekly basis.

4.3.1. Sample

Contrary to cross-sectional designs, the sample size for ESMs does not have to be very large to be able to find causal effects. However, it has to be relative to the overall observations one is aiming to obtain. For instance, one might have a sample of only forty participants but collect data twice a day for fifteen days (*e.g.*, Venus, Johnson, Zhang, Wang & Lanaj, 2018), while others may collect data for only five days but have a sample of over one hundred individuals (*i.e.*, Zacher, 2016; Zacher & Wilden, 2014). The only diary study that was conducted so far that examined the ambidextrous leadership theory and its connection to the innovation of the followers, was the one by Zacher and Wilden (2014). Their study had a sample size of 113 followers and their findings have shown that fluctuations amongst leaders' behaviours occur daily and on days where leaders were ambidextrous, followers were the most innovative. This study is different from theirs, as I assessed the effects of the standalone behaviours that comprise ambidextrous leadership, as well as the two main parts of the innovation process, namely creativity and implementation, whereas their study focused mainly on the interplay between the two leader behaviours, and its effect on employee innovative performance.

The initial plan for this study was to obtain a sample of workers from various companies within the city of Sheffield, however due to COVID-19, the sample has been changed to online. The data collection strategy that was followed, due to time pressure and situational restrictions, was an online process where the sample was obtained through the online platform *Prolific*, where compensation was offered for all participants who took part in this study. Since this study examines the same phenomenon as the study conducted by Zacher and Wilden (2014) and since their study has found significant results; the sample size for the current study was set to a minimum of one hundred individuals, who would provide data once a day for a period of one working week (five days). This approach would provide approximately 500 observations,

conditional on all 100 individuals responding to all daily questionnaires. This is nearly impossible, however, as diary studies are known for having a high dropout rate due to the increased effort that is required by the participants (Barrett, & Barrett, 2001; Ohly, Sonnentag, Niessen & Zapf, 2010). Participants usually get frustrated over responding to the same questions day after day, that is why a bigger target sample size is advised. The remaining available data, after the dropout, should still be enough to carry out any kind of analysis planned. Moreover, the sample size also depended on the available funds, since all participants who take part would be compensated. The available funds were sufficient for compensating approximately 100 individuals, conditional on all of them being paid 20 GBP each, for their full participation. The present study managed to obtain an initial sample size of 124 participants who fully completed the baseline survey and gave their consent that they would continue completing the daily surveys throughout the week. By the end of the week, 111 participants were left, who completed the baseline survey and all five daily surveys. Participants and Prolific's service charges were paid through the University of Sheffield research allowance, as well as personal funds. As a high dropout rate was expected, multiple measures have been put in place to ensure that the dropout rate was as small as possible, thus managing to finish data collection with only a 10% dropout, which can be considered successful (Peytchev, 2013; Rogelberg & Stanton, 2007). These measures are explained in the following recruitment and procedure subsections. The sample of n = 124 participants had a mean age of 36.13 (SD = 10.61). It consisted of 55 men (44%) and 69 women (56%) in total, and 122 of them spoke English as their first language. The participants were working in a variety of job sectors, with the top five being education and training (15.3%), healthcare and medical (12.1%), information and communication technology (10.5%), manufacturing, transport, and logistics (8.1%) and government (7.3%). Moreover, 55% of the sample have stated that they have attended a work-related creativity training, course, or workshop in the past.

4.3.2. Recruitment

Recruitment of the participants for this study followed a similar process as Study 1, due to the ongoing lockdown restrictions and people working from home. As the responses provided by users of the *Prolific* platform during the study 1 were of high quality, all the data collected for this study came from registered users of *Prolific* as well. Potential participants were pre-screened with certain criteria in order to obtain a specific and consistent sample. The platform gives the researcher the opportunity to set the required criteria and filter the entire pool size of the users. For this research, the criteria set were minimal, yet important, as consistency of the routine is a key characteristic of the diary study method. In order to conduct a study as such, one must be consistent with the timings and frequency of the data collection. The best way to ensure that everyone is following a similar routine is to set criteria of their work routine to ensure this consistency. First of all, to ensure that everyone is on the same time zone, the "current country of residence" was set to United Kingdom. Moreover the "working hours" were set to "regular 9-5". This ensured that when the daily survey was being sent out, everyone would be more or less on the same stage at work. Due to restrictions linking to the COVID-19 pandemic many individuals were working from home, while some others still commuted to work. Everyone was able to participate, either they were working from home or commuting to work, or even a mixture of both. One of the most important criteria was the supervisor. Potential participants had to work under the supervision of someone, hence the criterion "Do you have a direct supervisor at work" was set to yes. Finally, as the United Kingdom is a multinational country, the level of English had to be proficient to be able to understand the questions. Participants had to be at least fluent in English to be able to participate. No criteria were set in regard to age, sex, gender, ethnicity, religious beliefs, background, work experience or job sector. After the criteria were set, the platform has showcased that it contained 4,500 individuals eligible to participate in my research.

Due to the longitudinal nature of this study, the recruitment process was more complicated. Participants were invited to participate in this longitudinal study in which they were informed that the study consisted of one initial survey (the baseline survey) and five daily surveys (Monday to Friday). Participants were informed that full participation meant engagement with all six surveys was a key requirement in order to receive their payment. Participants were offered 5 GBP for the first questionnaire which required approximately 20 minutes to complete, and 2 GBP for each of the follow-up daily surveys which required 5 minutes to complete. A strategy that I put in place to ensure that dropout rate was minimal, was that potential participants were informed that they had to complete all six surveys to be rewarded. Failing attention checks or missing a day would result in no compensation for that day and data were not used. Attention check was in the form of question and was integrated in a different scale each day to ensure quality of data. The statement was very simple and straightforward and read "This is an attention check. Please select strongly disagree". Additional incentives were offered to further decrease the dropout rate. Potential participants were informed through the initial description of the study that not only they will get paid handsomely for only a few minutes work per day for a week, but they will also receive an additional 5 GBP bonus payment if they complete all six surveys, as requested. In order to avoid any priming effects and to eliminate biases, the description of the study was focused more on the communication they have with their supervisor on a daily basis, instead of explaining that the aim of this research is to examine the leaders' ambidextrous behaviours and the subordinates' creativity and innovation.

The data collection process lasted for five weeks and each week a further group of twenty-five more individuals was recruited. Studies of such magnitude are time consuming and require a lot of effort to ensure their quality. Responses were checked individually every day as only participants who responded to the previous daily survey would receive the next daily survey. Participants who missed a day would not receive another follow-up survey and their

participation would be considered over. Smaller groups of twenty-five individuals each week were easier to manage than checking all responses of 100 surveys every day for a week. Participants were informed that each daily survey would be sent to them at 16:00 every afternoon and would remain live for four hours until 20:00. The small timeframe that was provided to the participants was to ensure that they did not forget what they had experienced at work on each day. During the last hour of the timeframe, a message was sent to those who did not complete the survey yet, to remind them that they had to complete it in order to receive the final reward and remain as participants in the study. This email message further prompted them to act to avoid losing compensation, hence further minimising the dropout rate.

4.3.3. Procedure

Each group of potential participants would receive an invitation to participate in this study on the Saturday, prior to the following working week. The invitation briefly described the study and the reward conditions (see Appendix A). Participants were informed through the description of the Prolific invitation, that this was a multi-part study where they had to complete one initial survey on that day and five daily surveys from Monday until Friday of the following week. By clicking the link, participants were prompted to the baseline survey in Qualtrics. Initially, participants were asked to enter their Prolific ID (see Appendix B). This number was crucial for two reasons. Firstly, it guaranteed the participants' anonymity. Secondly and most importantly, since this was a longitudinal study, an identification number was needed to match the participants responses in all surveys. The following section of the baseline survey contained eligibility criteria questions to ensure that all the participants who passed Prolific's pre-

screening were all eligible (see Appendix C). As advised by Prolific customer service, the same questions should be used as part of the survey to ensure that only eligible participants carry on with the study, without wasting their time. This section included the six eligibility questions therefore; “Do you live in the United Kingdom?”, “Do you have a typical morning to afternoon working pattern (7-8 hours a day e.g., 9 to 5)”, “Will you be working for the entirety of next week, either by travelling to work or working from home”, “Do you work under the supervision of someone (team leader / manager / supervisor)”, “In general do you have a frequent interaction/communication with your supervisor?” and “Do you have a good knowledge of the English language”. Respondents who responded “Yes” to all the eligibility questions were able to proceed. Should a potential participant select “No” to any of those questions, they would be directed to an end screen telling them they are not eligible to participate (see Appendix D). After participants passed all the eligibility criteria, they were directed to the participant information page where they could read everything about the study and the payment process (see Appendix E). It was important to have the eligibility criteria before the participant information so as to not waste participants’ time with the information if they were not eligible to participate (see Appendix F). The information page provided them also with contact information to me and the extended research team in case they had any questions regarding the study that they wanted to clarify prior confirming their participation. The following page was the consent form where participants had to agree to all the terms in order to officially begin their enrolment with this research study (see Appendix G).

Upon reading everything they had to know about the study and accepting its terms, the baseline survey began with questionnaires (scales) on their personality, paradox mindset, innovative work behaviours on average, trust in the leader, feelings of trust by their leader and relationship quality between them and their leader (LMX) (see Appendix H). The baseline survey was used to collect measures that are more stable over a period of time and are likely to remain stable

throughout one week. In the baseline survey, I was able to capture between-subject factors, which included LMX and trust, variables that have been hypothesised to moderate the key relationship between ambidextrous leaders and follower innovation. Another purpose of the baseline survey was to collect data for the control variables. The control variables were mainly personality-traits (Big Five), as these do not tend to fluctuate from day-to-day as leadership behaviours do. Since such scales are more stable over time, it was more appropriate to only measure them once, at the very beginning.

Further questions followed including demographics such as age, gender, job sector, tenure, first language, managerial responsibilities, flexibility of working from home, and whether they had any creativity training in the past. Participants completed the baseline survey at approximately 20 minutes. At the end of the baseline survey (and each subsequent survey) participants were able to see further instructions for the continuation of the study (see Appendix I). The Prolific ID number of everyone who completed it was saved and used for the subsequent daily follow-up surveys.

The first daily survey was delivered to the participants two days after the baseline survey (Monday) at 16:00 GMT. The time that the survey was sent out was chosen on purpose as it was near the end of the working day. Most individuals finish their work at 17:00, however there are some who finish at 16:00 or 18:00. Hence everyone was on the same timeframe, which was near the end of the working day. By that time, participants should have experienced some interaction with their leader, hence they would be able to respond to the daily survey. The follow up survey was active for four hours (until 20:00) to give the opportunity to many people who had to drive back home from work to complete it before the time runs out. The daily follow up surveys contained the same questions. All of them began with a scale on positive and negative affect, as it is an important concept that fluctuates often, followed by questions on their interaction with their leader (number of times, topic, quality, etc.). The four scales for the

concepts of interest (ambidextrous leadership, innovative behaviours, follower ambidexterity and motivation) were then asked (see Appendix J). Each day these four concepts were placed in a random order to ensure quality. Moreover, the attention check question was also asked on a daily basis, which was also placed randomly throughout the survey on each day. Participants who would fail the attention check did not receive compensation for that day, as part of their agreement and instructions. Participants who failed to respond to a daily survey on time (i.e., Tuesday) would not complete the next daily survey (i.e., Wednesday) or any subsequent ones, as it would be considered that they have decided to withdraw their participation from the study.

Responses from each participant were checked on Saturdays, upon completing all six surveys. Those who engaged with all six surveys and passed the attention checks received payments for all six surveys plus the bonus payment as advertised. The following group would receive the baseline survey a few hours after the previous group has received all the payments. In total, this process lasted for five full, continuous weeks (March – April, 2021), and each week, approximately twenty-five people were recruited.

4.3.4. Measures

The main difference between the baseline survey and the daily surveys is that different measures were used. The table below (see Table 4.2) exhibits which measures were included in the baseline survey and which in the daily surveys. In Appendix K, a dictionary version of the measures may be seen which includes all items that were used for each scale and further information.

Table 4.2. Measures summary and time of capture.

Measure	**Survey**
Extraversion	Baseline
Conscientiousness	Baseline
Agreeableness	Baseline
Negative Emotionality	Baseline
Open Mindedness	Baseline
Paradox Mindset	Baseline
Trust in supervisor	Baseline
Feeling trusted by supervisor	Baseline
LMX	Baseline
Idea Generation (IWB)	Both
Idea Implementation (IWB)	Both
Opening Leader Behaviours	Daily
Closing Leader Behaviours	Daily
Positive Affect	Daily
Negative Affect	Daily
Intrinsic Motivation	Daily
Extrinsic Motivation	Daily
Exploration	Daily
Exploitation	Daily

Note. LMX = Leader – Member Exchange, IWB = Innovative Work Behaviours

Ambidextrous Leadership. The main concept of this research study is ambidextrous leadership which was measured through the descriptions of the *opening* and *closing* behaviours that were introduced by Rosing et al. (2011) and further validated through a scale format by

others (i.e., Zacher & Wilden, 2014). The two scales consist of seven items each that capture the behaviours of the leader. The items were measured on a 1 (Strongly Disagree) to 5 (Strongly Agree) Likert-type scale. The opening and closing scales are the same ones that have been used for the experimental study.

However, since this construct would be now measured daily, then a more concise version of the two sets of behaviours had to be used to minimise the amount of time participants take to complete the questionnaires, and therefore, their fatigue (Fisher & To, 2012). The decision was to reduce each scale from seven items down to three items each. In order to do that, I have utilised three different techniques to ensure that final three items for each set of behaviours are the most appropriate for this concept (e.g., Fay, Urbach & Scheithauer, 2019; Thøgersen-Ntoumani, Dodos, Chatzisarantis & Ntoumanis, 2017). To inform this decision, I used the data obtained from study one, the online experiment. The first technique used was a Factor Analysis, conducted in SPSS. The analysis was conducted using the Maximum Likelihood method of extraction. The data from the experiment were subjected to Bartlett's test of sphericity as well as the Kaiser-Meyer-Olkin (KMO) measure, to check whether they are fit for a factor analysis. The Bartlett's test of sphericity (Dyer & Keating, 1980; Tobias & Carlson, 1969), which tests the overall significance of all the correlations within the correlation matrix was significant (χ^2 (91) = 1254.6, $p < .001$), indicating a strong relationship among the variables. The KMO measure (Hill, 2011; Williams, Onsman, & Brown, 2010) of sampling adequacy indicated that the strength of the relationship among the variables was high (greater than 0.5) (KMO = .92). The results from Bartlett's test of sphericity and the KMO measure were considered excellent, hence this allowed the factor analysis process to continue. The factor analysis begun with all fourteen items for the two ambidextrous leadership sets of behaviours. Items that cross-loaded in both dimensions and items that had low loading (less than .40) were removed one by one, in consecutive stages since these were not contributing to the scale very

much, thus leaving each scale (opening behaviours and closing behaviours) with three items each. The last items that remained showed high loadings, ranging from .67 to .98. The Bartlett's test of sphericity and KMO measure for the two new scales, were also well above the threshold levels (KMO=.81, χ^2 (15) = 449.2, p < .001). All the communalities were above .3, the 2-factor model explained 72.5% of the variance and there were less than 0% nonredundant residuals. As evidence, therefore, of convergent validity, all loadings were above .6 and as evidence of discriminant validity, there were no cross-loadings. For further reliability of the new reduced scales, two reliability tests were conducted using Cronbach's Alpha, to ensure that the scales are still at acceptable levels. The new 3-item opening behaviours scale has shown a Cronbach's Alpha coefficient of $\alpha = 0.89$, while the coefficient for the 3-item closing behaviours scale was $\alpha = 0.86$.

A second method of checking that the two new scales fit the data, was through a Confirmatory Factor Analysis that was conducted in AMOS. All items loaded high on their corresponding latent variable with loadings of .80 or more. The fit indices for the 2-factor model have shown a predominantly acceptable model fit as well, for the sample size tested ((χ^2 (8), N=122) = 25.09; p < .01, χ^2 /df = 3.14; CFI =.96, NFI=.95, RMSEA = .13; SRMR = .06). The 1-factor model on the other hand, which combined all six behaviours into one variable had mainly unacceptable fit indices values ((χ^2 (9), N=122) = 112.44; p < .01, χ^2 /df = 12.49; CFI =.77, NFI=.76, RMSEA = .31; SRMR = .13).

As a third method of scale reduction, I have tested the new Optimization App for Selecting Item Subsets (OASIS) in R that was developed by Cortina et al. (2020). This app is user friendly and allows the user to input all items of a scale and then choose how many items the new scale should be. The app runs all possible combinations and shows the reliability scores for all of them. It can also provide convergent and divergent validity scores if the user inputs appropriate constructs, however this was not necessary. Essentially, this app may lead to other manual scale

reduction methods to be deemed obsolete. First, the opening behaviours dimension scale was tested. Results from this analysis indicated that the 3-item scale already identified through the FA and the CFA previously, is indeed the best shorter version of the scale, as it had also the highest Cronbach's Alpha value compared to the rest (.89). The paradox mindset scale, that was used for the experimental study (Cronbach's Alpha: $\alpha = 0.87$) was used to test the discriminant validity of the new scale. Discriminant validity refers to a measure of indication that a construct is unique and represents the phenomena that are of interest (Hair, Black, Babin & Anderson, 2010). The OASIS app suggests that the threshold level of discriminant validity is .35 and anything below that is considered a good score. The 3-item opening behaviours scale has shown a discriminant validity score of .11. Convergent validity refers to how similar the new scale is to other scales of the same construct. Regarding convergent validity, the opening behaviours scale from the second task of the experiment has been used. Although this was technically the same scale but at a different time point of the experiment, there was no other scale available that measured the leaders' opening behaviours, the scale combinations provided by the app ranged from .25 to .39. This was significantly lower than the acceptable .70. This would be considered the only limitation of this process. The low score in convergent validity might indicate that the two scales are not similar, despite that they were the same, however, it is worth noting that the scales represented different tasks at different time points, and ideally different portrayal of behaviours. Hence it was not surprising that the two scales were found dissimilar. As there were no other related scales available to test convergent validity, I have proceeded with the 3-item scale that has been produced by all three methods that have been used for this scale reduction process (FA, CFA, OASIS). Similarly, the same procedure in the OASIS app was followed for the closing behaviours scale. The results have shown that the new 3-item reduced scale for leaders' closing behaviours contains the same items as those identified in the FA and CFA. The new 3-item scale for closing behaviours has a Cronbach's Alpha score

of .86 and a discriminant validity score of -.03. The convergent validity score was also lower than acceptable for the same reasons as the opening behaviours. The closing behaviours measure for the second task of the experimental study was used to test convergent validity of the new 3-item scale however all combinations ranged lower than the acceptable levels. The new 3-item reduced scale for closing behaviours, was used therefore as a shorter version of the closing leader behaviours scale.

Hence, the new reduced scales included three items for each set of leader behaviours which have been used for the new diary study. The three items for the *daily opening behaviours* were "Today, my manager/supervisor provided me with opportunities to think and act independently", "Today, my manager/supervisor allowed room for new ideas" and "Today, my manager/supervisor encouraged me to experiment with different ideas". The three final items for the *daily closing behaviours* scale were "Today, my manager/supervisor was checking whether I am sticking to the rules", "Today, my manager/supervisor monitored and controlled how I achieved my goals/objectives" and "Today, my manager/supervisor paid attention to consistency in approach to task completion". The average value of Cronbach's Alpha for *daily opening behaviours* was $\alpha = 0.79$ and ranged from $\alpha = 0.78$ to $\alpha = 0.80$, while the average value of leader's *daily closing behaviours* was $\alpha = 0.66$ of and ranged from $\alpha = 0.48$ to $\alpha = 0.75$. It is worth noting that only day one had a low Cronbach's Alpha for the closing behaviours scale. The remaining four days ranged from $\alpha = 0.63$ to $\alpha = 0.75$, which are considered at acceptable levels.

Follower Ambidexterity. The concept of follower ambidexterity was measured through the dimensions of exploration and exploitation; a scale developed by Mom et al. (2007). The scale consists of two dimensions; *explorative activities* and *exploitative activities*, and both are measured on a Likert-scale from 1 (To a very small extent) to 7 (To a very large extent). Exploration consists of five items, while exploitation consists of six items.

However, as this construct will also be measured daily, a shorter version of the two dimensions would be more appropriate as to not overburden the participants. The scales have been reduced to three items each, through the same process as the ambidextrous leadership construct, using the data from study one. Firstly, a factor analysis in SPSS was conducted using the Maximum Likelihood method of extraction. Bartlett's test of sphericity was significant (χ^2 (55) = 381.2, $p < .001$), while the KMO measure of sampling adequacy indicated that strength of the relationship among the variables was good (KMO=.75). The results from the two tests were excellent thus allowing the factor analysis process to continue. The analysis began with all eleven items that comprise the two dimensions. Cross-loaded items from both dimensions were being removed in stages, as well as items with very low loadings (less than .4). The remaining items had high loadings ranging from .42 to 1.00 and each dimension consisted of three items (KMO=.69, χ^2 (15) = 187.4, $p < .001$). All communalities were above .2, the 2-factor model explained 52% of the variance and there were less than 6% nonredundant residuals. These results were the best possible outcome after multiple attempts of combining the variables. As evidence, therefore, of convergent validity, the items have indicated loadings over .4 and as evidence of discriminant validity, there are no cross-loadings. The new exploration dimension scale has shown a Cronbach's Alpha value of $\alpha = 0.72$, while the three items for the new exploitation scale have shown a value of $\alpha = 0.73$.

Furthermore, a CFA was also conducted in AMOS, using the data from the first study. All eleven items were loaded into their corresponding variable. After removing five items in total from both variables, each one was left with three items that had the highest loadings of all. The two-factor model has shown an excellent model fit ((χ^2 (8), N=122) = 7.68; $p > .05$, χ^2 /df = .96; CFI =1.00, NFI=.96, RMSEA = .00; SRMR = .04), compared to the one-factor model ((χ^2 (9), N=122) =62.17.09; $p > .05$, χ^2 /df = 6.90; CFI =.73, NFI=.71, RMSEA = .22; SRMR =

.10). The three items left for each dimension, were the same items as identified in the Factor Analysis in SPSS.

A scale reduction test was followed on the OASIS app in run that was developed by Cortina et al. (2020). Results also showed that the new scale for exploration included the three items that have been identified before through the FA and the CFA (Cronbach's Alpha: $\alpha = 0.72$) The discriminant validity score of this scale was .13, while the convergent validity was .48. Regarding the exploitation scale, the three items that were identified in FA and CFA were also the most reliable for this scale with a Cronbach's Alpha of $\alpha = 0.73$, a discriminant validity of .35 and a convergent validity of .54. Similar to the ambidextrous leadership scale, the convergent validity values did not surpass the threshold of 0.70, as there were no variables available that measured the same concept, and the innovative work behaviours variables have been used for this test (idea generation for testing exploration and idea implementation for testing exploitation. The discriminant validity values on the other hand were satisfactory for both scales.

The participants, therefore, were asked "Today at work, to what extent did you engage in work-related activities that can be characterized as follows.." and the final items that were used for the exploration dimension were "Searching for new possibilities with respect to products, services or processes", "Evaluating diverse options with respect to products, services or processes" and "Activities requiring quite some adaptability of you", while the items for the reduced exploitation dimension were "Activities of which a lot of experience has been accumulated by yourself", "Activities of which it is clear to you how to conduct them" and "Activities which you can properly conduct by using your present knowledge". The new reduced *exploration* scale has shown an average Cronbach's Alpha value of $\alpha = 0.74$ and ranged from $\alpha = 0.70$ to $\alpha = 0.77$ throughout the five days, while the *exploitation* scale has shown an average Cronbach's Alpha value of $\alpha = 0.83$ and ranged from $\alpha = 0.71$ to $\alpha = 0.91$.

The overall follower ambidexterity scale as a whole produced an average Cronbach's Alpha value of $\alpha = 0.69$, with values ranging from $\alpha = 0.59$ to $\alpha = 0.77$.

Innovative Work Behaviours. The IWB of the participants of this study were measured through Janssen's (2000) scale of innovative work behaviours, adapted to a daily level. Two of the three dimensions of the scale were used for this occasion as well (idea generation and idea implementation), as one of them (idea promotion) is not theorised in the ambidextrous leadership theory. The theory only explains how the leaders' behaviours can influence the idea generation and idea implementation of the followers; hence the idea promotion dimension is not measured. IWB was measured daily, hence it had to be a short scale, for convenience. As each dimension is measured with three items only, there was no need for further scale reduction. The response options are on a 7-point Likert scale from 1 (Strongly Disagree) to 7 (Strongly Agree). Participants were asked to what extent they agreed with each statement on each day. The items for the *idea generation* scale were "I came up with new ideas for difficult issues", "I have searched out new working methods, techniques or instruments", "I have generated original solutions for problems", and the items for the *idea implementation* scale were "I have been transforming innovative ideas into useful applications", "I have introduced innovative ideas into the work environment in a systematic way", and "I have evaluated the utility of innovative ideas". The two variables were measured during the baseline survey, as well as on a daily basis. The idea generation scale that was measured during the baseline survey has shown a Cronbach's Alpha value of $\alpha = 0.87$, and throughout the week it showed an average value of $\alpha = 0.90$ which ranged from $\alpha = 0.84$ to $\alpha = 0.92$, while the idea implementation (realization) scale has shown a value of $\alpha = 0.90$. for the baseline survey, and an average value of $\alpha = 0.92$ throughout the week, which ranged from $\alpha = 0.91$ to $\alpha = 0.94$ during the week. The overall IWB scale has shown a value of $\alpha = 0.93$ for the baseline survey and an average value of $\alpha = 0.94$ for the daily scales, which ranged from $\alpha = 0.93$ to $\alpha = 0.95$.

Motivation. The concept of motivation was measured with the same scale that was used in study one. The Situational Motivation Scale (SIMS) developed by Guay, Ballerand and Blanchard (2000) contains four dimensions; intrinsic motivation, identified regulation, extrinsic motivation and amotivation. For this study, only two dimensions of motivation are hypothesised, same as the experimental study. The dimensions of interest; *intrinsic motivation* and *extrinsic motivation*, are both measured through four items and were adapted to correspond to daily level tasks. The scales were already short enough, hence further scale reduction was not necessary. The scales were measured on 7-point Likert scale from 1 (Corresponds not at all) to 7 (Corresponds exactly). Participants were asked the reason why they have engaged with their workload and tasks on each day. The items that measured *intrinsic motivation* were "I think they were interesting", "I think that they were pleasant", "I think that they were fun" and "I felt good when I was working on them". The items for *extrinsic motivation* included "It was something I had to do", "I did not have a choice", "I felt that I had to do them" and "I was supposed to do them". Intrinsic motivation has shown an average Cronbach's Alpha value of $\alpha = 0.90$ and ranged from $\alpha = 0.88$ to $\alpha = 0.93$ across the five days, while the extrinsic motivation scale has shown an average Cronbach's Alpha value of $\alpha = 0.88$ across all days and ranged from $\alpha = 0.83$ to $\alpha = 0.92$.

LMX. The leader-member exchange concept was measured only once, during the baseline survey, as a relationship, although it may develop over time (Day, 2014) is more constant during short periods of time and it is highly unlikely that it will have significant changes over one week. It is important to measure LMX as a moderator as individuals perceive leader behaviours differently depending on the quality of their relationship with their leader (Karin, Matthijs, Nicole, Sandra & Claudia, 2010; Sparr & Sonnentag, 2008). To measure the quality of the relationship between the leaders and their followers, the LMX-7 scale has been used (Graen & Uhl-Bien, 1995). LMX-7 was selected due to its appropriateness, popularity,

robustness, and reliability (Caliskan, 2015; Hanasono, 2017; Hooper & Martin, 2008; Moss, Sanchez, Brumbaugh & Borkowski, 2009; Schriesheim, Wu, & Cooper, 2011). It assesses the quality of working relationships between leaders and followers, with a focus on the perception of the follower, through items that focus on mutual respect, and reciprocity (Graen and Uhl-Bien, 1995).

The scale consists of seven items that measure the overall quality and effectiveness of the relationship between a follower and his or her leader. The items of this scale were measured on a 1 to 5-point scale, where the responses differ depending on the statement. Sample items included "How well does your manager/supervisor understand your job problems and needs?" (1 = not a bit; 5 = a great deal), "How would you characterise your working relationship with your manager/supervisor?" (1=extremely ineffective; 5 = extremely effective) and "How well does your manager/supervisor recognise your potential?" (1 = not at all; 5 = Fully). *LMX* has shown a Cronbach's Alpha value of $\alpha = 0.89$.

Trust in the supervisor. *Trust in the supervisor* plays a key role in determining the quality of a relationship between a leader and a follower, but also in how followers may perceive their leaders' behaviours. For this concept the scale by Robinson and Rousseau (1994) was used. Similar to the LMX concept, this was measured only once, during the baseline survey. The scale consists of seven items that characterise the trust of the subordinates in their immediate supervisor. All items were measured on a five-point Likert scale with responses ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). Sample items from this scale included "My manager/supervisor is open and upfront with me", "I believe my manager/supervisor has high integrity", "My manager/supervisor is not always honest and truthful" and "I am not sure I fully trust my manager/supervisor". This scale has shown a Cronbach's Alpha value of $\alpha = 0.89$.

Feeling trusted by the supervisor. Relationships are a two-way street; hence it is also important to measure whether individuals *feel trusted by their supervisor*. This concept was measured once, during the baseline survey. Feeling trusted by the supervisor was measured with a 10-item adapted scale of Mayer and Gavin (2005) that Baer et al. (2015) have used for their research. The ten items are measured on a five-point Likert scale from 1 (Strongly Disagree) to 5 (Strongly Agree). The scale included items such as "My manager/supervisor doesn't feel the need to 'keep an eye' on me", "My manager/supervisor lets me have significant influence over how I do my job" and "My manager/supervisor shares their opinion about sensitive issues with me, even if their opinion is unpopular". This scale has shown a Cronbach's Alpha value of $\alpha = 0.89$.

Control Variables

It is common practice in psychology research to control for any variables which may explain a large amount of the variance in the outcome. These variables can often explain some of the variance, hence by removing their effect, we are able to look at "true relationships" (Atinc, Simmering & Kroll, 2012). However, some would argue that there might be some limitations in our attempts to control for everything and aiming to assess a pure relationship between the independent variable and the dependent variable might be challenging. For example, having too many control variables might affect the degrees of freedom as well as weaken the amount of variance that could be explained by the key predictors (Becker, 2005; Carlson & Wu, 2012), and at the same time, control variables could increase the chances of finding a significant relationship between the independent and dependent variables (MacKinnon, Krull & Lockwood, 2000). Bernerth, Cole, Taylor and Walker (2018) urge leadership researchers to focus on conceptually meaningful control variables, instead of the common demographic

variables that are always used in research. The control variables should be relevant to the relationships tested and related to the concepts of interest. I decided therefore to focus on two variables, in order not to overcomplicate the models and the analysis.

The first control variable is **Affect**. Affect is commonly referred to as mood, or emotions. Emotions and moods are affective reactions which can last from a few seconds to a few weeks, usually due to specific situations, and can be powerful enough to disturb ones' psychological state and have an impact (either positive or negative) on their thoughts or even behaviours and actions (Ekman, 1994; Frijda, 1986; Kagan, 1994; Thayer, 1996; Watson, 2000). Research on organisational creativity has shown that positive affect can predict creativity in a positive direction (Amabile et al., 2005; Binnewies & Wörnlein, 2011; George & Zhou, 2007; Madjar, Oldham & Pratt, 2002). Even past diary studies have shown that positive affect can promote innovative work behaviours (Madrid et al., 2014). When individuals feel happy and in a positive mood, they tend to come up with new and useful ideas and engage with alternative courses of action.

Participants' mood was the last concept that was measured on a daily level. The Positive and Negative Affect (PANA) Scale (Watson, Clark & Tellegen,1988) was proven very effective and reliable during the first study. The original PANA scale uses twenty items to measure positive and negative affect (ten items each). However, the 20-item scale on a daily level, might have been frustrating for the participants. Hence, a shorter scale of this version would be more appropriate for this study. Unlike the ambidextrous leadership and the follower ambidexterity concepts, there is an already established shorter scale of the PANA concept. For this study, the International Positive and Negative Affect Schedule Short Form (I-PANAS-SF) has been used (Thompson, 2007). This scale includes the same items from the PANA scale, instead of using twenty items, it uses ten (five for each dimension). Studies that have been conducted in the past using this scale, have shown that it is reliable and efficient (i.e., Drummond, Sauer, Ferguson

& Hall, 2020; Lockwood, Jownsend, Daley & Sayal, 2020). Participants were asked at the beginning of the daily survey, what their mood was, before proceeding to complete it. The *positive affect* scale included the items "Today, I have been feeling determined; active; alert; inspired; attentive", while the *negative affect* scale included the items "Today, I have been feeling ashamed; nervous; upset; hostile; afraid". All items were measured on a 5-point Likert scale from 1 (Very slightly or not at all) to 5 (Extremely). The average Cronbach's Alpha value for the *positive affect* scale across all days was $\alpha = 0.90$ and ranged from $\alpha = 0.88$ to $\alpha = 0.91$, while the *negative affect* scale has shown an average value of $\alpha = 0.83$ that ranged from $\alpha = 0.78$ to $\alpha = 0.86$.

The second factor that I am taking into consideration during the analysis is **Personality**. Different personality traits such as openness to new experiences (Tan, Lau, Kung & Kailsan, 2019; Zhang, Sun, Jiang & Zhang, 2019), extraversion (Amin et al., 2020; Furnham, & Nederstrom, 2010) and conscientiousness (Amin et al., 2020; Chen, 2016) were found to be drivers of creativity hence it would be ideal that such traits are controlled as the aim of the study is to examine the pure effect of the leaders' behaviours on the followers' innovative behaviours.

Personality dimensions from the Big Five inventory were used as control variables for this study. Personality is stable over time within an individual (Costa & McCrae, 1988; 1992), therefore this was measured only in the baseline survey. As the aim of these surveys is to be short, concise, and straight to the point, a shorter version of the Big Five personality inventory (John, Donahune & Kentle, 1991) was used. For this study, the Big Five Inventory-2 Short version (BFI-2-S) has been used. This inventory assesses the Big Five personality domains through 30 items (six items for each) and was developed by Soto and John (2017). The scale has been validated multiple times since then (Heffner, Vives, & FeldmanHall, 2021; Rammstedt, Danner, Soto & John, 2018), hence making it a robust short measure for assessing

the Big Five personality dimensions. All 30 items are scored on a five-point Likert scale from 1 (Strongly Disagree) to 5 (Strongly Agree). Sample items from the scale included "I am someone who… is dominant, acts as a leader (*Extraversion*); assumes the best about people (*Agreeableness*); keeps things neat and tidy (*Conscientiousness*); worries a lot (*Negative Emotionality*); is original, comes up with new ideas (*Open-Mindedness*). The five personality dimensions have shown Cronbach's Alpha values of $\alpha = 0.71$ (*Extraversion*), $\alpha = 0.79$ (*Agreeableness*), $\alpha = 0.71$ (*Conscientiousness*), $\alpha = 0.89$ (*Negative Emotionality*) and $\alpha = 0.78$ (*Open-Mindedness*).

It is important to note that not all five personality dimensions have been measured as control variables, but only those that have been deemed appropriate. The three control variables that have been used in this study are extraversion, open-mindedness as well as daily positive affect These three variables were selected after a rigorous method to determine their appropriateness, which includes suggestions from past research (Baer, Oldham, Jacobsohn, & Hollingshead, 2008; Chiang, Hsu & Shih, 2017; Gocłowska, Ritter, Elliot & Baas, 2019; Wolfradt, & Pretz, 2001), as well as their high correlation with the outcome variables (see Appendix L).

4.4. Results

All data analyses undertaken to test the set hypotheses have been conducted in SPSS (v. 26). The table below (see Table 4.3) displays the descriptive statistics of the baseline variables.

Table 4.3. Descriptive statistics of baseline measures.

	Min	*Max*	*Mean*	*SD*
Age	20	65	36.13	10.61
Tenure (in years)	.17	21.00	4.17	4.42
Extraversion	1.67	5.00	3.03	.65
Conscientiousness	2.33	5.00	3.81	.59
Agreeableness	2.17	5.00	3.98	.61
Negative emotionality	1.00	4.67	2.57	.90
Open-mindedness	1.50	4.67	3.41	.72
Trust in the leader	1.57	5.00	4.02	.76
Feeling trusted by the leader	1.80	5.00	3.79	.68
LMX	1.71	5.00	3.90	.72
Idea Generation	1.00	7.00	4.98	1.19
Idea Realization	1.00	7.00	4.58	1.35

Note. n = 124.

Participants' age ranged from 20 years to 65 years old, while the mean age was 36 years old. The range of the participants' age is ideal, as the theory of ambidextrous leadership does not make any cases for specific age groups, hence theoretically could be applied at any working age. Moreover, participants' tenure spanned from 2 months to 21 years, with the mean tenure being a bit over 4 years. When participants spend more time working with a particular leader, the relationship develops and matures (Park, Sturman, Vanderpool & Chan, 2015), hence the mean tenure of 4 years is an indication that a relationship between a leader and a follower has been established amongst the participants. Should LMX show no effects in this study, this eliminates the possibility that it was due to fresh or new relationships between leaders and followers.

Table 4.4. Descriptive statistics of daily measures.

	ICC(1)	*Min*	*Max*	*Mean*	*SD*
Opening Leader Behaviour		1.00	5.00	3.43	.85
Closing Leader Behaviour		1.00	5.00	2.78	.88
Idea Generation	.47	1.00	7.00	3.78	1.57
Idea Implementation	.57	1.00	7.00	3.41	1.51
IWB	.56	1.00	7.00	3.60	1.45
Exploration	.45	1.00	7.00	4.00	1.34
Exploitation	.40	1.00	7.00	5.64	1.12
Intrinsic Motivation	.60	1.00	7.00	4.21	1.33
Extrinsic Motivation	.66	1.00	7.00	5.76	1.10
Positive Affect		1.00	5.00	3.27	.92
Negative Affect		1.00	4.60	1.30	.53

Note. IWB = Innovative Work Behaviours.

Following suggestions from Gerlach and her colleagues (2020), I also employed unconditional random coefficient models (Bliese, 2000), to test the Interclass Correlation Coefficient(1) value for the proposed dependent variables. In regard to repeated measures data, the ICC can tell us how much of the proportion of the dependent variable's variance can be explained by the clustering (in this case, the daily effect). It can essentially help us determine if further multilevel modelling analysis is necessary, or whether a simpler analysis would be more appropriate.

I conducted this using Linear Mixed Modelling in SPSS, by creating a model with only the dependent variable. Based on the results output, I then followed the following equation to calculate the ICC for each dependent variable:

ICC= (Variance of Interest) / (Variance of interest + Unwanted Variance).

Idea generation has shown an ICC(1) value of .47, indicating that 53% of the total variance of the follower daily idea generation was at the within-person level. Idea implementation showed

an ICC(1) value of .57 suggesting that a 43% of the variance was at the within-subject level. In general, all the dependent variables have shown a decent amount of within-subject variation. The assumption therefore that individual innovation varies only between people is rejected, and therefore the multilevel structure of the data must be taken into consideration, and analysis may continue, using multilevel processes.

Table 4.5. Correlation Matrix.

Variables	*M*	*SD*	1	2	3	4	5	6	7	8	9	10	11	12	13
Within-person (level 1) variables															
1) Leader daily opening behaviours	3.46	.85	-	-.093	.562**	.472**	.531**	.389**	.110	.351**	.487**	-.099			
2) Leader daily closing behaviours	2.78	.88	.015	-	.052	.169	.121	.282**	.001	.207*	.037	.142			
3) Daily follower idea generation	3.78	1.57	.521**	.012	-	.874**	.965**	.652**	.016	.488**	.442**	-.289			
4) Daily follower idea implementation	3.41	1.50	.448**	.135*	.788**	-	.969**	.727**	.008	.538**	.377**	-.299**			
5) Daily follower Innovative Work Behaviours [a]	3.60	1.45	.511**	.077	.944**	.943**	-	.710**	.012	.528**	.424**	-.300**			
6) Daily follower exploration	3.96	1.34	.403**	.199*	.581**	.625**	.642**	-	.118	.804**	.405**	-.166			
7) Daily follower exploitation	5.64	1.12	.167**	-.051	.077	.062	.069	.134**	-	.686**	.199*	.217*			
8) Daily follower ambidexterity [b]	4.80	.93	.393**	.117*	.465**	.488**	.505**	.802**	.700**	-	.416**	.009			
9) Daily follower intrinsic motivation	4.21	1.33	.460**	.024	.412**	.364**	.417**	.395**	.228**	.422**	-	-.127			
10) Daily follower extrinsic motivation	5.76	1.10	-.194**	.149**	-.220**	-.234**	-.242**	-.123**	.207**	.036	-.149**	-			
Between-person (level 2) variables															
11) LMX	3.90	.72	.359**	-.212**	.125**	.085*	.114*	.069	.077	.096*	.265**	.004	-		
12) Feeling trusted by the leader	3.79	.67	.309**	-.309**	.198**	.187**	.206*	.118*	.058	.120**	.206**	-.109**	.771**	-	
13) Trust in the leader	4.02	.76	.327**	-.159**	.080	.072	.082*	.033	.100*	.084*	.278**	.010	.774**	.674**	-

Note. Pearson correlation values above the diagonal are based on within-person data (level 1) (n =118) and values below the diagonal are based on between-person data (level 2) (n =435), [a] = the mean of all follower innovative behaviour subscales, [b] = the mean of all follower ambidexterity subscales, * $p < 0.05$, ** $p < 0.01$.

The results of the correlation testing show that leader's daily opening behaviours were strongly and positively correlated with the follower's daily idea generation (r = .52, p < .01), idea implementation (r = .45, p < .01), innovative work behaviours (r = .51, p < .01), exploration (r = .40, p < .01) and exploitation (r = .17, p < .01), as well as high quality LMX (r = .36, p < .01), feeling trusted by the leader (r = .31, p < .01) and feeling trust in the leader (r = .33, p < .01). These results are initial indications that opening behaviours may be beneficial for innovative work behaviours all-round. Moreover, closing behaviours were significantly correlated with daily follower's idea implementation, as expected (r = .14, p < .05), and surprisingly follower's exploration (r = .20, p < .05). Moreover, closing behaviours were found to be significantly but negatively correlated with LMX (r = -21, p < .01), feeling trusted by the leader (r = -.31, p < .01) as well as feeling trust in the leader (r = -.16, p < .01). As expected, relationship-based aspects (LMX, trust) seem to have a positive correlation with leaders' opening behaviours, but a negative one with leaders' closing behaviours, suggesting therefore that contextual factors might play a role in the effectiveness of the ambidextrous leadership theory (Rosing et al., 2011).

4.4.1. Analytical Strategy

There are multiple ways one may analyse longitudinal data in order to test causal relationships, however, it all depends on the nature of the research question, the hypotheses and the scope of the study. For example, analyses could be conducted through time series analysis, latent growth modelling, repeated measures ANOVA, latent growth curve modelling and other methods of multilevel modelling. For this study, I have used Linear Mixed Effects Models (LMM) (West, 2009; West, Welch & Galecki, 2006) and recommended by Zacher & Wilden (2014). This procedure is extremely flexible and powerful, which allows researchers to assess individual change over time by fitting multiple regression models to longitudinal data. Various recent

studies have used LMM to analyse data collected from daily diary studies and suggest that this method is ideal to capture the fluctuation of variance (Klootwijk, Koele, van Hoorn, Güroğlu & van Duijvenvoorde, 2021; Mark, Iqbal, Czerwinski & Johns, 2014; Schumann, & Ross, 2010). The key reason why this method is appropriate for this study is because of its benefits that it can have compared to the alternatives (West, 2009).

First of all, LMMs can consider time-varying as well as time-invariant covariates as predictors of any continuous dependent variable that the research wishes to use. A repeated measures ANOVA (rmANOVA) on the other hand may only consider time-invariant (baseline) covariates. Moreover, a rmANOVA approach does not work well with missing data. If a participant failed to respond at one time-point, rmANOVA will delete the entire subject's data, while a LMM is able to accommodate all the data available. In addition to that, LMM can consider data that have been collected at random times, while rmANOVA requires the researcher to only use measures that have been collected at exactly the same time points. A LMM can also take advantage of the various covariance structures that can be used to assess random effects. These models can be compared between them, to determine the model with the best fit to the given data. The benefit of including random effects in LMM procedures is that one is able to consider within-subject variables as predictors and thus explain random between-subject variance and also examine how such variance remains after including the fixed effects (all predictors) in a model (Heck, Thomas & Tabata, 2013; West, 2009). In order to answer my set hypotheses therefore, I have used the Linear Mixed Models procedure through SPSS.

4.4.2. Hypothesis Testing

The first hypothesis suggested that the "*Leaders' daily opening behaviours will have a positive influence on the employees' daily idea generation.*". The process that followed, is that I set the

subject variable, which in this case was the ID of each subject, and then the repeated measures variable which was the TIME variable. It is worth mentioning at this point that the dataset has been converted from a wide format to a long format, hence each subject is made up of 5 rows, one for each time point (day; in this case). The TIME variable, therefore, contains the time point, that the measurement was taken (day 1, day 2 etc.). The covariance structure was initially set to diagonal, by default. In order to assess the model-fit through the covariance structure one has to look at the Akaike's Information Criterion (AIC) and the Schwarz's Bayesian Criterion (BIC). Ideally, the smaller the values, the better the model fit. Hence, one has to choose a structure covariance which shows the lowest values of AIC and BIC compared to the alternative models with different covariance structure. In order to carry on with the analysis one has to include a continuous dependent variable, as well as time-varying or time-varying covariates and any other factors that might be accounted for to explain the potential variance amongst (or between) the subjects. As a start, the null model includes no predicting covariates, but only the dependent variable which was the follower's daily idea generation score (mean across all days). If predicting covariates existed, these should be tested for fixed effects. Regarding the random effects only the intercept has been included, to examine within-subject variance. The model has yielded an AIC of 1973 and a BIC of 1999. The way this analytical process works, it is by observing whether the fit indices of AIC and BIC decrease after each variable is added, which suggest a better model-fit. The results from the estimates of covariance parameters suggest that the residuals at all times were all statistically significant ($p < .001$). The variance of the intercept was also statistically significant ($b = 1.15$, $p < .001$). The initial results suggest that the variation at level 1 (Days) as well as level 2 (individuals) may be further explained when additional predictors are introduced.

For the next step, a new covariance matrix has been used, to assess whether the data fit the model better under a different covariance structure. The new covariance structure was specified

as first-order autoregressive [AR (1)]. This particular covariance structure suggests that errors that are associated with observations for different subjects are assumed to be uncorrelated. The new model has shown an AIC of 1969 and a BIC of 1982, suggesting that under this covariance structure, there is a better model fit. Hence, the analysis carried on under the AR (1) covariance structure. The next step was to introduce predicting variables and examine their fixed effects. The variable that was added for this hypothesis is daily leaders' opening behaviours. The variable of TIME was not added in the analysis as it is not the main variable of interest. Follower's behaviours (idea generation) from day to day are not hypothesised to fluctuate due to the day of the week, but due to the behaviours of the leader.

Hence, the next step was to introduce the key predicting variable of the model, which was the leader's daily opening behaviours (mean across all days). The new model includes the leader's daily opening behaviours and examined therefore for fixed effects. By introducing the leader's opening behaviours in the model, the model fit became significantly better. The AIC has dropped from 1969 to 1397 while the BIC has dropped from 1982 to 1409, suggesting that leader's opening behaviours is a key variable in this model. The estimates of fixed effects results indicate that there is a significant positive linear relationship [$F (1, 422) = 119.27$, $p < .001$] of leader's opening behaviours with follower's idea generation ($p < .001$) with the estimated fixed effect being .83. This suggests that for 1 unit increase of the leader's opening behaviours, follower idea generation increases by .83.

For the next step and final step, I have added the three control variables (extraversion, open-mindedness and daily positive affect) to the model which could further explain the variance. The new model has shown a better fit compared to the previous model with an AIC of 1378 and BIC of 1390. The small decrease in the fit-indices values might indicate that the control variables do not have as a great effect on the outcome as the leaders' behaviours. In addition to that, the intercept of the model was also significant ($p < .050$). Followers' daily positive

affect [F (1, 413) = 6.77, p < .010] and extraversion [F (1, 125) = 9.01, p < .010] were also significant predictors of the followers' daily idea generation with estimates of .21 (p<.010) and .46 (p<.010) respectively, while daily leader opening behaviours remained a strong positive significant predictor [F(1, 423)= 85.74, p < .001]. The results for the leaders opening behaviours indicate with 95% confidence that the mean score of the followers' idea generation ranges between 0.57 to 0.88 across the days of the week with an estimate of .72, (p <.001). The estimates of covariance have shown a significant result for the intercept's variance (b=.64, p<.001). The final model therefore indicated significant lower values of AIC and BIC compared to the first model. The AIC value has dropped from 1973 to 1378 while the BIC has dropped from 1999 to 1390. The lower the value of these, the better the quality of fit. Hence, it is appropriate to choose the model with the smaller values of AIC and BIC. The values were also decreasing at every step of the analysis, indicating that the predictors added, yield a better model fit. The final model, which includes the key predictor and further control variables has shown the best model fit compared to all the previous ones. All independent variables and control variables have been added as fixed effects, as these are the primary interest and need to be present in case of replication of the study. The random effects have levels which in this case are not the main interest, but only a sample from a larger pool of subjects. In this case, the only random effect that is useful is the intercept of the subjects, in order to determine the interindividual variance. The variance of the intercept is .64 (p < .001) suggesting that different participants have different intercepts. However, the participants behaviours did not vary significantly from day to day. Nonetheless, since the daily leader's opening behaviours were strongly significant predictors of the follower's daily idea generation, suggests that *H1* is accepted. The results of the final model (hypothesis 1) can be shown in the table below (see Table 4.6). The line graph in Figure 4.3 is a visual representation of this relationship, showing

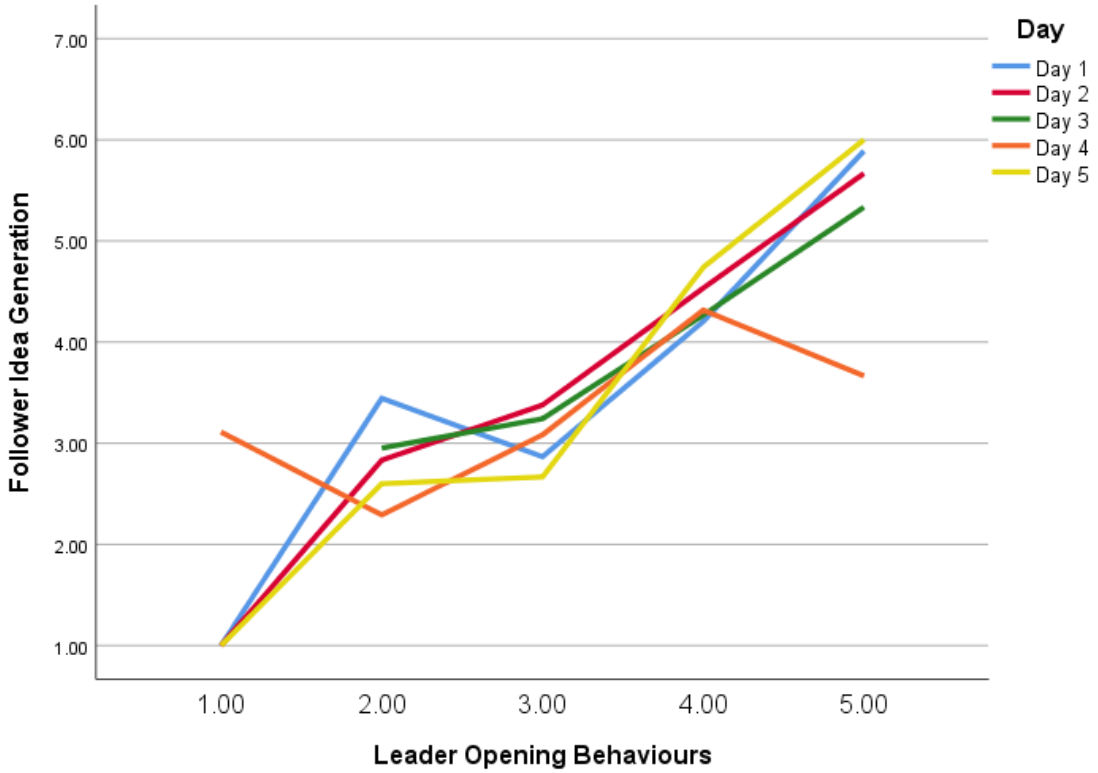
the trajectory of follower idea generation based on the leaders' opening behaviours based on a daily-to-day basis.

Table 4.6. Results of Linear Mixed Model analysis predicting follower daily self-reported idea generation.

Predictor	Estimate	SE	95% CIs	t	p
Intercept	-1.30	.58	[-2.46, -0.14]	-2.22	.028
Between-person (level 2) control variable					
Open-mindedness	0.19	.13	[-0.66, 0.45]	1.47	.144
Extraversion	0.46	.15	[0.16, 0.76]	3.01	.003
Within-person (level 1) control variable					
Daily Positive Affect	0.21*	.08	[0.05, 0.37]	2.60	.010
Within-person (level 1) main effects					
Leader Daily Opening Behaviours	0.72**	.08	[0.57, 0.88]	9.26	.000

Note. n = 569 daily survey responses nested within 124 participants. Estimates of Fixed Effects (B) standard errors (SE), lower and upper levels of confidence intervals (95% CI), * $p < .05$, ** $p < .01$.

Figure 4.3. Line Graph for H1.



Hypothesis 2 stated that "*Leaders' daily opening behaviours will have a positive influence on the employees' daily exploration.*". In order to assess this hypothesis, a mixed linear modelling method was used. The first null model employed a diagonal covariance structure, and the followers' daily exploration behaviours score (mean across all days). The first model for this hypothesis has shown an AIC of 1800 and a BIC of 1826 and was statistically significant ($p < .001$). The variance of the intercept was significant ($b=.81$, $p < .001$).

To improve the model, the same strategy as the first hypothesis was followed. The covariance structure was changed to AR (1) which showed an AIC of 1793 and a BIC value of 1806, indicating a slightly better model fit. Hence the following analysis was carried out through an AR (1) repeated covariance type. When the main predicting variable of leader's daily opening behaviours was added, the model became instantly better. The new fit indices showed an AIC

value of 1330 and a BIC of 1342 with a significant overall model ($p < .001$). The predictor was also statistically significant [$F (1, 428) = 67.41$, $p < .001$].

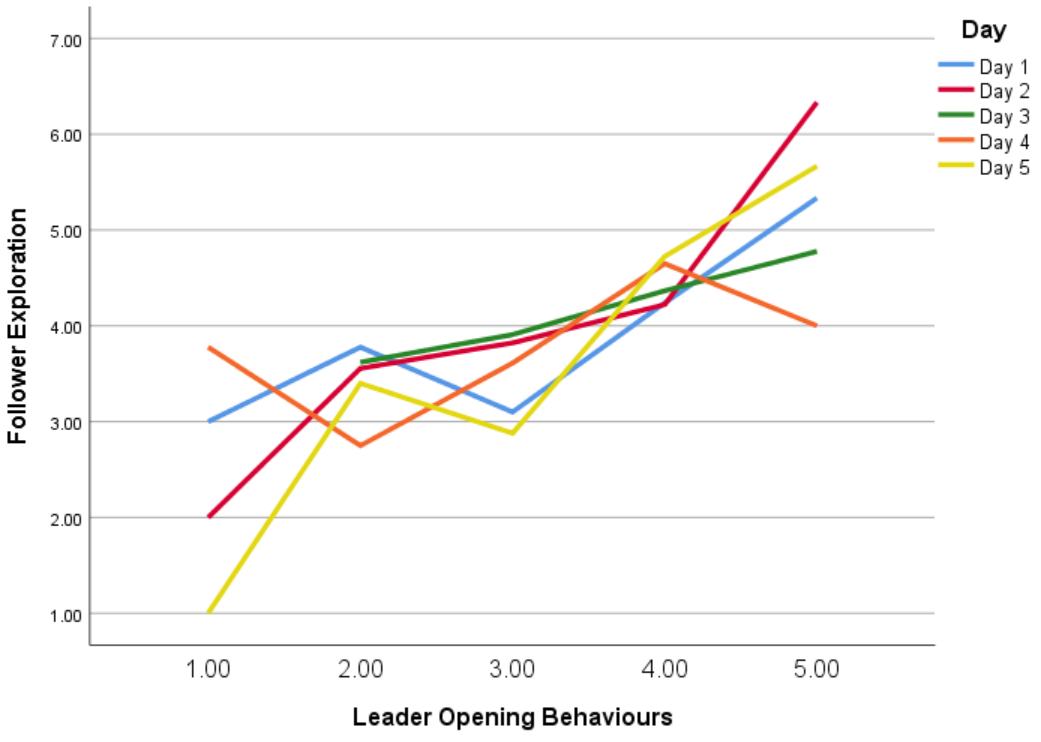
For the final model, the three control variables of positive affect, extraversion and open-mindedness were added. The new model has showed that the control variables improve the model fit as the new value for AIC was 1307 and the new value for BIC was 1320. Leaders' daily opening behaviours remained a strong significant predictor of employee daily exploration [$F (1, 425) = 41.91$, $p < .001$] with an estimate of .47. Furthermore, two of the three control variables were also significant, thus further explaining the variance. The first control variable was daily positive affect [$F (1, 398) = 10.82$, $p < .001$] with an estimate fixed effect of .25 and the second one was extraversion [$F (1, 128) = 8.99$, $p < .010$] with an estimate fixed effect of .41. The variance of the intercept is .39 ($p < .001$) suggesting that different participants have different intercepts. These results confirm Hypothesis 2, suggesting that leader's daily opening behaviours will have a positive influence on the follower's daily exploration. Results of this analysis can be seen below in Table 4.7. The line graph in Figure 4.4 is a visual representation of this relationship, showing the trajectory of follower exploration based on the leaders' opening behaviours based on a daily-to-day basis.

Table 4.7. Results of Linear Mixed Model analysis predicting follower daily exploration.

Predictor	Estimate	SE	95% CIs	t	p
Intercept	-0.19	.52	[-1. 22, 0.84]	-0.36	.719
Between-person (level 2) control variable					
Open-mindedness	0.17	.11	[-0.58, 0.40]	1.48	.143
Extraversion	0.41**	.14	[0.14, 0.67]	3.00	.003
Within-person (level 1) control variable					
Daily Positive Affect	0.25**	.07	[0.10, 0.39]	3.29	.001
Within-person (level 1) main effects					
Leader Daily Opening Behaviours	0.47**	.07	[0.32, 0.61]	6.47	.000

Note. n = 569 daily survey responses nested within 124 participants. Estimates of Fixed Effects (B) standard errors (SE), lower and upper levels of confidence intervals (95% CI), * p < .05, ** p < .01.

Figure 4.4. Line Graph for H2.



Hypothesis 3 stated that *employee exploration will mediate the relationship between leaders' daily opening behaviours and employees' daily idea generation.* This mediation hypothesis was tested using the MLmed macro for SPSS (Rockwood, 2017). The macro, though still at its BETA version, was designed to process multilevel mediation models. It is capable to automatically perform all necessary procedures before fitting the model, such as within-group centering and computation of new mean lower-level independent variables. The output can be seen separated into two sections: between-effects level and within-effects level. The results of this mediation analysis through the MLmed macro may be seen below in Table 4.8. For this hypothesis I also examined the mediating effects of exploitation in order to compare them with the mediating effects of exploration. The output therefore presents the results through three models (exploration, exploitation, idea generation). Before testing the mediation, two regression models were run to explore the effect of leader's daily opening behaviours on the two types of followers' ambidexterity. As before, I controlled for daily positive affect (level-1 covariate), extraversion (level-2 covariate) and open-mindedness (level-2 covariate). The first model examines exploration as the outcome variable and indicates that leader opening behaviours are a significant predictor of follower exploration at the within-effects level [β = .50, p < .001, 95% C.I. (.326, .671)] as well as the between-effects level [β = .391 p < .01, 95% C.I. (.142, .641)]. The second model examined exploitation as the outcome variable but the leaders' opening behaviours was not significant at neither the within-effect level, nor the between-effect level. The third model is a parallel mediation model, with exploration and exploitation mediating the effect of leader opening behaviours on followers daily idea generation. The third model examined idea generation as the outcome and shows that opening behaviours is a significant predictor at both the within-effects level level [β = .43, p < .001, 95% C.I. (.260, .601)] and the between-effects level [β = .68, p < .001, 95% C.I. (.427, .934)]. Exploration is also a significant positive predictor of idea generation at the within-effect level

[β = .47, p < .001, 95% C.I. (.361, .570)] as well as the between-effect level [β = .49, p < .001, 95% C.I. (.301, .680)]. On the contrary, and as expected, exploitation was not significant at neither the within-effect level, nor the between-effect level. Results from this analysis also show the indirect effect coefficients, which is what is needed for this hypothesis. Exploration is a significant mediator between opening leader behaviours and followers' idea generation at the within-effect level [β = .23, p < .001, 95% C.I. (.142, .331)] and the between-effect level [β = .19, p < .001, 95% C.I. (.062, .350)]. Exploitation was not a significant mediator. Since exploration is a significant mediator at the within-effect level, which is what was hypothesised, that means H3 is confirmed and therefore accepted.

Table 4.8. *Mediation Analysis Results – Exploration as mediator.*

Outcome		Predictor	β	SE	t	p	95% CI [LLCI, ULCI]
Model 1							
Exploration							
	Within-Effects		.01	.58	.020	.984	[-.1.14, 1.17]
		Opening Behaviours	.50**	.09	5.68	.000	[.326, .671]
		Positive Affect	.22*	.09	2.37	.018	[.037, .403]
	Between-Effects						
		Opening Behaviours	.39**	.13	3.10	.002	[.142, .641]
		Positive Affect	.26*	.13	2.04	.043	[.008, .511]
		Extraversion	.42**	.15	2.78	.006	[.122, .723]
		Open-Mindedness	.16	.12	1.38	.170	[-.070, .391]
Model 2							
Exploitation							

	Within-Effects		4.11	.49	8.34	.000	[3.13, 5.08]
		Opening Behaviours	.01	.07	.078	.938	[-.139, .150]
		Positive Affect	.36**	.078	4.63	.000	[.208, .515]
	Between-Effects						
		Opening Behaviours	.10	.11	.979	.330	[-.107, .315]
		Positive Affect	.49**	.11	4.53	.000	[.274, .699]
		Extraversion	-.38**	.13	-2.99	.004	[-.637, -.129]
		Open-Mindedness	.22*	.10	2.29	.024	[.030, .419]
Model 3							
Idea Generation							
	Within-Effects		-.494	.73	-.674	.502	[-1.95, .960]
		Opening Behaviours	.43**	.09	4.91	.000	[.259, .606]
		Exploration	.47**	.05	8.75	.000	[.361, .570]
		Exploitation	-.03	.06	-.398	.691	[-.148, .098]
		Positive Affect	.25**	.09	2.68	.008	[.067, .431]
	Between-Effects						
		Opening Behaviours	.68**	.13	5.31	.000	[.427, .934]
		Exploration	.49**	.10	5.14	.000	[.301, .680]
		Exploitation	-.18	.12	-1.61	.110	[-.420, .044]
		Positive Affect	-.08	.14	-.584	.561	[-.371, .202]
		Extraversion	.28	.16	1.78	.078	[-.032, .601]
		Open-Mindedness	.17	.12	1.44	.152	[-.064, .407]

Random Effects	β	SE	p	95% CI
Exploration	.49**	.10	.000	[.333, .735]
Exploitation	.36**	.07	.000	[.236, .535]
Idea Generation	.49**	.10	.000	[.332, .727]
Indirect Effects				

Opening Behaviours → Exploration →Idea Generation				
Within – Indirect Effects	.23**	.05	.000	[.142, .331]
Between-Indirect Effects	.19**	.07	.000	[.062, .350]
Opening Behaviours → Exploitation →Idea Generation				
Within – Indirect Effects	-.00	.01	.978	[-.012, .010]
Between-Indirect Effects	-.02	.03	.460	[-.084, .022]

Note. n = 435;
CI = Confidence Interval; LLCI = Lower-Level Confidence Interval; ULCI = Upper-Level Confidence Interval.
* $p < 0.05$; ** $p < 0.01$.

Hypothesis 4 stated that "*Leaders' daily opening behaviours will have a positive influence on the employees' daily intrinsic motivation*." In order to test this hypothesis, the LMM process in SPSS was followed. The first model was the null model, in which a diagonal covariance type was used along with the followers' daily intrinsic motivation levels as the dependent variable. The indices for the model's fit were 1679 for AIC and 1705 for BIC. The second step was to alter the covariance type to Auto-Regressive (1) to examine whether the criteria for the model-fit are better. The results have shown that the AIC has dropped from 1679 to 1678 and the BIC has dropped from 1705 to 1691. Although the difference is minimal, the values are smaller nonetheless, suggesting that the AR (1) covariance type has a better model fit. For the third step, the primary predictor for this hypothesis was added. The results have shown that the model becomes instantly better with the AIC showing a value of 1233 while the BIC showed a value of 1245. The model was significant with the leaders' daily opening behaviours being a strong positive significant predictor of followers' daily intrinsic motivation [$F(1, 428) = 55.71$, $p < .001$] with an estimate of .47.

For the final step, the three control variables were added in the analysis, to assess whether they can explain any further variance. The model's fit indices demonstrated that with the control

variables there is a better model-fit, as the new value for AIC is 1135 while the new value for BIC was 1147. The results indicated, unsurprisingly, that a great proportion of the variance in the followers' daily intrinsic motivation could be explained by the followers' levels of positive mood [F (1, 423) = 103.30, p <. 001] with an estimate of .63 (Isen & Reeve, 2005; Pretty & Seligman, 1984; Stanko-Kaczmarek, 2012). Extraversion and open-mindedness did not show any significant relationship with the outcome, as these two variables are more directly linked with creativity rather than motivation (Gocłowska, Ritter, Elliot, & Baas; 2019). Leaders' daily opening behaviours remained a significant predictor of followers' daily intrinsic motivation [F (1, 421) = 25.12, p <.001] with an estimate of .29. The covariance parameters results indicated that the variance of the intercept was .59 (p < .001). Since the leaders' daily opening behaviours positively predict the followers' daily intrinsic motivation, *H4* is accepted. The table below (Table 4.9) shows the results of the final model for this hypothesis. The line graph in Figure 4.5 is a visual representation of this relationship, showing the trajectory of follower intrinsic motivation based on the leaders' opening behaviours based on a daily-to-day basis.

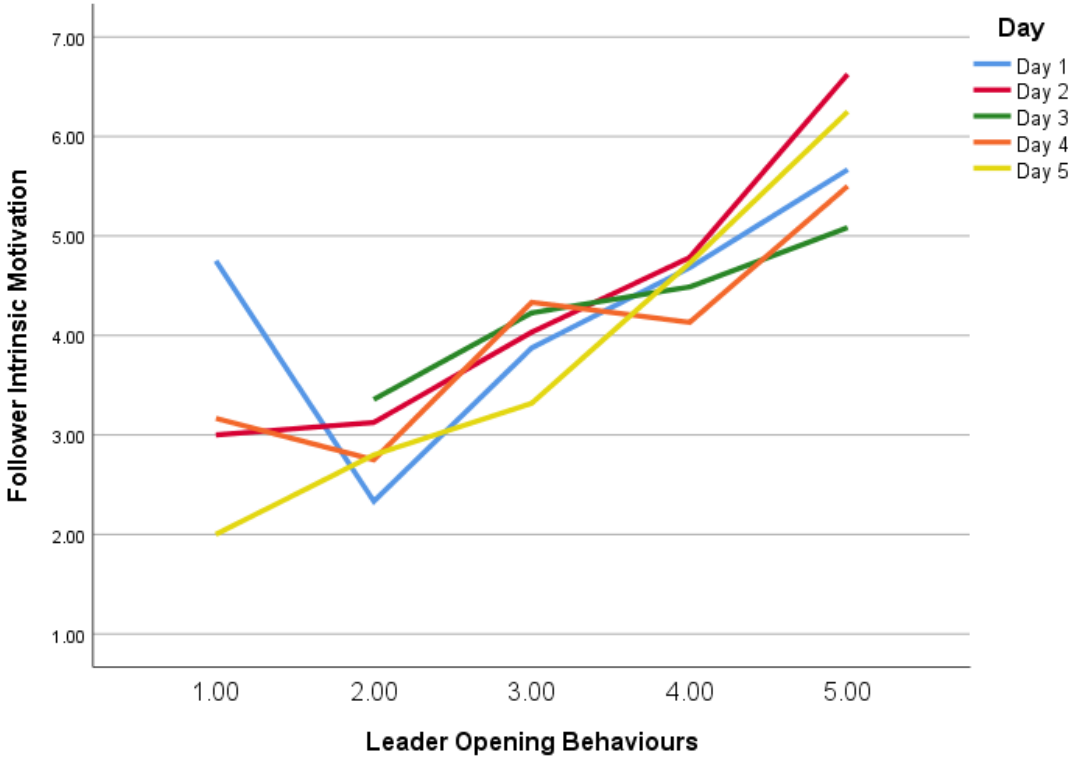
Table 4.9. Results of Linear Mixed Model analysis predicting follower daily intrinsic motivation

Predictor	Estimate	SE	95% CIs	t	p
Intercept	0.22	.53	[-0. 83, 1.27]	0.42	.674
Between-person (level 2) control variable					
Open-mindedness	0.08	.12	[-0.16, 0.31]	0.66	.508
Extraversion	0.21	.14	[-0.58, 0.49]	1.56	.122
Within-person (level 1) control variable					
Daily Positive Affect	0.63	.06	[0.51, 0.75]	10.16	.000

Within-person (level 1) main effects					
Leader Daily Opening Behaviours	0.29	.06	[0.18, 0.41]	5.01	.000

Note. n = 569 daily survey responses nested within 124 participants. Estimates of Fixed Effects (B) standard errors (SE), lower and upper levels of confidence intervals (95% CI), t statistics and p values are shown for all predicting variables.

Figure 4.5. Line Graph for H4.



Hypothesis 5 stated *employee daily intrinsic motivation will mediate the relationship between leaders' daily opening behaviours and employees' daily idea generation*. This mediation hypothesis was tested using the MLmed macro for SPSS (Rockwood, 2017). Before testing the mediation, two regression models were run to explore the effect of leader opening behaviours on the two types of motivation.

The first model examines intrinsic motivation as an outcome and indicates that leader opening behaviours are a significant predictor of follower intrinsic motivation at the within-effect level [β = .22, p < .001, 95% C.I. (.086, .345)], as well as the between-effects level [β = .62 p < .001, 95% C.I. (.374, .864)]. The second model examined extrinsic motivation for comparison purposes. Opening behaviour has shown non-significant predicting effects on neither the within-effects level, nor the between-effects level.

The third model is a parallel mediation model, with intrinsic and extrinsic motivations mediating the effect of leader opening behaviours on followers' daily idea generation. The third model examined idea generation as the outcome and indicated that opening behaviours [β = .59, p < .001, 95% C.I. (.411, .771)] and intrinsic motivation [β = .38, p < .001, 95% C.I. (.227, .523)] are both strong positive predictors at the within-effect level. However, only opening behaviours were a strong positive predictor at the between level [β = .76, p < .001, 95% C.I. (.475, 1.05)]. Extrinsic motivation was a significant mediator, but in a negative direction [β = -.26, p < .001, 95% C.I. (-.462, -.064)]. Results from this analysis also show the indirect effect coefficients, which is what is needed for this hypothesis. Intrinsic motivation is a significant mediator between opening leader behaviours and followers' idea generation at the within-effect level [β = .08, p < .01, 95% C.I. (.027, .146)], but not the between-effect level. Extrinsic motivation was not significant at neither level. Since intrinsic motivation at the within-level is a significant mediator between opening behaviours and idea generation on a daily level, then hypothesis H5 is supported. Result can be seen in Table 4.10.

Table 4.10. *Mediation Analysis Results – Intrinsic motivation as mediator.*

Outcome	Predictor	β	SE	t	p	95% CI [LLCI, ULCI]
Model 1						

Intrinsic Motivation							
	Within-Effects		-.46	.58	-.79	.430	[-1.62, .695]
		Opening Behaviours	.22**	.07	3.27	.001	[.086, .345]
		Positive Affect	.63**	.07	8.97	.000	[.495, .773]
	Between-Effects						
		Opening Behaviours	.62**	.12	5.00	.000	[.374, .864]
		Positive Affect	.56**	.13	4.42	.000	[.309, .810]
		Extraversion	.12	.15	.77	.441	[-.183, .417]
		Open-Mindedness	.11	.12	.98	.336	[-.118, .344]
Model 2							
Extrinsic Motivation							
	Within-Effects		7.13	.59	12.07	.000	[5.96, 8.30]
		Opening Behaviours	-.08	.06	-1.44	.151	[-.194, .030]
		Positive Affect	.01	.06	.20	.839	[-.108, .133]
	Between-Effects						
		Opening Behaviours	-.16	.12	-1.30	.195	[-.407, .084]
		Positive Affect	.27*	.13	2.14	.034	[.020, .526]
		Extraversion	-.56**	.15	-3.69	.000	[-.867, -.261]
		Open-Mindedness	-.00	.12	-.02	.987	[-.235, .231]
Model 3							
Idea Generation							
	Within-Effects		.72	.95	.76	.450	[-1.16, 2.60]
		Opening Behaviours	.59**	.09	6.46	.000	[.411, .771]

	Intrinsic Motivation	.38**	.08	4.99	.000	[.227, .523]
	Extrinsic Motivation	.10	.09	1.12	.262	[-.074, .271]
	Positive Affect	.11	.11	.99	.322	[-.105, .317]
Between-Effects						
	Opening Behaviours	.76**	.15	5.24	.000	[.475, .1.05]
	Intrinsic Motivation	.03	.11	.28	.781	[-.181, .240]
	Extrinsic Motivation	-.26**	.10	-2.62	.010	[-.462, -.064]
	Positive Affect	.00	.15	.01	.989	[-.304, .308]
	Extraversion	.43*	.17	2.51	.014	[.091, .774]
	Open-Mindedness	.19	.13	1.53	.130	[-.057, .441]

Random Effects		β	SE	p	95% CI
Intrinsic Motivation		.60**	.10	.000	[.434, .828]
Extrinsic Motivation		.65**	.10	.000	[.478, .883]
Idea Generation		.60**	.12	.000	[.408, .884]
	Indirect Effects				
	Opening Behaviours → Intrinsic Motivation →Idea Generation				
	Within – Indirect Effects	.08**	.03	.007	[.027, .146]
	Between-Indirect Effects	.02	.07	.785	[-.113, .155]
	Opening Behaviours → Extrinsic Motivation →Idea Generation				
	Within – Indirect Effects	-.01	.01	.437	[-.033, .008]
	Between-Indirect Effects	.04	.04	.269	[-.020, .131]

Note. n = 435;
CI = Confidence Interval; LLCI = Lower-Level Confidence Interval; ULCI = Upper-Level Confidence Interval.
* p < 0.05; ** p < 0.01.

Hypothesis 6 suggested a serial mediation and stated that *Employee daily intrinsic motivation (mediator 1) and employee daily exploration (mediator 2), in serial, will mediate the positive relationship between leaders' daily opening behaviours and employee daily idea generation. As the MLmed macro by Rockwood (2017) is not able to perform serial mediation relationships, but only parallel mediation, this* hypothesis was examined through Hayes' (2017) PROCESS macro for SPSS, which is able to conduct a wide variety of mediation, moderation and conditional process analysis. However, since this macro is not able to handle longitudinal data, I aggregated the data at the individual level and conducted the analysis by computing a mean for all five days. For analysing a serial mediation through the PROCESS macro, I used model 6 (see Figure 4.6). The model number along with the IV, DV, the two mediators and the control variables were entered into the syntax. This hypothesis is a progression of the previous hypothesis (H5) suggesting a serial mediation model, where intrinsic motivation predicts exploration, before resulting in creativity. The results of the serial mediation hypothesis can be seen below in Table 4.11. Results for each direct relationship appear as different models. The first model assessed predictors of intrinsic motivation. The model was significant (R = .66, $p < 0.01$) and indicates that leader opening behaviours are a significant predictor of follower intrinsic motivation [$\beta = .44$, $p < 0.01$, 95% C.I. (.212, .673)]. The second model examined exploration as a dependent variable. Results showed that the second model was also significant (R = .56, $p < 0.01$) and suggested that leader opening behaviours [$\beta = .26$, $p < 0.05$, 95% C.I. (.018, .511)] was a positive predictor of follower exploration. The last model tested follower idea generation as the dependent variable. The model was significant (R = .75, $p < 0.01$) with opening behaviours [$\beta = .52$, $p < 0.01$, 95% C.I. (.278, .759)] and exploration [$\beta = .52$, $p < 0.01$, 95% C.I. (.339, .696)] positively predicting follower idea generation. In addition to the models, the analysis shown the indirect effects of opening behaviours on idea generation. Results suggest that exploration is a significant

mediator between opening behaviours and idea generation [β = .14, 95% C.I. (.005, .281), ab_{cs}=.08], yet, the serial mediation effect was not significant hence Hypothesis 6 is not supported. Figure 4.7. is a visual representation of the results of this hypothesis.

Figure 4.6. Model 6 – Hayes' PROCESS macro (Hayes, 2017, p.446)

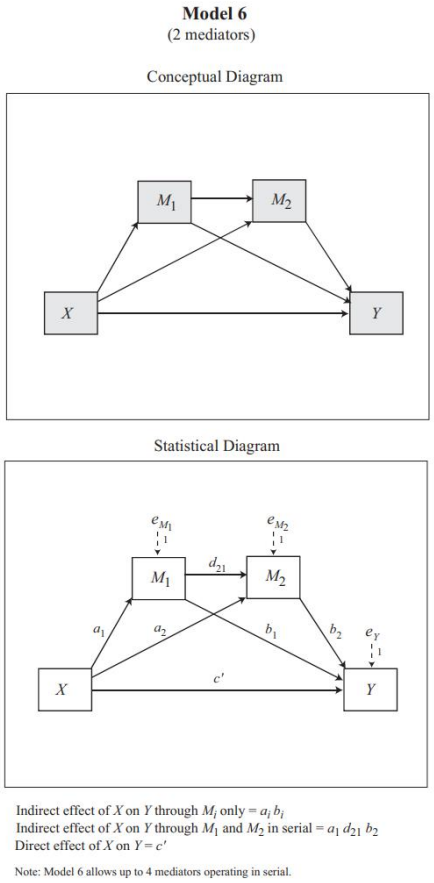


Table 4.11. *Serial Mediation Analysis Results – Intrinsic motivation and exploration as mediators.*

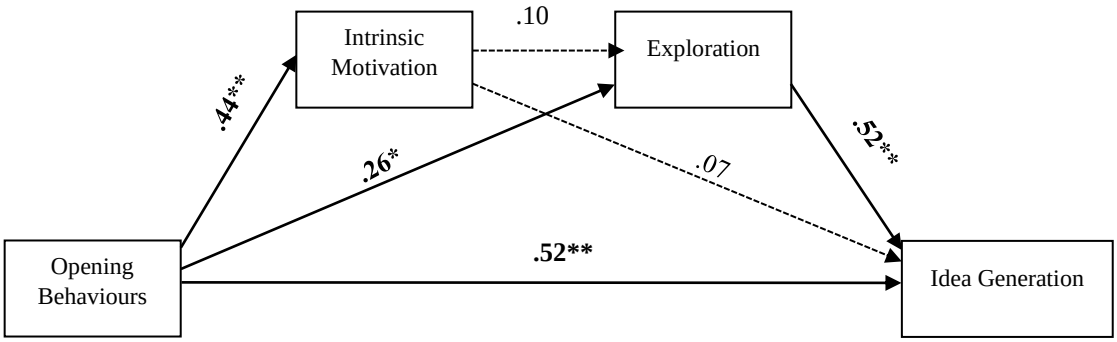
Outcome	Predictor	β	SE	95% CI [LLCI, ULCI]	R	R^2	p
Intrinsic Motivation					.659	.434	.000
	Opening Behaviours	.44**	.12	[.212, .673]			.002

	Positive Affect	.61**	.12	[.368, .852]			.000
	Extraversion	.17	.15	[-.117, .461]			.240
	Open-Mindedness	.10	.11	[-.123, .327]			.370
Exploration					.557	.310	.000
	Opening Behaviours	.26*	.12	[.018, .511]			.036
	Intrinsic Motivation	.10	.09	[-.088, .287]			.297
	Positive Affect	.20	.14	[-.070, .470]			.144
	Extraversion	.39*	.115	[.092, .678]			.011
	Open-Mindedness	.14	.11	[-.087, .369]			.223
Idea Generation					.754	.569	.000
	Opening Behaviours	.52**	.12	[.279, .759]			.000
	Intrinsic Motivation	.07	.09	[-.107, .254]			.423
	Exploration	.52**	.09	[.339, .696]			.000
	Positive Affect	-.14	.114	[-.398, .122]			.297
	Extraversion	.38*	.15	[.090, .666]			.011
	Open-Mindedness	.11	.11	[-.107, .331]			.314

Indirect Effects	β	Boot *SE*	Boot 95% CI
Opening Behaviours → Intrinsic Motivation → Idea Generation	.03	.04	[-.046, .011]
Opening Behaviours → Exploration -> Idea Generation	.14	.07	[.005, .281]
Opening Behaviours → Intrinsic Motivation →Exploration →Idea Generation	.02	.02	[-.023, .075]

Note. n = 118;
CI = Confidence Interval; LLCI = Lower-Level Confidence Interval; ULCI = Upper-Level Confidence Interval.
* p < 0.05; ** p < 0.01.

Figure 4.7. Diagram of the results of the serial mediation (Creativity)



Hypothesis 7 was looking at the other set of ambidextrous leadership behaviours. It stated that *"Leaders' daily closing behaviours will have a positive influence on the employees' daily idea implementation."*. The same process followed as the previous hypothesis. The null model included a diagonal covariance structure, and the followers' daily idea implementation scores (mean across all days) without any covariates. The model yielded an AIC of 1837 and a BIC of 1863 and was significant. The results from the estimates of covariance parameters suggest that the residuals at all times were all statistically significant (p <.001). The variance of the intercept was also statistically significant (b=1.31, p <.001).

The next model followed the same process with the only change being the covariance structure which again was specified to AR (1). The new model yielded a better model field showcasing an AIC of 1827 and a BIC of 1840. For the following model, the key independent variable; leader's daily closing behaviours (mean across all days) was added. The model became markedly better, showing an AIC of 1409 and a BIC of 1421. The estimates of fixed effects results indicate that there is a significant positive linear relationship [F (1, 432) = 6.92, p <.010]

of leader's closing behaviours with follower's idea implementation (p <.010) with the estimated fixed effect being .22. This suggests that for 1 unit increase of the leader's closing behaviours, follower idea implementation increases by .22.

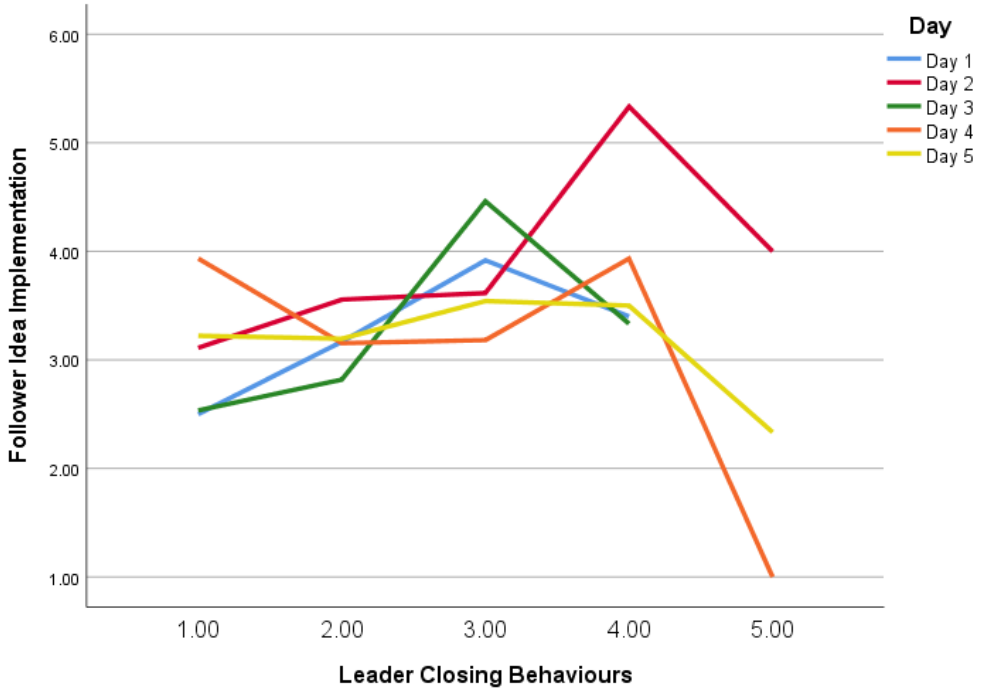
For the final model, I have added the three control variables to examine their effect. The model has shown a better model fit after the control variables were introduced with AIC being 13876 and BIC showing a value of 1389. Follower's daily positive affect was a significant predictor of their daily idea implementation [F (1, 425) = 11.44, p < .001). Follower's extraversion was also a significant predictor [F (1, 124) = 16.36, p < .001). Leader's daily closing behaviours remained a significant predictor [F (1, 422) = 5.61, p < .050] with an estimate fixed effect of .19. The variance of the intercept is .93 (p < .001) suggesting that different participants have different intercepts. These results agree with the proposed hypothesis, suggesting that leader's daily closing behaviours will predict the follower's daily idea implementation, thus confirming *H7*. Results of this analysis can be seen below in Table 4.12. The line graph in Figure 4.8 is a visual representation of this relationship, showing the trajectory of follower idea implementation based on the leaders' closing behaviours based on a daily-to-day basis. Interestingly, the graph indicates more variation compared to the relationship between leaders' opening behaviours and follower idea generation.

Table 4.12. Results of Linear Mixed Model analysis predicting follower daily self-reported idea implementation.

Predictor	Estimate	SE	95% CIs	t	p
Intercept	-0.62	.69	[-1. 99, 0.74]	-0.90	.370
Between-person (level 2) control variable					
Open-mindedness	0.17	.15	[-0.12, 0.47]	1.15	.252
Extraversion	0.70**	.17	[0.36, 1.05]	4.04	.000
Within-person (level 1) control variable					
Daily Positive Affect	0.27**	.08	[0.11, 0.43]	3.38	.001
Within-person (level 1) main effects					
Leader Daily Closing Behaviours	0.19*	.08	[0.03, 0.34]	2.37	.018

Note. n = 569 daily survey responses nested within 124 participants. Estimates of Fixed Effects (B) standard errors (SE), lower and upper levels of confidence intervals (95% CI), t statistics and p values are shown for all predicting variables, * p < .05, ** p < .01.

Figure 4.8. Line Graph for H7.



Hypothesis 8 states that "*Leaders' daily closing behaviours will have a positive influence on the employees' daily exploitation.*" Testing this hypothesis will require the same process as before. Firstly, the null model with a diagonal covariance type and followers' daily exploitation as the dependent variable, yielded an AIC of 1608 and a BIC of 1635. Next, I have changed the covariance type to AR (1), while keeping the dependent variable, which showed a better overall model fit, with indices of AIC and BIC being 1606 and 1619 respectively. For the next model, the main predictor of leaders' daily closing behaviours was added. The model has shown an AIC of 1200 and a BIC of 1213. Although the model was significantly better, the leaders' daily closing behaviours was not a significant positive predictor of followers' daily exploitation.

The final model included the three control variables of daily positive affect, extraversion and open-mindedness, which indicated that it was the best model-fit so far with AIC decreasing to 1161 and BIC decreasing to 1173. All three control variables were significant predictors of exploitation, with positive affect and open-mindedness being positive predictors while extraversion had a negative influence on exploitation. Followers' daily positive affect was a positive predictor of their exploitation behaviours [$F (1, 400) = 47.05$, $p < .001$) with an estimate of .42. Open-mindedness was also a positive predictor of the followers' daily exploitation [$F (1, 104) = 4.54$, $p < .050$) with an estimate of .21. Extraversion was a significant predictor of followers' daily exploitation, but in a negative direction [$F (1, 118) = 6.67$, $p < .050$) with an estimate of -.30. The final model was significant ($p < .001$), and its variance had a significant estimate of .33 ($p < .001$). Leaders' daily closing behaviours remained non-significant nonetheless, suggesting that the stated hypothesis may not be accepted, thus *H8* is not supported. The results for this model can be seen below in Table 4.13.

Table 4.13. Results of Linear Mixed Model analysis predicting follower exploitation.

Predictor	Estimate	SE	95% CIs	t	p
Intercept	4.69	.46	[3. 79, 5.59]	10.27	.000
Between-person (level 2) control variable					
Open-mindedness	0.21*	.10	[0.01, 0.40]	2.13	.035
Extraversion	-0.30*	.11	[-0.52, -.0.07]	-2.58	.010
Within-person (level 1) control variable					
Daily Positive Affect	0.42**	.06	[0.30, 0.54]	6.86	.000
Within-person (level 1) main effects					
Leader Daily Closing Behaviours	-0.08	.06	[-0.20, 0.03]	-1.40	.160

Note. n = 569 daily survey responses nested within 124 participants. Estimates of Fixed Effects (B) standard errors (SE), lower and upper levels of confidence intervals (95% CI), t statistics and p values are shown for all predicting variables, * $p < .05$, ** $p < .01$.

H9 stated that *employee daily exploitation will mediate the positive relationship between daily leaders' closing behaviours and daily employees' idea implementation*. This mediation hypothesis was also tested using the MLmed macro for SPSS (Rockwood, 2017). The results from this analysis are showcased in three models. Before testing the mediation, two regression models were run to explore the effect of leader closing behaviours on the two types of follower ambidexterity.The first model examines exploitation as the outcome and indicates that closing behaviours are not a significant predictor of exploitation at the within-effect level, nor the between-effect level ($p > .050$). The second model examined exploration as the outcome. The reason for adding exploration is to compare it with exploitation and examine whether it can have a mediating effect in the same relationship. Results showed that closing behaviours was

a significant predictor of exploration at the between-effects level [β = .31, p < 0.01, 95% C.I. (.091, .519)], but not a significant predictor at the within-effects level.

The third model is a parallel mediation model, with exploration and exploitation mediating the effect of leader closing behaviours on employee idea implementation. The third model showed that closing behaviours and exploitation are not significant predictors at the within-effect level or the between-effect level (p > .050). Contrary to those results, exploration was a significant predictor of idea implementation at both the within-effects [β = .43, p < 0.01, 95% C.I. (.338, .528)] and the between-effects [β = .85, p < 0.01, 95% C.I. (.655, 1.05)] levels. Results from this analysis also show the indirect effect coefficients, indicating that exploitation is not a significant mediator between daily closing leader behaviours and followers' idea implementation. Surprisingly, exploration was a significant mediator between leaders' daily closing behaviours and followers' daily idea implementation [β = .26, p < 0.01, 95% C.I. (.075, .461)], but not at the within-effect level. However, since exploitation is not a significant mediator between closing behaviours and idea implementation, then H9 is not supported. Results from this analysis can be seen below in Table 4.14.

Table 4.14. *Mediation Analysis Results – Exploitation as mediator.*

Outcome		Predictor	β	SE	t	p	95% CI [LLCI, ULCI]
Model 1							
Exploitation							
	Within-Effects		4.61	.50	9.14	.000	[3.61, 5.61]
		Closing Behaviours	-.06	.08	-.70	.486	[-.213, .101]
		Positive Affect	.37**	.08	4.81	.000	[.218, .519]
	Between-Effects						

		Closing Behaviours	-.11	.09	-1.23	.222	[-.292, .069]
		Positive Affect	.53**	.10	5.10	.000	[.327, .743]
		Extraversion	-.36**	.12	-2.90	.005	[-.608, -.114]
		Open-Mindedness	.20*	.10	2.09	.039	[.010, .398]
Model 2							
Exploration							
	Within-Effects		-.02	.60	-.039	.969	[-1.21, 1.16]
		Closing Behaviours	.15	.10	1.47	.141	[-.049, .343]
		Positive Affect	.34**	.10	3.57	.000	[.153, .529]
	Between-Effects						
		Closing Behaviours	.31**	.11	2.82	.006	[.091, .519]
		Positive Affect	.31*	.12	2.47	.015	[.060, .553]
		Extraversion	.55**	.15	3.73	.000	[.258, .844]
		Open-Mindedness	.15	.12	1.33	.188	[-.076, .383]
Model 3							
Idea Implementation							
	Within-Effects		.31	.78	.39	.695	[-1.24, 1.86]
		Closing Behaviours	.01	.09	1.06	.291	[-.079, .262]
		Exploitation	.00	.06	.00	.996	[-.117, .117]
		Exploration	.43**	.05	8.98	.000	[.338, .528]
		Positive Affect	.19*	.09	2.17	.031	[.018, .360]
	Between-Effects						
		Closing Behaviours	-.06	.11	-.49	.623	[-.281, .169]
		Exploitation	-.20	.12	-1.65	.102	[-.432, .040]
		Exploration	.85**	.10	8.60	.000	[.655, 1.05]
		Positive Affect	-.04	.15	-.27	.785	[-.330, .250]
		Extraversion	.29	.16	1.76	.082	[-.037, .606]

	Open-Mindedness	.10	.12	.79	.432	[-.144, .334]

Random Effects				
	β	SE	*p*	95% CI
Exploitation	.35**	.07	.000	[.236, .533]
Exploration	.47**	.10	.000	[.310, .718]
Idea Implementation	.54**	.10	.000	[.379, .780]
Indirect Effects				
Closing Behaviours → Exploitation →Idea Implementation				
Within – Indirect Effects	-.00	.00	.726	[-.027, .010]
Between-Indirect Effects	.02	.03	.443	[-.020, .090]
Closing Behaviours → Exploration →Idea Implementation				
Within – Indirect Effects	.06	.04	.15	[-.020, .151]
Between-Indirect Effects	.26**	.10	.01	[.075, .462]

Note. n = 435;
CI = Confidence Interval; LLCI = Lower-Level Confidence Interval; ULCI = Upper-Level Confidence Interval.
* p < 0.05; ** p < 0.01.

Hypothesis 10 states that "*Leaders' daily closing behaviours will have a positive influence on the employees' daily extrinsic motivation.*" The same process of linear mixed modelling analysis was followed. The first null model employed a diagonal covariance and used followers' daily extrinsic motivation variable as the dependent variable. The AIC of the null model showed a value of 1352 while BIC was 1378. In the next step, the covariance structure was changed to AR (1) which did not show a better fit. Further covariance structures have been tested, such as unstructured and scaled identity, but the one that showed the best overall fit was diagonal, hence for this hypothesis' analysis, the diagonal covariance structure has remained.

The next step was to add the key predicting variable, which is the leaders' daily closing behaviours. The model's fit criteria suggest that the predicting variable make the model better

as the new AIC value was 1037 while the new BIC was 1061. The model also showed a significant intercept (p <.001) however, the predicting variable was not significant.

In the final step, the three control variables were added. The control variables did not show any significant positive relationships with the dependent variables, as expected, due to extrinsic motivation being unrelated with any of the creativity and innovation outcomes, but it was significantly correlated with the leaders' daily closing behaviours (b= .15, p < .001). Extraversion was the only control variable that was highly significant, but in a negative way [F (1, 118) = 15.14, p < .001) with an estimate of -.51. The variance of the intercept was .61 (p < .001), however, since the leaders' closing behaviours was not a significant predictor of extrinsic motivation, the Hypothesis 10 is not supported. Results of the final model can be seen below in Table 4.15.

Table 4.15. Results of Linear Mixed Model analysis predicting follower extrinsic motivation.

Predictor	Estimate	SE	95% CIs	t	p
Intercept	7.00	.51	[5.98, 8.01]	13.64	.000
Between-person (level 2) control variable					
Open-mindedness	0.03	.11	[-0.20, 0.25]	0.23	.817
Extraversion	-0.51**	.13	[-0.76, -.0.25]	-3.89	.000
Within-person (level 1) control variable					
Daily Positive Affect	0.06	.05	[-0.10, 0.11]	0.13	.898
Within-person (level 1) main effects					
Leader Daily Closing Behaviours	0.08	.05	[-0.03, 0.18]	1.48	.140

Note. n = 569 daily survey responses nested within 124 participants. Estimates of Fixed Effects (B) standard errors (SE), lower and upper levels of confidence intervals (95% CI), t statistics and p values are shown for all predicting variables, * p < .05, ** p < .01.

Hypothesis 11 stated that *employee daily extrinsic motivation will mediate the positive relationship between daily leaders' closing behaviours and daily employees' idea implementation.* This mediation hypothesis was tested using the MLmed macro for SPSS (Rockwood, 2017). The results of the mediation analysis through the PROCESS macro may be seen in Table 4.16. The results from this analysis are showcased in three models. Before testing the mediation, two regression models were run to explore the effect of leader closing behaviours on the two types of motivation.

The first model examines extrinsic motivation as an outcome. However, results indicate that closing behaviours are not a significant predictor ($p > .05$) at neither the within-effect level nor the between-effect level. The second model examined intrinsic motivation as an outcome of leaders' daily closing behaviours, for comparison purposes. The results showed that closing behaviours was also a not significant predictor of intrinsic motivation ($p > .05$). The third model is a parallel mediation model, with intrinsic and extrinsic motivations mediating the effect of leader closing behaviours on employee idea implementation. The model showed that intrinsic motivation was a significant predictor of idea implementation at the within-effect level [β = .47, $p < 0.01$, 95% C.I. (.336, .609)], whereas extrinsic motivation was a significant predictor of idea implementation only at the between-effect level [β = -.36, $p < 0.01$, 95% C.I. (-.581, -.134)] and surprisingly, in a negative direction. Results from this analysis also show the indirect effect coefficients, indicating that extrinsic motivation, nor intrinsic motivation, were significant mediators between leaders' daily closing behaviours and followers' daily idea implementation. Since extrinsic motivation is a not significant mediator at the within-effect level, then H11 is not supported.

Table 4.16. *Mediation Analysis Results – Extrinsic Motivation as mediator.*

Outcome		Predictor	*β*	SE	*t*	*p*	95% CI [LLCI, ULCI]
Model 1							
Extrinsic Motivation							
	Within-Effects		6.27	.60	10.42	.000	[5.08, 7.46]
		Closing Behaviours	.06	.06	0.95	.343	[-.062, .181]
		Positive Affect	-.01	.06	-0.20	.841	[-.131, .107]
	Between-Effects						
		Closing Behaviours	.21	.11	1.93	.056	[-.005, .421]
		Positive Affect	.19	.12	1.55	.123	[-.053, .434]
		Extraversion	-.59**	.15	-4.06	.000	[-.892, -.307]
		Open-Mindedness	.03	.12	0.28	.782	[-.199, .263]
Model 2							
Intrinsic Motivation							
	Within-Effects		1.13	.66	1.72	.087	[-.169, 2.43]
		Closing Behaviours	.05	.07	.66	.512	[-.095, .191]
		Positive Affect	.69**	.07	9.73	.000	[.549, .827]
	Between-Effects						
		Closing Behaviours	-.13	.12	-1.15	.255	[-.367, .098]
		Positive Affect	.74**	.14	5.48	.000	[.475, 1.01]
		Extraversion	.29	.16	1.80	.075	[-.029, .610]
		Open-Mindedness	.04	.13	.28	.781	[-.217, .288]
Model 3							
Idea Implementation							

Within-Effects		1.45	1.03	1.41	.161	[-.588, 3.49]
	Closing Behaviours	.13	.09	1.39	.165	[-.052, .306]
	Extrinsic Motivation	.09	.08	1.06	.290	[-.074, .248]
	Intrinsic Motivation	.47**	.07	6.79	.000	[.336, .609]
	Positive Affect	.02	.10	.02	.839	[-.176, .217]
Between-Effects						
	Closing Behaviours	.34*	.13	2.56	.012	[.076, .595]
	Extrinsic Motivation	-.36**	.11	-3.16	.002	[-.581, -.133]
	Intrinsic Motivation	.21	.11	1.90	.061	[.-010, .431]
	Positive Affect	.01	.17	.065	.948	[-.333, .356]
	Extraversion	.54**	.19	2.88	.005	[.171, .924]
	Open-Mindedness	.18	.14	1.25	.214	[-.103, .453]

Random Effects	β	SE	p	95% CI
Extrinsic Motivation	.64**	.10	.000	[.472, .870]
Intrinsic Motivation	.74**	.12	.000	[.544, 1.02]
Idea Implementation	.86**	.15	.000	[.605, 1.20]

Indirect Effects				
Closing Behaviours → Extrinsic Motivation →Idea Implementation				
Within – Indirect Effects	.01	.01	.563	[-.009, .027]
Between-Indirect Effects	-.07	.05	.111	[-.177, .002]
Closing Behaviours → Intrinsic Motivation →Idea Implementation				
Within – Indirect Effects	.02	.04	.517	[-.044, .092]
Between-Indirect Effects	-.03	.03	.372	[-.104, .021]

Note. n = 435;
CI = Confidence Interval; LLCI = Lower-Level Confidence Interval; ULCI = Upper-Level Confidence Interval.
* p < 0.05; ** p < 0.01.

Hypothesis 12 stated that *Employee daily extrinsic motivation (mediator 1) and employee daily exploitation (mediator 2), in serial, will mediate the positive relationship between leaders' daily closing behaviours and employee daily idea implementation.* This hypothesis is a progression of the previous hypothesis suggesting a serial mediaton model, where extrinsic motivation predicts exploitation, before resulting in implementation. This mediation hypothesis was examined through Hayes (2017) PROCESS macro for SPSS, as the MLmed macro (Rockwood, 2017) does not compute serial mediation hypotheses. Yet, the downside of the PROCESS macro is that it does not handle longitudinal data. The data were aggregated at the subject-level, due to the inability of the PROCESS macro to calculate nested data. The results of the serial mediation hypothesis can be seen below in Table 4.17. The first model assessed predictors of extrinsic motivation. The model was significant (R = .36, $p < 0.01$) and indicates that leader closing behaviours are not a significant predictor of follower extrinsic motivation ($p > 0.05$). The second model examined exploitation as a dependent variable. Results showed that the second model was also significant (R = .55, $p < 0.01$) extrinsic motivation was a positive predictor of follower exploitation [$\beta = .15$, $p < 0.05$, 95% C.I. (.002, .291)]. The last model tested follower idea implementation as the dependent variable. The final model was significant (R = .54, $p < 0.01$) with closing behaviours [$\beta = .28$, $p < 0.05$, 95% C.I. (.019, .544)] positively predicting follower idea implementation. Extrinsic motivation was a negative predictor of idea implementation [$\beta = -.31$, $p < 0.01$, 95% C.I. (-.531, -.082)], while exploitation was not significant. In addition to the models, the analysis shown the indirect effects of closing behaviours on idea implementation. The results show that extrinsic motivation and exploitation are not serial mediators of the relationship between leader closing behaviours and follower idea implementation, hence Hypothesis 12 is not supported.

Table 4.17*. Serial Mediation Analysis Results – Extrinsic motivation and exploitation as mediators.*

Outcome	Predictor	*β*	SE	95% CI [LLCI, ULCI]	*R*	R^2	*p*
Extrinsic Motivation					.358	.128	.004
	Closing Behaviours	.16	.11	[-.055, .383]			.141
	Positive Affect	.21	.13	[-.047, .460]			.109
	Extraversion	-.56**	.15	[-.856, -.257]			.000
	Open-Mindedness	.01	.12	[-.227, .250]			.923
Exploitation					.552	.204	.000
	Closing Behaviours	-.08	.09	[-.251, .092]			.358
	Extrinsic Motivation	.15*	.07	[.002, .291]			.047
	Positive Affect	.56**	.10	[.360, .758]			.000
	Extraversion	-.30*	.12	[-.543, -.052]			.018
	Open-Mindedness	.26**	.09	[.072, .442]			.007
Idea Implementation					.540	.292	.000
	Closing Behaviours	.28*	.13	[.019, .544]			.036
	Extrinsic Motivation	-.31**	.11	[-.531, -.082]			.008
	Exploitation	-.07	.14	[-.351 .220]			.651
	Positive Affect	.26	.17	[-.088, 599]			.143
	Extraversion	.53**	.19	[.143, .912]			.008
	Open-Mindedness	.22	.15	[-.070, 514]			.135
Indirect Effects				*β*	Boot *SE*		Boot

			95% CI
Closing Behaviours → Extrinsic Motivation → Idea Implementation	-.05	.05	[-.171, .019]
Closing Behaviours → Exploitation -> Idea Implementation	.01	.02	[-.034, .041]
Closing Behaviours → Extrinsic Motivation →Exploitation →Idea Implementation	-.00	.00	[-.011, .001]

Note. n = 118;
CI = Confidence Interval; LLCI = Lower-Level Confidence Interval; ULCI = Upper-Level Confidence Interval.
* $p < 0.05$; ** $p < 0.01$.

Hypothesis 13 suggests that "*The interaction between the leaders' daily opening and closing behaviours will predict the employees' daily self-reported innovative behaviours, such that the employees' innovative behaviours are highest when both daily opening and closing behaviours are high.*". To assess this hypothesis, a LMM process was followed. The first model consisted of the diagonal covariance structure with the followers daily innovative work behaviours as the dependent variable (IWB; mean of idea generation and idea implementation). The null model has shown an AIC of 1816 and a BIC of 1842, with the model being significant ($p < .001$). On the next step the covariance structure was changed to AR (1), as previous hypotheses which indicated that this is the best alternative. The model fit was improved slightly with AIC decreasing to 1810 and BIC decreasing to 1823. For the next step, I have added the key predicting variables of daily opening and closing behaviours, as well as their interaction. However, for this analysis, the two variables were centred on the mean as it is generally recommended when having to assess interactions between covariates (moderation analysis) to avoid multicollinearity issues. The model was significant and has shown an AIC of 1296 and a BIC of 1308, indicating how these variables improve the model fit. Out of the three predicting variables only leader's daily opening behaviours was significant [$F (1, 429) = 107.11$, $p < .001$]

with an estimate of .70. Leader's daily closing behaviours, as well as the interaction between leader's opening and closing behaviours was not significant.

For the final step, the three control variables were added onto the model. The fit indices of AIC and BIC have shown a better model fit of 1274 and 1286 respectively, yet the overall model was not significant. Out of the six predicting variables, three of them were significantly predicting the follower's daily innovative work behaviours in a positive way. Leader's daily opening behaviours [$F (1, 426) = 79.42$, $p < .001$] was significant with an estimate of .62, follower's daily positive affect [$F (1, 425) = 6.73$, $p < .010$] was significant with an estimate of .19 and follower extraversion [$F (1, 126) = 11.40$, $p < .001$] was also significant with an estimate of .51. The variance of the intercept is .67 ($p < .001$) suggesting that different participants have different intercepts. Nonetheless, the interaction between leader's daily opening and closing behaviours was not statistically significant, hence, the results suggest that *H13* is not supported. Results from this analysis can be seen at the table below (Table 4.18).

Table 4.18. Results of Linear Mixed Model analysis predicting follower daily innovative work behaviours.

Predictor	Estimate	SE	95% CIs	t	p
Intercept	.86	.57	[-0.27, 1.98]	1.51	.134
Between-person (level 2) control variable					
Open-mindedness	.21	.13	[-0.04, 0.46]	1.64	.105
Extraversion	.51**	.15	[0.21, 0.80]	3.38	.001
Within-person (level 1) control variable					
Daily Positive Affect	.19*	.07	[0.05, 0.33]	2.60	.010
Within-person (level 1) main effects					
Leader Daily Opening Behaviours	.62**	.07	[0.48, 0.75]	8.91	.000
Leader Daily Closing Behaviours	.11	.07	[-0.03, 0.25]	-1.61	.108
Within-person (level 1) interaction effects					

Leader Daily Opening Behaviours * Leader Daily Closing Behaviours	.04	.06	[-0.07, 0.16]	0.74	.452

Note. n = 569 daily survey responses nested within 124 participants. Estimates of Fixed Effects (B) standard errors (SE), lower and upper levels of confidence intervals (95% CI).

Hypothesis 14 stated that "*The positive effect of leaders' daily ambidextrous behaviours on the employees' daily innovative behaviours will be moderated by LMX, so that the positive effect will be stronger when the LMX is high.*". In order to assess the role of the relationship between leaders and followers, as a moderator on the effect of ambidextrous leadership on the followers' innovative behaviours, a linear mixed modelling approach was utilised. The first model is created as a baseline for comparison. In this model, the covariance structure is left as diagonal by default, and the dependent variable is set as the followers' daily innovative behaviours (which is the mean of their daily idea generation and implementation). The model showed an AIC of 1816 and a BIC of 1842. An alternative model that uses an AR (1) covariance structure was used in order to carry on with the analysis. The new model showed a better model-fit with an AIC value of 1810 and a BIC value of 1823.

For the next model, the independent variable was added in the model. The variables of interest in this case are the opening and closing leader behaviours, as well as their interaction. As this a moderation hypothesis, the independent variables were mean-centred before used. The new model showed better model-fit indices with the AIC decreasing from 1810 to 1296 and BIC decreasing from 1823 to 1308. The interaction variable of ambidextrous leadership was not significant, which was expected as this was the result for *H13* which was not supported earlier. However, opening leader behaviours were significant in a positive direction [$F(1, 429) = 107.11$, $p < .001$].

Following this, the moderator was added in the model. The variable of LMX was also mean-centred before used. For this model, the aim was to have a three-way interaction, which included the leaders' opening and closing behaviours, as well as LMX, and all the interactions between them. The new model did not show better results when the LMX was added (AIC: 1305, BIC: 1317). Only the predictor of leaders' opening behaviours remained significant [$F(1, 418) = 87.10$, $p < .001$].

For the final model, the three control variables of positive affect, extraversion and open-mindedness were added. The new model was better than the previous one with the final AIC showing a value of 1283 and the BIC showing a value of 1295. The predictor of opening leaders' behaviours remained significant, above and beyond the control variables [$F(1, 416) = 68.39$, $p < .001$], while its estimate of .62 suggests a strong positive influence. Moreover, the control variable of positive affect was also significant in a positive direction [$F(1, 421) = 7.01$, $p < .010$] with an estimate of .19. The extraversion variable was significantly predicting follower innovative behaviours as well [$F(1, 122) = 12.08$, $p < .001$] with a positive estimate of .53. The variance of the intercept was significant too with an estimate of .69 ($p < .001$). The moderator of this hypothesis was not significant nonetheless, hence H14 is not supported. The results for H14 can be seen below in Table 4.19.

Table 4.19. Results of Linear Mixed Model analysis predicting follower daily innovative work behaviours, with LMX as moderator.

Predictor	Estimate	SE	95% CIs	t	p
Intercept	.71	.59	[-0.45, 1.88]	1.22	.227
Between-person (level 2) control variable					
Open-mindedness	.23	.13	[-0.03, 0.49]	1.74	.086
Extraversion	.53**	.15	[0.23, 0.84]	3.46	.001
Within-person (level 1) control variable					

Daily Positive Affect	.19**	.07	[0.05, 0.34]	2.65	.008
Within-person (level 1) main effects					
Opening Behaviours	.62**	.07	[0.47, 0.76]	8.27	.000
Closing Behaviours	.12	.07	[-0.03, 0.27]	1.58	.115
LMX	-.13	.15	[-0.10, 0.16]	-0.92	.361
Within-person (level 1) interaction effects					
Opening * LMX	-.11	.10	[-0.30, -0.09]	-1.04	.299
Closing * LMX	-.02	.12	[-0.25, 0.20]	-0.19	.846
Opening * Closing	.03	.07	[-0.10, 0.16]	0.44	.663
Opening * Closing * LMX	-.02	.07	[-0.16, 0.13]	-0.27	.791

Note. n = 569 daily survey responses nested within 124 participants. Estimates of Fixed Effects (B) standard errors (SE), lower and upper levels of confidence intervals (95% CI), t statistics and p values are shown for all predicting variables.

Hypothesis 15 suggested that "*The positive effect of leaders' daily ambidextrous behaviours on the employees' daily innovative behaviours will be moderated by trust in the supervisor, so that the positive effect will be stronger when the trust in the supervisor is high*." To test this hypothesis, the same process of linear mixed modelling was followed. The first (null) model employed a default diagonal covariance structure with the followers' daily IWB as the dependent variable. The model showed an AIC of 1816 and a BIC of 1842. In the second step, the covariance structure was altered to AR (1) which showed a better model fit (AIC = 1810, BIC = 1823). In the following step, the key predicting variables of opening and closing behaviours (mean-centred) and their interaction was added, which, improved the model fit even further (AIC = 1296, BIC = 1308). The model was significant ($p < .001$) and indicated that opening behaviours was a strong positive predictor of daily follower IWB [$F (1, 429) = 107.11$, $p < .001$] with an estimate of .70. The interaction between opening and closing behaviours was not significant.

In the next step, the moderating variable of trust in the supervisor was added. The variable was mean-centred before being added. The new model was tested for a 3-way interaction. The new model was significant with a model-fit indices of 1303 and 1315 for AIC and BIC respectively. The new model did not show any significant 2-way or 3-way interactions. The predictor of leaders' opening behaviours remained significant [F (1, 423) = 94.23, p < .001] with an estimate of.71.

For the next model, the three control variables of positive affect, extraversion and open-mindedness were added. The new model showed better model-fit indices with the new AIC being 1280 and the BIC being 1292. Out of the 10 predicting variables in total, three of them were significant. Opening behaviours were significant [F (1, 418) = 70.71, p < .001] with an estimate of .62. Followers' positive affect was significant [F (1, 420) =7.62, p < .010] in a positive direction with an estimate of .20. Lastly, extraversion was significant [F (1, 122) = 11.32, p < .001] and in a positive direction, with an estimate of .651. The variance of the intercept was significant (p < .001) with an estimate of .70. The interaction between ambidextrous leadership (the product of opening and closing behaviours) and trust in the supervisor was not significant. Therefore, H15 is not supported. The results of the final model from this mixed modelling analysis can be seen below in Table 4.20.

Table 4.20. Results of Linear Mixed Model analysis predicting follower daily innovative work behaviours, with trust in the supervisor as moderator.

Predictor	Estimate	SE	95% CIs	t	p
Intercept	.80	.58	[-0.34, 1.94]	1.38	.169
Between-person (level 2) control variable					
Open-mindedness	.22	.13	[-0.04, 0.48]	1.69	.094

Extraversion	.51**	.15	[0.21, 0.81]	3.37	.001
Within-person (level 1) control variable					
Daily Positive Affect	.20**	.07	[0.06, 0.35]	2.76	.006
Within-person (level 1) main effects					
Opening Behaviours	.62**	.07	[0.48, 0.77]	8.41	.000
Closing Behaviours	.12	.07	[-0.02, 0.27]	1.68	.095
Trust	-.18	.13	[-0.44, 0.72]	-1.42	.158
Within-person (level 1) interaction effects					
Opening * Trust	-.18	.09	[-0.35, 0.00]	-1.95	.052
Closing * Trust	-.03	.10	[-0.23, 0.16]	-0.31	.755
Opening * Closing	.02	.06	[-0.11, 0.14]	0.27	.788
Opening * Closing * Trust	-.02	.07	[-0.15, 0.12]	-0.27	.788

Note. n = 569 daily survey responses nested within 124 participants. Estimates of Fixed Effects (B) standard errors (SE), lower and upper levels of confidence intervals (95% CI), t statistics and p values are shown for all predicting variables.

The final hypothesis, *H16*, stated that feeling trusted by the leader will be a positive moderator between leader ambidextrous behaviours and follower daily IWB. In particular, H16 stated that "*The positive effect of leaders' daily ambidextrous behaviours on the employees' innovative behaviours will be moderated by the feelings of trust by the supervisor, so that the positive effect will be stronger when the feelings of trust are high*". The same process of linear mixed modelling was followed, in order to test the last hypothesis of this study.

The first (null) model, which employed a diagonal covariance structure and daily IWB as the dependent variable, has shown an AIC value of 1816 and 1842. For the next step, the covariance structure was changed to AR (1) which showed a better model fit (AIC = 1810, BIC = 1823). The main predictors of opening and closing behaviours (mean-centred), as well as their interaction, were added for the next model. The new model was significant with better model-fit (AIC = 1296, BIC = 1308). The predictor of opening behaviours was significant in a

positive direction [F (1, 429) = 107.11, p < .001] but the interaction between opening and closing behaviours was not.

In the next model, the main moderator of feeling trusted by the supervisors was added. This model aimed to assess whether the variables had a 3-way interaction. This model included seven predicting variables therefore: opening behaviours, closing behaviours, feeling trusted by the supervisor and four interaction terms of their combinations. All variables were mean-centred. The fit indices of the new model had a minimal difference with the previous model (AIC = 1298, BIC = 1310) and the model was significant as well. The variable of feeling trusted by the supervisor was significant in a positive direction [F (1, 139) = 6.18, p < .050] with an estimate of .39. In addition, opening [F (1, 423) = 67.29, p < .001] and closing behaviours [F (1, 426) = 5.46, p < .050] were both significant positive predictors with respective estimates of .63 and .17. However, the 2-way and 3-way interactions tested were not significant.

For the final model, the three control variables of positive affect, extraversion and open-mindedness were added, which improved the model-fit (AIC = 1279, BIC =1292). Positive affect [F (1, 420) = 6.97, p < .010] and extraversion [F (1, 118) = 9.87, p < .010] were positive predictors of daily IWB of the followers, with estimates of .19 and .48 respectively. The variable of feeling trusted by the supervisor was no longer a significant predictor (p = .056), however, leader's opening [F (1, 421) = 51.26, p < .001] and closing behaviours [F (1, 421) = 4.31, p < .050] remained significant in a positive direction with respective estimates of .56 and .15. The hypothesis stated that feeling trusted by the supervisor will have a positive influence, however results of the mixed modelling analysis did not show such results, therefore, H16 is not supported. The results of the final model can be seen below in Table 4.21.

Table 4.21. Results of Linear Mixed Model analysis predicting follower daily innovative work behaviours, with feeling trusted by the supervisor, as moderator.

Predictor	Estimate	SE	95% CIs	t	p
Intercept	1.01	.58	[-0.15, 2.18]	1.73	.087
Between-person (level 2) control variable					
Open-mindedness	.18	.13	[-0.07, 0.44]	1.42	.159
Extraversion	.48	.15	[0.18, 0.78]	3.14	.002
Within-person (level 1) control variable					
Daily Positive Affect	.19	.07	[0.05, 0.34]	2.64	.009
Within-person (level 1) main effects					
Opening Behaviours	.56	.08	[0.40, 0.71]	7.16	.000
Closing Behaviours	.15	.07	[0.01, 0.29]	2.08	.039
Feeling Trusted	.23	.15	[-0.07, 0.53]	1.53	.127
Within-person (level 1) interaction effects					
Opening * Feeling Trusted	-.06	.10	[-0.26, 0.13]	-0.63	.529
Closing * Feeling Trusted	-.11	.10	[-0.31, 0.09]	-1.08	.280
Opening * Closing	.00	.07	[-0.13, 0.14]	0.05	.963
Opening * Closing * Feeling Trusted	-.09	.07	[-0.23, 0.06]	-1.21	.226

Note. n = 569 daily survey responses nested within 124 participants. Estimates of Fixed Effects (B) standard errors (SE), lower and upper levels of confidence intervals (95% CI), t statistics and p values are shown for all predicting variables.

The table below (Table 4.22) shows the hypotheses and their outcomes.

Table 4.22. Hypotheses Results.

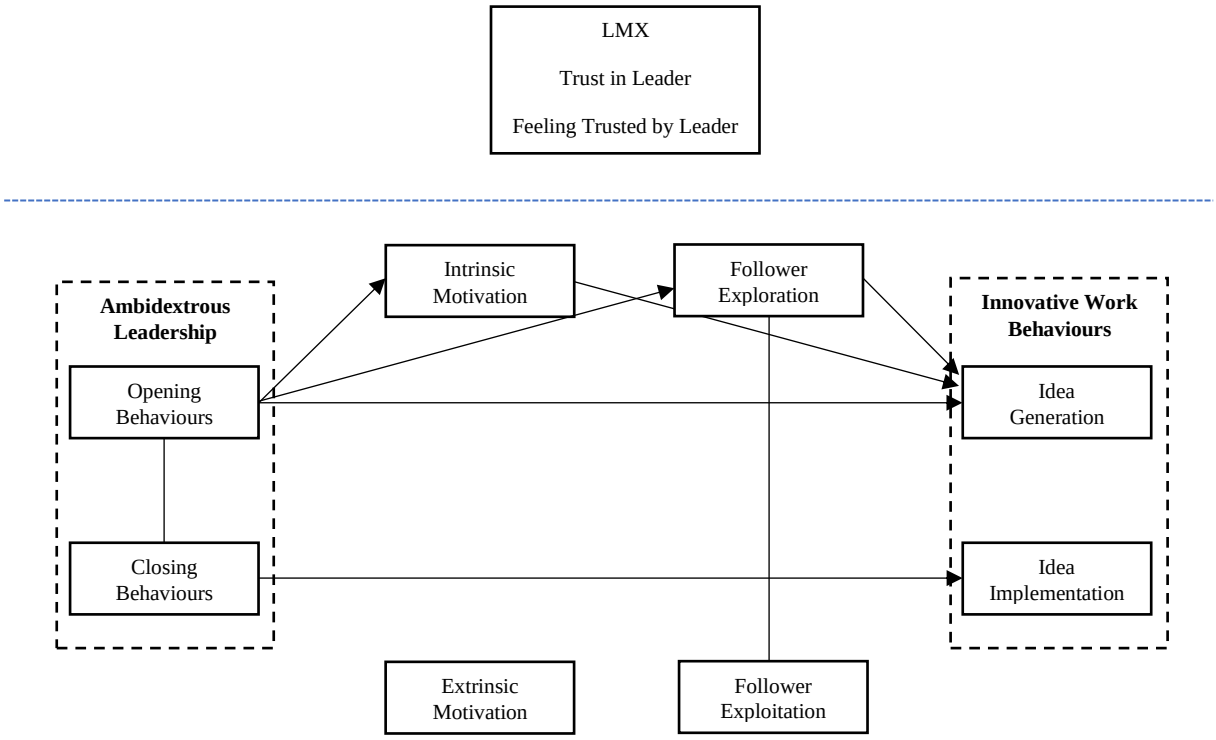
Hypotheses		**Analysis**	**Result**
1	*Leaders' daily opening behaviours will have a positive influence on the employees' daily idea generation.*	LMM	Accepted

2	*Leaders' daily opening behaviours will have a positive influence on the employees' daily exploration.*	LMM	Accepted
3	*Employee exploration will mediate the relationship between leaders' daily opening behaviours and employees' daily idea generation.*	MLMED	Accepted
4	*Leaders' daily opening behaviours will have a positive influence on the employees' daily intrinsic motivation.*	LMM	Accepted
5	*Employee daily intrinsic motivation will mediate the relationship between leaders' daily opening behaviours and employees' daily idea generation.*	MLMED	Accepted
6	*Employee daily intrinsic motivation (mediator 1) and employee daily exploration (mediator 2), in serial, will mediate the positive relationship between leaders' daily opening behaviours and employee daily idea generation.*	PROCESS	Not Supported
7	*Leaders' daily closing behaviours will have a positive influence on the employees' daily idea implementation.*	LMM	Accepted
8	*Leaders' daily closing behaviours will have a positive influence on the employees' daily exploitation.*	LMM	Not Supported
9	*Employee daily exploitation will mediate the positive relationship between daily leaders' closing behaviours and daily employees' idea implementation.*	MLMED	Not Supported
10	*Leaders' daily closing behaviours will have a positive influence on the employees' daily extrinsic motivation.*	LMM	Not Supported
11	*Employee daily extrinsic motivation will mediate the positive relationship between daily leaders' closing behaviours and daily employees' idea implementation.*	MLMED	Not Supported
12	*Employee daily extrinsic motivation (mediator 1) and employee daily exploitation (mediator 2), in serial, will mediate the positive relationship between leaders' daily closing behaviours and employee daily idea implementation.*	PROCESS	Not Supported
13	*The interaction between the leaders' daily opening and closing behaviours will predict the employees' daily self-*	LMM	Not Supported

	reported innovative behaviours, such that the employees' innovative behaviours are highest when both daily opening and closing behaviours are high.		
14	*The positive effect of leaders' daily ambidextrous behaviours on the employees' daily innovative behaviours will be moderated by LMX, so that the positive effect will be stronger when the LMX is high.*	LMM	Not Supported
15	*The positive effect of leaders' daily ambidextrous behaviours on the employees' daily innovative behaviours will be moderated by trust in the supervisor, so that the positive effect will be stronger when the trust in the supervisor is high.*	LMM	Not Supported
16	*The positive effect of leaders' daily ambidextrous behaviours on the employees' daily innovative behaviours will be moderated by the feelings of trust by the supervisor, so that the positive effect will be stronger when the feelings of trust are high.*	LMM	Not Supported

The figure below (Figure 4.9) demonstrates the conceptual model examined and the hypotheses that were supported.

Figure 4.9. Conceptual model tested in this study with results



Note. The blue dotted line indicates the level of examination. The constructs above the line are between-subject variables, while the constructs below the line are within-subject variables.

4.4.3. Supplementary Analysis

As part of additional analysis that supplements the hypothesis testing, I examined the effects of the leaders' behaviours from day to day, and their lasting duration. The lagged effect is an important part of leadership behaviour research (e.g., Kinnunen, Feldt & Mauno; Laschinger & Fida, 2014), and examining how these ambidextrous leadership behaviours can have an effect (either positive or negative) that lasts for more days than what the leader intended (or not) is important. Zacher and Wilden (2014) whose study was the first to examine ambidextrous leadership through a daily diary study, also indicate that future research should look into the time lag factor, as they did not look into it.

The first analysis I conducted as part of this section was a Pearson correlation to assess whether the two sets of leaders' behaviours correlate with their corresponding employee behaviour, not just on the same day, but the subsequent days as well. Results are presented in two tables. The first table (see Table 4.23) showcases the associations between leaders' opening behaviours on each day, with the followers' idea generation outcomes on each day. Results indicate a strong correlation between the leaders' opening behaviours and idea generation on their corresponding day. It can also be observed that leaders' behaviours are also associated with the follower idea generation outcomes of some of the subsequent days from the day of the portrayal.

Table 4.23. Correlations between Opening Behaviours and Idea Generation.

	Idea Generation				
Opening Behaviours	*T1*	*T2*	*T3*	*T4*	*T5*
T1	.557**	.334**	.195	.433**	.335**
T2	.391**	.574**	.305**	.347**	.329**
T3	.113	.252*	.416**	.205	.165
T4	.318**	.425**	.355**	.497**	.329**
T5	.151	.360**	.198	.290*	.588**

Note. * p <.05, ** p < .01.

Table 4.24 showcases the results of the same analysis, but for the relationship between leaders' closing behaviours and followers' idea implementation outcomes. However, the results are not as strong as the opening behaviours. Leader's closing behaviours on day 1 were not correlated with followers' outcome on day 1, however they were correlated with them on days 2 (r = .21, p < .05), 3 (r = .26, p < .05) and 4 (r = .22, p < .05). Moreover, leaders' closing behaviours on day 3 were only correlated with followers' behaviours on day 4 (r = .22, p < .05). Although these results seem to demonstrate that closing behaviours have an effect the following day, the pattern is not very strong to make such deductions.

Table 4.24. Correlations between Closing Behaviours and Idea Implementation.

	Idea Implementation				
Closing Behaviours	*T1*	*T2*	*T3*	*T4*	*T5*
T1	.180	.213*	.259*	.218*	.000
T2	.012	.105	.068	.175	.053
T3	.162	.137	.179	.221*	.026
T4	.106	.072	.194	.155	.061
T5	.097	.089	.129	.166	.049

Note. * p <.05, ** p < .01

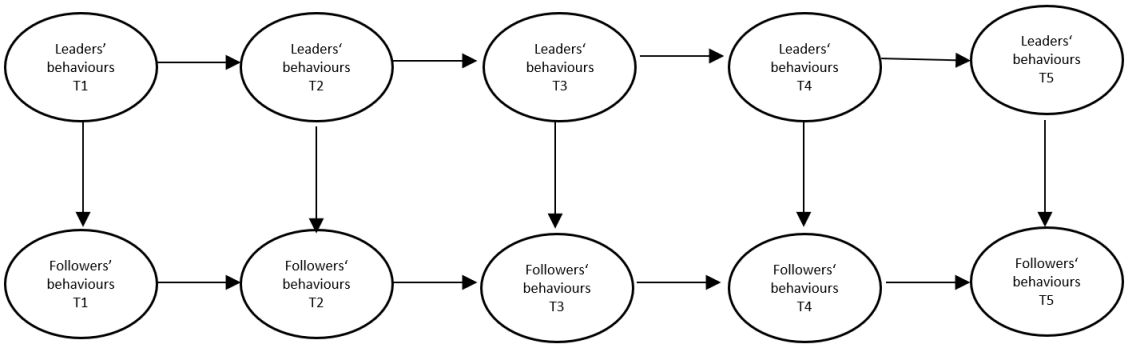
As a second method of the supplementary analysis, I decided to conduct some Cross-Lagged Panel Models (CLPM). CLPM, which can also be referred to as cross-lagged path models, or cross-lagged regression models, can only be calculated through longitudinal (or panel) data, where observations are recorded at multiple time points (Zyphur et al., 2020). In this case, both leaders' behaviours and followers' behaviours were recorded once a day for 5 consecutive days. Selig and Preacher (2009) state that this is an appropriate method if the aim is to assess the effect of your predictor over a period and has multiple benefits. By using CLPM, one is allowing additional time for the causes to influence the outcome. Moreover, in comparison to models that use single time-points (cross-sectional) data, CLPMs can indicate a clearer inference regarding the path of the causation, and they are capable of reducing parameter biases.

As my data are at the individual level, I have followed the same approaches as Meier and Spector (2013), Nieuwenhuis, Knight, Postmes and Haslam (2014) and Fox, Hunter and Jones (2016), by using SPPS AMOS (v.26) to construct Structural Equation Models (SEM) with measured variables and conduct cross-lagged panel analysis. Such models can offer the researcher more flexibility as they examine all longitudinal influences of one variable on another simultaneously, while controlling for their associations and stability (Nieuwenhuis, Knight, Postmes &Haslam, & 2014). In order to assess the lagged effect of the key proposed relationships, five cross-lagged models

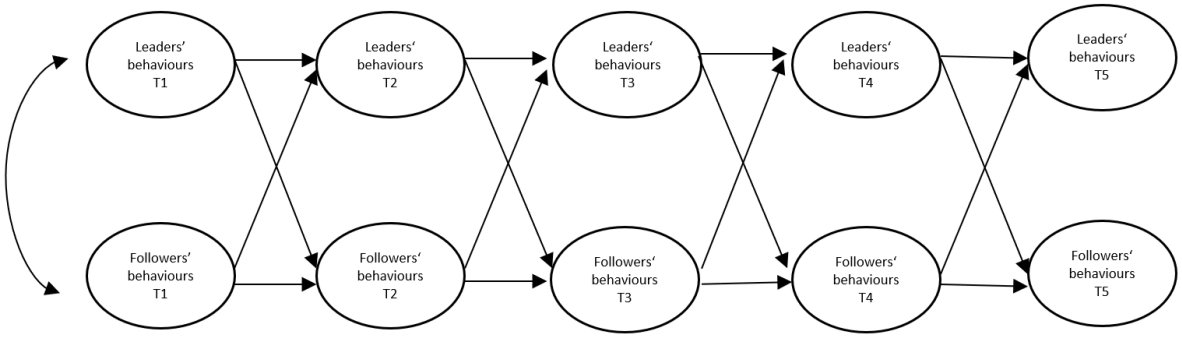
have been developed. An illustration of these models can be seen in Figure 6. These models examine the lagged effect of leaders' behaviours from Day 1 on the followers' behaviours on Days 2, 3, 4 and 5, meaning that leaders' behaviours are examined for a 1-day lag, 2-day lag, 3-day lag, and 4-day lag, as well as same-day effect. A model demonstrating the effect of the behaviours on the same day is also examined for comparison purposes.

Figure 4.10. Cross-lagged Structural Models.

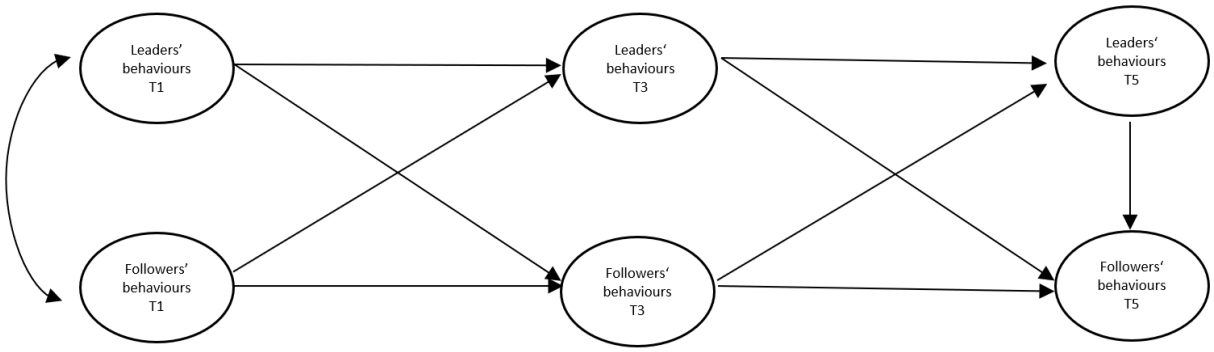
Model 1: 0-day lag



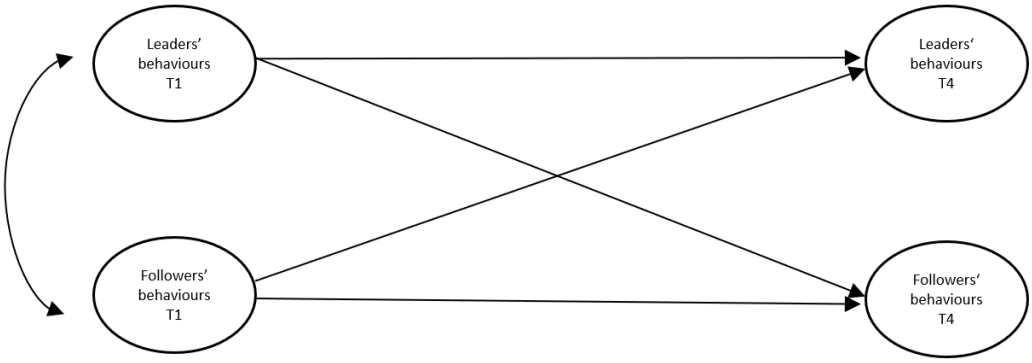
Model 2: 1-day lag



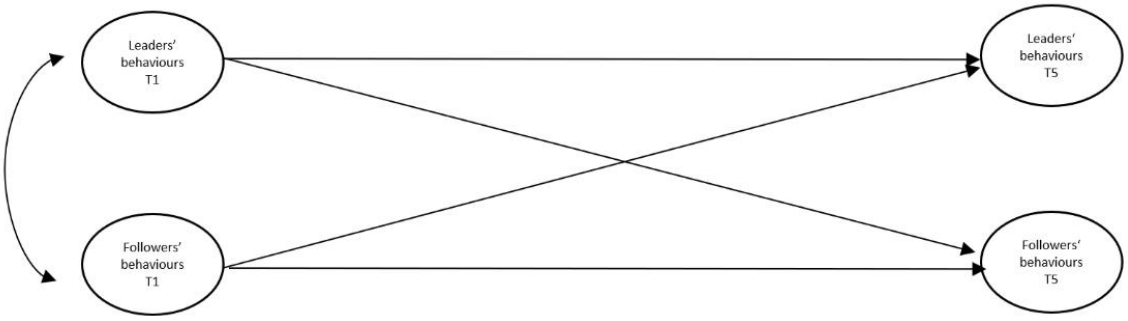
Model 3: 2-day lag



Model 4: 3-day lag



Model 5: 4-day lag



The proposed models in Figure 4.10 are the fully cross-lagged models. For each model, I also tested each causal relationships individually, before analysing the fully cross lagged model. Meaning that, apart from model 1 (which examines same day effect), every structural model consists of 3 (sub) models: one where leaders' behaviours lead to following day's followers' behaviours, one where followers' behaviours led to following day's leaders' behaviours, and finally the fully crossed-lagged models.

Hence, thirteen (13) models have been tested for each leaders' behavioural set, meaning that a total of twenty-six (26) structural models have been assessed (all tested models can be seen in Appendices M and N).

For each proposed model, various fit indices have been reported in order to determine whether the data fit the model well. Fit indices that have been reported include the chi-square (χ^2) goodness of fit, along with its degree of freedom (*df*). Ideally, a small and non-significant value of χ^2 would indicate good fit (Nieuwenhuis, Knight, Postmes &Haslam, & 2014). Another index would be the χ^2/df which researchers suggest that a common acceptable benchmark would be a value between 3-5 and anything less than 3 would suggest a great fit. The second and third index that are taken into account are the comparative fit index (CFI), and the Tucker-Lewis Index (TLI), both of which would indicate an excellent fit of data if the value is .95 or more (Hu & Bentler, 1999). Lastly, the root mean square error of approximation is also reported (RMSEA), where values lower than .06 indicate a good fit (Hu & Bentler, 1999). Another common model selection criterion is the Akaike's information criterion (AIC), which indicate whether the model is better than the alternatives. Ideally, a lower AIC would indicate a better fit. Although some criticism exists by Preacher, Zhang, Kim, and Mels (2013) who suggest that the RMSEA outperforms AIC in selecting an optimal model, the AIC values are still reported in the results tables.

Firstly, the leaders' opening behaviours for a lagged effect on the followers' idea generation outcomes were tested. Thirteen structural models have been created and analysed. Results of this analysis can be seen below in Table 4.25. The results show that the 0-day lag model is the optimal one (χ^2/df = .32, p >.05, CFI = 1.00, TLI =1.00, RMSEA = .00). Following models, starting from 1-day lag, also show some good fit indices, with χ^2/df, and CFI showing good values. Models that investigated 2-day lag show similarly acceptable values of χ^2/df, and CFI. Models that have investigated the 3-day and 3-day lag do not show as good model fit values as the previous models. Although leader behaviour variables seem to have significant path coefficients for their following

days of leader behaviours, they do not seem to have a strong lagged effect on follower idea generation. All thirteen models, including the pathway coefficients, can be seen in Appendix M. The results suggest that in general, there is no strong significant effect that can last for days. The only significant effect was found in the 1-day lag model, where opening behaviours (T1) predicted idea generation (T2) (b = .21 , p < .001), but subsequent days did not predict anything. Results were also significant at the cross-lagged analysis, indicating that followers who reported their idea generation as high at T1, also perceived their leader's behaviours as opening at T2 (b = .23 , p < .001). Significant effect was also found in the 3-day lag model, where opening leader behaviours (T1) predicted idea generation (T4) (b = .24, p < .001). These results are not consistent enough to suggest that opening behaviours could have an effect on idea generation that could last for days.

Table 4.25. Cross-lagged Analysis (Leaders' Opening Behaviours → Followers' Idea Generation)

Model	Model Type	χ^2	*df*	χ^2/df	*p*	CFI	TLI	RMSEA (90% CI)	AIC
0-day lag	a	2.21	7	.32	.95	1.00	1.00	.00 [.000, .012]	118.2
1-day lag	b	31.74	16	1.98	.01	.96	.86	.09 [.042, .135]	129.7
	c	30.90	16	1.93	.01	.96	.86	.09 [.038, .133]	128.9
	d	20.93	12	1.74	.05	.98	.89	.08 [.000, .132]	126.9
2-days lag	b	9.33	4	2.33	.05	.96	.79	.10 [.000, .193]	55.3
	c	8.95	4	2.24	.06	.96	.81	.10 [.000, .190]	55.0
	d	6.44	2	3.22	.04	.97	.65	.13 [.025, .257]	56.4
3-days lag	b	13.86	2	6.93	.00	.89	.43	.22 [.120, .335]	37.9
	c	18.61	2	9.31	.00	.84	.20	.26 [.160, .374]	42.6
	d	13.79	1	13.79	.00	.88	.00	.32 [.187, .483]	39.8
4-days lag	b	29.16	2	14.58	.00	.69	.00	.33 [.232, .444]	53.2
	c	31.11	2	15.55	.00	.67	.00	.34 [.244, .455]	55.1
	d	28.07	1	28.07	.00	.70	.00	.47 [.329, .626]	54.1

Note. n= 124. Model type:
a = $X(T_x)$ → $Y(T_x)$
b = $X(T_x)$ → $Y(T_{x+n})$, *n* being the number of lagged days
c = $Y(T_x)$ → $X(T_{x+n})$, *n* being the number of lagged days
d = Fully cross-lagged model (b AND c)

The same structural models have also been tested for the relationship between leaders closing behaviours and followers' idea implementation. Results from the thirteen (13) models of this analysis can been seen below in Table 4.26. The results show that all models indicate good model-fit indices, in terms of their χ^2/df values, the CFI, TLI and RMSEA. However, significant paths do not exist between leader behaviours and following days. As there are no significant paths between closing behaviours and idea implementation at any point, it can be assumed that a time-lagged effect does not exist. All thirteen models between closing behaviours and implementation along with the coefficients of every path can be found in Appendix N. It is worth mentioning that before conducting any cross-lagged analysis, the disturbances of all variables were allowed to covary (apart from T1). In particular, the outcome variable was allowed to covary with itself for all days, as well as its corresponding predictor variable.

Table 4.26. Cross-lagged Analysis (Leaders' Closing Behaviours → Followers' Idea Implementation)

Model	Model Type	χ^2	*df*	χ^2/df	*p*	CFI	TLI	RMSEA (90% CI)	AIC
0-day lag	a	2.99	7	.43	.89	1.00	1.00	.00 [.000, .052]	119.0
1-day lag	b	17.29	16	1.08	.37	1.00	.99	.03 [.000, .089]	115.3
	c	22.65	16	1.42	.12	.99	.95	.06 [.000, .019]	120.6
	d	16.27	12	1.36	.18	.99	.96	.05 [.000, .113]	122.3
2-days lag	b	4.08	4	1.02	.40	1.00	1.00	.01 [.000, .137]	50.1
	c	6.27	4	1.57	.18	.99	.92	.07 [.000, .164]	52.3
	d	4.04	2	2.02	.13	.99	.86	.09 [.000, .221]	54.0
3-days lag	b	0.71	2	.36	.70	1.00	1.00	.00 [.000, .131]	24.7
	c	3.22	2	1.61	.20	.98	.90	.07 [.000, .206]	27.2
	d	0.23	1	.23	.64	1.00	1.00	.00 [.000, .187]	26.2
4-days lag	b	1.39	2	.69	.50	1.00	1.00	.00 [.000, .160]	25.4
	c	3.06	2	1.53	.22	.98	.90	.07 [.000, .203]	27.1
	d	1.38	1	1.38	.24	.99	.93	.06 [.000, .254]	27.4

Note. n= 124. Model type: a = $X(T_x)$ → $Y(T_x)$, b = $X(T_x)$ → $Y(T_{x+n})$, *n* being the number of lagged days,
c = $Y(T_x)$ → $X(T_{x+n})$, *n* being the number of lagged days, d = Fully cross-lagged model (b AND c)

Further supplementary analysis to examine lagged effect of the leaders' behaviours included multiple regression. A multiple regression can be used to assess the effects of multiple predictors on one dependent variable. As the structural models indicated primarily that the creativity and implementation outcomes have a strong effect on themselves the following days, the outcome variable for the day before was controlled. In this multiple regression analysis therefore, I decided to examine 1-day lagged effect, as this was the most promising from the CLPM analysis. For each set of leadership behaviours therefore, I conducted four multiple regressions, assessing the outcome on Days 2, 3, 4 and 5 using the appropriate leadership behaviour of the day before as the predictor, as well as the same outcome from the day before as a control variable. Hierarchical linear regression models were created in order to examine the changes in variance, and essentially whether the leaders' behaviours are significant and contribute to the variance, after controlling for followers' outcomes of the day before. Firstly, hierarchical multiple regression analysis was conducted to examine 1-day lagged effect of leaders' opening behaviours on followers' idea generation. Results of these models can be seen below in Table 4.27.

Multiple linear regressions were carried out to determine the lagged effect (1-day) of leaders' opening behaviours on followers' idea generation outcomes. The first analysis examined idea generation (T2) as an outcome and its first model included leaders' opening behaviours (T1). The model was statistically significant ($F(1,91) = 11.46$; $p < .001$) with the adjusted R^2 indicating a value of .10 suggesting that 10% of the variance in idea generation (T2) could be explained by variances in leaders' opening behaviours (T1) ($\beta = .33$, $p < .001$). In the second step, the control variable of idea generation (T1) was added. The second model was also statistically significant, ($F(1,90) = 22.17$; $p < .001$) with the adjusted R^2 showing a value of .27, suggesting the two variables can explain the variance in followers' idea generation by 27 per cent (R^2 change = .18). However, this model suggests that only idea generation (T1) is

significant (β = .50, p <.001). As the leaders' opening behaviour from the previous did not have a significant effect, it can be suggested that a lagged effect does not exist in this case. In fact, all subsequent analysis followed the same pattern, where only the control variable of idea generation (T-1) was significant at the second model, while the opening behaviours (T-1) was not significant. These results could also suggest that opening behaviours do not have a lagged effect on the followers' idea generation on the following day.

Table 4.27. Multiple regression models (Opening Behaviours → Idea Generation).

Outcome	Predictors	B	SE	β	*t*	*p*	R^2	Adj R^2	ΔR2	F Change
Idea Generation (T2)							.11	.10	.11	F (1,91) = 11.46; p <.001
	Opening Behaviours (T1)	.594**	.18	.334**	3.39	.001				
Idea Generation (T2)							.29	.27	.18	F (1,90) = 22.17; p <.001
	Opening Behaviours (T1)	.099	.19	.056	.522	.603				
	Idea Generation (T1)	.488**	.10	.503**	4.71	.000				
Idea Generation (T3)							.09	.08	.09	F (1, 90) = 9.24; p < .010
	Opening Behaviours (T2)	.539*	.177	.305**	3.04	.003				
Idea Generation (T3)							.22	.20	.13	F (2,89) = 12.43; p <.001
	Opening Behaviours (T2)	.128	.20	.072	.645	.520				
	Idea Generation (T2)	.396**	.11	.424**	3.78	.000				
Idea Generation (T4)							.04	.03	.04	F (1,85) = 3.72; p > .050
	Opening Behaviours (T3)	.386	.20	.205	1.93	.057				
Idea Generation (T4)							.25	.23	.21	F (1,84) = 23.06; p <.001

	Opening Behaviours (T3)	-.006	.20	-.003	-.030	.976				
	Idea Generation (T3)	.547**	.11	.500**	4.80	.000				
Idea Generation (T5)							.11	.10	.11	F (1,81) = 9.81; p <.010
	Opening Behaviours (T4)	.557*	.18	.329*	3.13	.002				
Idea Generation (T5)							.24	.22	.13	F (1,80) = 13.26; p <.001
	Opening Behaviours (T4)	.211	.19	.125	1.11	.272				
	Idea Generation (T4)	.430**	.12	.410**	3.64	.000				

Note. * p<.05, ** p<.001

The same analysis was also conducted for closing behaviours (1-day lagged effect) and their effect on the followers' idea implementation outcomes of the following day. Results of this analysis can be seen in Table 4.28. The first analysis examined follower idea implementation (T2) as the outcome and used the leaders' closing behaviours (T1) to assess a 1-day lagged effect, while also controlling for followers' idea implementation (T1). The first model was statistically significant ($F(1,91) = 4.34$; $p < .050$) with the adjusted R^2 indicating a value of .05 suggesting that 5% of the variance in idea implementation (T2) could be explained by variances in leaders' closing behaviours (T1) ($\beta = .21$, $p < .050$). In the second model, the control variable of idea implementation (T1). The second model was highly significant ($F(1,90) = 97.87$, $p<.001$) with an adjusted R^2 of .53%, 49 of which was added due to the control variable. The control variable of idea implementation (T1) was highly significant ($\beta = .72$, $p < .001$), while the closing behaviours were no longer significant ($p>.050$). This was the same result as with the opening behaviours, and the rest of the analysis for the closing behaviours has shown the same pattern, where only the control variable of idea implementation was the only significant

variable that could explain a large proportion of the variance in the followers' idea implementation. Hence, it is safe to assume that a lagged effect does not exist in the case of closing behaviours.

Table 4.28. Multiple regression models (Opening Behaviours → Idea Generation).

Outcome	Predictors	B	SE	β	*t*	*p*	R^2	Adj R^2	ΔR2	F Change
Idea Implementation (T2)							.05	.04	.05	F (1,91) = 4.34; p <.050
	Closing Behaviours (T1)	.426*	.21	.213*	2.08	.040				
Idea Implementation (T2)							.54	.53	.49	F (1,90) = 97.87; p <.001
	Closing Behaviours (T1)	.168	.15	.084	1.16	.249				
	Idea Implementation (T1)	.729**	.07	.717**	9.89	.000				
Idea Implementation (T3)							.01	-.01	.01	F (1,90) = 0.42; p > .050
	Closing Behaviours (T2)	.110	.17	.068	.649	.518				
Idea Implementation (T3)							.28	.26	.27	F (1,89) = 34.01; p <.001
	Closing Behaviours (T2)	.013	.15	.008	.090	.929				
	Idea Implementation (T2)	.519**	.09	.528**	5.83	.000				
Idea Implementation (T4)							.05	.04	.05	F (1,85) = 4.36; p <.050
	Closing Behaviours (T3)	.404*	.19	.221*	2.09	.040				
Idea Implementation (T4)							.42	.41	.37	F (1,84) = 54.27; p <.001
	Closing Behaviours (T3)	.201	.15	.110	1.31	.195				
	Idea Implementation (T3)	.663**	.09	.621**	7.37	.000				
Idea Implementation (T5)							.00	-.01	.00	F (1,81) = 0.31; p >.050

	Closing Behaviours (T4)	.093	.17	.061	.552	.582				
Idea Implementation (T5)							.40	.39	.40	F (1,80) = 52.78; p <.001
	Closing Behaviours (T4)	-.056	.13	-.037	-.426	.672				
	Idea Implementation (T4)	.619**	.09	.637**	7.27	.000				

Note. * p<.05, ** p<.001

The next part of supplementary analysis that was conducted as part of the lagged-effects testing, included serial mediations. The serial mediations that were tested in this analysis are the same as the ones proposed in Hypotheses 3.3 and 6.3, however in order to look at the lagged effect, the variables examined are from different days. In particular, I looked at leaders' behaviours (T1), motivation (T2), exploration/exploitation (T3), follower outcome (T4). This holistic approach would allow an examination from a different perspective, where mediators are also investigated for lagged effects, in addition to the leadership behaviours. The decision for this analysis was loosely based on the conservation of resources theory (Hofboll, 1989), which suggests that individuals are driven to maintain their current resources or gain new resources, which can help them achieve their goals and work tasks. When individuals perceive a leader's behaviours useful for them, they will try to prevent them for disappearing by maintaining them carefully. If they use them on the other hand and find them effective, then they have to replenish them (Halbesleben, et al., 2009; Halbesleben & Wheeler, 2008; Ng & Feldman, 2012; Vinokur & Schul, 2002). As followers may not know when will be the next time that their leader will portray those behaviours, they might attempt conserving the effect of the ones they currently possess, or use them at a slower pace, which could make them have a longer effect that could last for days (Halbesleben, 2010, Halbesleben & Bowler, 2007; Halbesleben & Wheeler, 2011).

As the data used to test this assumption were only at the between-subject level, then the PROCESS macro (Hayes, 2017) was appropriate to use. For this analysis I have used the serial

mediation *model 6* (see Figure 4). As always, two analyses were conducted for serial mediation effect, one for each leadership behaviour set. The first analysis included leaders' opening behaviours (T1), intrinsic motivation (T2), exploration (T3) and follower idea generation (T4). Results from this serial mediation analysis can be seen in Table 29. As the leaders' behaviours are being examined on T1, then it would also be wise to control for idea generation (T1) and intrinsic motivation (T1) as previous analysis indicated the strong effect that opening behaviours have on intrinsic motivation, but also the strong effect that idea generation has on itself from day to day.

The first model of this analysis examined intrinsic motivation (T2) as an outcome. The model was significant ($p < .001$) and indicated that intrinsic motivation (T1) was the only strong positive predictor ($\beta = .48$, $p < .001$, 95% CI [.307, .661]). Opening behaviours (T1) was not significant. The second model assessed exploration (T3) and was statistically significant ($p < .010$). Idea generation (T1) was the only significant predictor ($\beta = .28$, $p < .010$, 95% CI [.072, .479]). The third and final model examined idea generation (T4) as the outcome. This model was also statistically significant ($p < .001$) with positive predictors of exploration (T3) ($\beta = .31$, $p < .010$, 95% CI [.078, .556]) and idea generation (T1) ($\beta = .30$, $p < .050$, 95% CI [.065, .530]). The analysis also produced indirect effect results. However, none of the relationships demonstrated any significant results, indicating that a serial mediation relationship does not exist, hence suggesting that opening leader behaviours may not show a lagged effect. Results from this analysis can be seen below in Table 4.29.

Table 4.29. Serial Mediation for opening behaviours lagged effect.

Outcome	Predictor	*β*	SE	95% CI [LLCI, ULCI]	*R*	R^2	*p*
Intrinsic Motivation T2					.646	.418	.000
	Opening Behaviours T1	.10	.14	[-.179, .379]			.478
	Intrinsic Motivation T1	.48**	.09	[.307, .661]			.000
	Idea Generation T1	.09	.08	[-.060, .248]			.230
Exploration T3					.404	.163	.005
	Opening Behaviours T1	.09	.18	[-.273, .457]			.618
	Intrinsic Motivation T2	.05	.14	[-.229, .338]			.703
	Intrinsic Motivation T1	-.01	.14	[-.283, .255]			.917
	Idea Generation T1	.28*	.10	[.072, .479]			.009
Idea Generation T4					.603	.363	.000
	Opening Behaviours T1	.35	.20	[-.052, .750]			.087
	Intrinsic Motivation T2	.16	.16	[-.148, .473]			.301
	Exploration T3	.31*	.12	[.078 .556]			.010
	Intrinsic Motivation T1	-.10	.15	[-.399, .191]			.486
	Idea Generation T1	.30*	.12	[.065, .530]			.013

Indirect Effects	*β*	Boot *SE*	Boot 95% CI

Opening Behaviours (T1) → Intrinsic Motivation (T2) → Idea Generation (T4)	.02	.04	[-.051, .100]
Opening Behaviours (T1) → Exploration (T3) → Idea Generation (T4)	.03	.07	[-.108, .166]
Opening Behaviours (T1) → Intrinsic Motivation (T2) → Exploration (T3) → Idea Generation (T4)	.00	.01	[-.013, .025]

Note. n = 88

The second serial mediation analysis followed the same process but with variables closely linked to leaders' closing behaviours. For this analysis I examined closing behaviours (T1), extrinsic motivation (T2), exploitation (T3) and idea implementation (T4). As before, I controlled for extrinsic motivation (T1) as well as idea implementation (T1). The first model examined extrinsic motivation (T2) as the outcome and was significant ($p<.001$). Extrinsic motivation (T1) was the only significant predictor ($\beta = .80$, $p < .001$, 95% CI [.629, .979]). The next model assessed exploitation (T3) as the outcome. The model was not significant, with no significant predictors. The third and final model examined idea implementation (T4) as the outcome. This model was statistically significant ($p<.001$) with only idea implementation (T1) being a strong positive significant predictor ($\beta = .58$, $p < .001$, 95% CI [.382, .776]). The analysis also produced indirect effect results; however, none was significant. At this point, we can also assume that closing behaviours do not demonstrate any lagged effects. Results from this analysis can be seen in Table 4.30.

Table 4.30. Serial Mediation for closing behaviours lagged effect.

Outcome	Predictor	*β*	SE	95% CI [LLCI, ULCI]	*R*	R^2	*p*
Extrinsic Motivation T2					.776	.602	.000
	Closing Behaviours T1	.16	.09	[-.027, .339]			.093
	Extrinsic Motivation T1	.80**	.09	[.629, .979]			.000
	Idea Implementation T1	-.04	.05	[-.149, .062]			.415
Exploitation T3					.182	.033	.590
	Closing Behaviours T1	-.16	.17	[-.495, .184]			.364
	Extrinsic Motivation T2	.08	.20	[-.315, .476]			.687
	Extrinsic Motivation T1	.18	.23	[-.276, .626]			.442
	Idea Implementation T1	.08	.10	[-.113, .272]			.413
Idea Implementation T4					.673	.452	.000
	Closing Behaviours T1	.24	.17	[-.110, .584]			.178
	Extrinsic Motivation T2	.23	.20	[-.171, .636]			.254
	Exploitation T3	.02	.11	[-.199 .246]			.831
	Extrinsic Motivation T1	-.42	.23	[-.883, .038]			.072
	Idea Implementation T1	.58**	.10	[.382, .776]			.000

Indirect Effects	*β*	Boot *SE*	Boot 95% CI
Closing Behaviours (T1) → Extrinsic Motivation (T2) → Idea Implementation (T4)	.03	.03	[-.026, .105]
Closing Behaviours (T1) → Exploitation (T3) → Idea Implementation (T4)	-.00	.04	[-.089, .077]
Closing Behaviours (T1) → Extrinsic Motivation (T2) → Exploitation (T3) → Idea Implementation (T4)	.00	.01	[-.014, .010]

Note. n = 88.

The table below (see Table 4.31) is a summary table of the fixed effect coefficients for the relationships between predictors and outcomes. For each coefficient, a unique model was produced which examined the predictor, as well as the three control variables (daily positive affect, extraversion, open-mindedness). For the interaction term, I have included both opening and closing behaviours, and created a new factorial variable (opening * closing) through the fixed effects dialog. All three predictor variables were present in the models of the interaction effect results. This supplementary analysis demonstrates the strong effects of opening behaviours, in comparison to ambidextrous behaviours.

Table 4.31. Linear Mixed Modelling – Comparison of leadership sets.

	Idea Generation	Idea Implementation	IWB	Exploration	Exploitation	Intrinsic Motivation	Extrinsic Motivation
Opening Behaviours	.72**	.53**	.62**	.47**	.05	.29**	-.09
Closing Behaviours	.07	.19*	.14	.23*	-.08	-.01	.09
Ambidextrous Behaviours [a]	.05	.03	.04	.10	-.03	.22**	-.05

Note. LMM fixed effects results. Each coefficient represents the estimate of the predictor through a unique mixed model, which includes the predictor, as well as the control variables of extraversion, open-mindedness and daily positive affect. * p<.05, ** p<.001. Coefficients shown based on an AR(1) covariance structure, [a] = opening behaviours * closing behaviours.

The last but not least part of this supplementary analysis is part of the theoretical model by Rosing et al. (2011), suggesting that the interaction between leader opening and closing behaviours will predict follower exploration and exploitation respectively, and it is the interaction between follower exploration and exploitation that will consequently predict follower innovative work behaviours. The study by Zacher et al., (2016) also supported this assumption and was consistent with the theory. However, their study was at a cross-sectional level, hence my study is looking at it from a longitudinal perspective. In order to assess this mediation, a new variable of "employee ambidexterity" had to be calculated. Following Klonek et al., (2020), Mom et al., (2009) and Zacher et al., (2016), ambidexterity was calculated using the multiplicative term between follower daily exploration and exploitation. The term was used as the mediator between daily ambidextrous leadership and innovative work behaviours on a daily level. Both interaction variables were mean-centred prior analysis. For this analysis, I used Rockwood's MLmed macro (2017) which takes into account the nested nature of the data. Results from this analysis can be seen below in Table 4.32. The first model assessed ambidexterity as the outcome. Results showed that ambidextrous leadership was only a significant positive predictor at the between-effect level ($\beta = .30$ $p < .05$, 95% C.I. (.008, .593)] but not the within-effect level. The second model examined overall daily innovative work behaviours as the outcome. Neither ambidextrous leadership nor ambidexterity was a significant predictor at either level. The analysis also produced results for indirect effects, but results show that ambidexterity was not a significant mediator at either level.

Table 4.32. *Mediation Analysis Results – Employee Ambidexterity as mediator.*

Outcome		Predictor	*β*	SE	*t*	*p*	95% CI [LLCI, ULCI]
Ambidexterity							
	Within-Effects		-.33	.62	-.54	.590	[-1.56, .894]
		Ambidextrous Leadership	-.02	.12	-.18	.861	[-.261, .218]
		Positive Affect	-.52**	.15	-3.40	.001	[-.823, -.220]
	Between-Effects						
		Ambidextrous Leadership	.30*	.15	2.03	.046	[.008, .593]
		Positive Affect	.20	.15	1.37	.175	[-.090, .491]
		Extraversion	.19	.18	1.09	.276	[-.156, .541]
		Open-Mindedness	-.20	.14	-1.49	.141	[-.473, .068]
Innovative Work Behaviours							
	Within-Effects		.20	.66	.31	.754	[-2.10, 1.51]
		Ambidextrous Leadership	-.03	.07	-.36	.716	[-.160, .110]
		Ambidexterity	-.02	.03	-.55	.584	[-.079, .044]
		Positive Affect	.42**	.09	4.63	.000	[.242, .599]
	Between-Effects						
		Ambidextrous Leadership	.10	.15	.685	.495	[-.193, .398]
		Ambidexterity	.12	.11	1.14	.257	[-.090, .333]
		Positive Affect	.15	.15	1.02	.311	[-.147, .456]
		Extraversion	.77**	.18	4.19	.000	[.208, 1.14]
		Open-Mindedness	.18	.14	1.21	.229	[-.113, .467]

Random Effects	*β*	SE	*p*	95% CI
Ambidexterity	.34*	.15	.019	[.150, .498]
Innovative Work Behaviours	.90**	.15	.000	[.642, 1.25]

Indirect Effects				
Ambidextrous Leadership → Ambidexterity →Innovative Work Behaviours				
Within – Indirect Effects	.00	.00	.933	[-.009, .010]
Between-Indirect Effects	.04	.04	.362	[-.028, .130]

Note. n = 435;
CI = Confidence Interval; LLCI = Lower-Level Confidence Interval; ULCI = Upper-Level Confidence Interval.
* $p < .05$; ** $p < .01$.

4.5. Discussion

This study examined the theory of ambidexterity for innovation longitudinally. Although this is not the first study that uses a diary method to examine ambidextrous leadership (Gerlach et al., 2021; Zacher & Wilden, 2014), it is the first that deconstructs the concept of ambidextrous leadership and examines the main effects of opening and closing leader behaviours separately. Moreover, this study investigates factors that have not been examined before in the ambidextrous leadership research, including motivation, LMX, trust in the leader and feeling trusted by the leader. The large number of studies around the importance of creativity and innovation in recent times (Anderson, et al., 2014, 2014; Lee et al., 2020) suggests that a leadership style that is flexible to deal with all the contradictory and complex issues of the innovation cycle would be ideal. Past research has evidenced that the ambidextrous leadership style is an effective style that can facilitate the innovative behaviours of the followers and allow them to perform at their maximum capabilities (Alghamdi, 2018; Zacher et al., 2016; Zacher & Rosing, 2015; Zacher & Wilden, 2014). This study extended the findings of Study 1 (Chapter 3) by focusing on the longitudinal aspect of ambidextrous behaviours and their effect on various creativity-related outcomes. The present study complements the first one as it examines

factors which were not possible to be tested in experimental settings, such as the relationships between leaders and followers, and follower perceptions of their actual leader's behaviours, across a longer timespan (day-level rather than the 1-hour of the experiment). This is critical as it can give us some insight as to whether the leaders' behaviours do play a role in facilitating employee innovative behaviours and it is not due to factors such as relationship quality or trust. Of course, it would be absurd to state that the factors examined are the only ones' worth examining, or the only ones that could play an additional role. The ambidexterity theory of leadership for innovation (Rosing et al., 2011) assumes that followers act as passive agents, who automatically respond to opening or closing behaviours. To address this assumption, I also examined follower traits, such as personality as well as affect. This study investigated the theory at a more thorough level, by examining independently each leadership behavioural set (opening & closing), each follower behavioural set (exploration & exploitation) and each follower outcome (creativity & implementation). Although the theory suggests that the two leadership behaviours work in conjunction, this study examines the effects of each behaviour on the relevant follower outcome. The nested data collected in this study also allowed me to examine cross-lagged effect and understand whether a variable (i.e., opening behaviours) has any directional effects on another variable at different time points. Multiple researchers believe that that some leadership behaviours can have a lasting impact on the followers (Amabile et al., 2004; Kelemen et al., 2020), yet it was not certain how long effect from ambidextrous leaders would last, as they portray contradictory behaviours on daily basis (Zacher et al., 2014).

One of the reasons why this study is of great importance is that it is the first study in ambidextrous leadership that examines the main effects of opening and closing behaviours seperately, and innovative work behaviours in a longitudinal way. Zacher and Wilden's study (2014) was the only diary study in ambidextrous leadership thus far that examined the effect of the interaction between opening and closing behaviours on innovation but as whole concept,

while Mascareño et al. (2021), who deconstructed the concept of innovation into idea generation, idea promotion and idea implementation, have only done so through a cross-sectional approach. The present study, therefore, is the first one to examine the relationships between standalone behaviours of leaders and followers longitudinally.

Initially, I examined leaders' opening behaviours on a daily level using longitudinal multilevel analysis. Results showed that leaders' daily opening behaviours have a beneficial effect for followers' daily idea generation outcomes, meaning that the more opening behaviours leaders use, the more creative the employees are. This was expected for various reasons. First of all, the study by Mascareño et al. (2021), although cross-sectional, has also found support that leader opening behaviours are positive predictors of employee idea generation, hence there is initial evidence that this relationship exists. Moreover, transformational leadership style, which shows similar behaviours to opening leader behaviours (Rosing et al., 2011, Zacher & Rosing, 2015) has also been found to influence creativity in a positive way (Gumusluoglu & Ilsev, 2009; Shin & Zhou, 2003). Third, and most importantly, the relationship is logical. When leaders portray opening behaviours day after day, meaning they provide their followers with autonomy, freedom, no restrictions, and no repercussions, it is reasonable that they will be able to generate more ideas and be more creative overall, as they have nothing to lose.

Unsurprisingly, results also demonstrated a positive relationship between leaders' daily opening behaviours and exploration. The theory (Rosing et al., 2011) and other studies (Alghamdi, 2018; Zacher, Robinson & Rosing, 2016) posit that opening behaviours allow the followers to engage with explorative behaviours, such as risk taking, experimentation and thinking outside the box. This would be the case, as opening leader behaviours not only allow the followers to engage with such behaviours, but motivate them to experiment with new methods, seek out new solutions and take unlimited risks. Exploration was also found to mediate the relationship between opening behaviours and idea generation. As demonstrated

from the theoretical model (Rosing et al., 2011), opening behaviours would facilitate employee exploration before leading to employee creativity. Although studies have assessed exploration as a mediator, it is worth noting that they did not use creativity or idea generation as an outcome, but innovation or innovative behaviours as an overall measure (Alghamdi et al., 2018, Gerlach et al., 2020b; Zacher & Wilden, 2014). This finding means that the reason opening behaviours can make followers come up with more ideas, is because they engage in behaviours that allow them to experiment, take risks and try new methods, which essentially is about creative thinking. This could also mean that any leader behaviours, or other job or organisational factors, that facilitate the explorative behaviours of the followers, would lead to an increase in their creativity.

Leaders' daily opening behaviours have also been found to predict the followers' daily intrinsic motivation. This means that when leaders encourage followers to approach their work tasks however they want to, instead of being told how to do things and being micromanaged, followers are more likely to enjoy their work and have a sense of intrinsic satisfaction and fun. This study is the first to examine this factor in relation to ambidextrous leadership. Intrinsic motivation is a key component of creativity (Amabile et al., 2018; Liu et al., 2016; Zhang & Bartol, 2010), hence it is not surprising that it was correlated with every part of the innovation process (both creativity and implementation). Not only is it logical that opening leader behaviours predicts intrinsic motivation on a daily level, but results have also shown that it is a positive mediator between opening behaviours and idea generation. Individuals who are intrinsically satisfied with their job and engage with their tasks because they find them fun and joyful, tend to be more creative, and generate more novel ideas. Surprisingly this relationship was only significant at the within-subject level and not the between-subject level, meaning that intrinsic motivation is a significant mediator for the same people from day to day, but not significant between different people. This might be due to further factors playing a role such

as low task complexity (Chae, Seo, Yee & Kee; Sia & Appu, 2015), relationship with leader (Volmer, Spurk & Niessen, 2012) or even a sense of belonging with their peers (Sheldon et al., 2003).

I also examined the possibility that intrinsic motivation and exploration are connected, which is why a serial mediation was also hypothesised. It is worth noting that this assumption was hypothesised at the within-subject level but examined at the between-subject level only. Findings suggest that the relationship was not significant. One of the reasons could be due to the analysis of this hypothesis, which was conducted at the between-subject level and did not consider the nested data, as both intrinsic motivation and exploration were found positive mediators when examined longitudinally. From another point of view, the fact that mean levels of intrinsic motivation and exploration are not significant when averaged is a positive indication, as the daily level is the one of interest. Another reason could be that people could be intrinsically motivated to do their work without having to explore, as the nature of their tasks is routine-based. In essence, apart from the serial mediation, all hypotheses that assessed the effect of leaders' daily opening behaviours have been supported and were consistent with theory and past research.

Regarding leaders' daily closing behaviours, results show that they have a positive influence on idea implementation. Idea implementation, being about application and execution of ideas, does not require much autonomy or error tolerance, according to the theory (Rosing et al., 2011). This finding is also amongst the novel outputs of this study as it is the first to look at daily closing behaviours and their effect on daily follower idea implementation. Leaders who demand specific methods of work and routines, do not leave any room for autonomy and flexibility, hence pushing the followers with their behaviours to follow established ways and "play it safe" when it comes to implementing ideas. Followers may perceive these tactics as scary, and a threat to their job safety, hence following their leaders' direction will only make

them follow specific methods of implementation, most likely the same ones that they have experience with. This study is the first to show evidence that closing leader behaviours can directly promote follower idea implementation.

Moreover, I postulated that leaders who portray closing behaviours will make their followers engage with more exploitative activities. This means that when leaders are more controlling, tend to monitor the process, demand their employees to follow specific plans and advise them that errors are not tolerated, then followers are more likely to stay within their comfort zone and use process and techniques that they are very familiar with, rather than experiment with new ones. Theory (Rosing et al., 2011) suggests that exploitation is the key mediator that will make followers focus on implementation rather than creativity. When followers use their current knowledge and skills as well as familiar processes to execute a new idea, then the need to take risks and experiment to generate new ideas is no longer necessary. Therefore, it would be logical that closing behaviours would facilitate the followers' exploitative behaviours, which would then promote the idea implementation of the followers. Additionally, past studies have already found evidence that closing behaviours promote follower exploitation before facilitating innovation (Alghamdi, 2018; Zacher, Robinson & Rosing, 2016), hence it was assumed that this relationship would be significant. Surprisingly, however, results from this study indicated that leaders' daily closing behaviours did not significantly predict followers' daily exploitation, nor did they show that exploitation was a significant mediator between closing behaviours and idea implementation. This could be possible, if a leader portrays consistently, and on a daily basis, a specific approach (i.e., closing leadership) to a point where it has no longer a strong effect, or it has a negative effect (Jóhannsdóttir & Ólafsson, 2004). This could also be due to followers avoid responding to negative leadership behaviours, as those portrayed in closing behaviours (Sharma & Kulshreshtha, 2021; Schilling, 2009). The essence of closing leadership behaviours, and why they should be used in conjunction with

opening behaviours is that they are considered restrictive and controlling, on their own which could be classed under negative leadership (Schilling, 2009). If they were to be used on their own, they could be easily perceived as behaviours of an autocratic leader. When followers perceive their leader as autocratic, who displays a more dominating and pushy approach, they might feel they are not respected, or valued for their competence hence put less effort in their work (Bass, 1990a; De Cremer, 2006; Russel & Stone, 2002). Another possible explanation as to why closing behaviours did not support some hypotheses could be down to methodological issues. Closing behaviours did not show as high reliability values (Cronbach's Alpha) as opening behaviours. The three items that have been used to measure closing behaviours were selected through factor analysis using data from study 1, and the meaning of those items might be different in natural contexts compared to laboratory (simulation) contexts. Moreover, the three items that were used for exploitation were " […] activities of which a lot of experience has been accumulated by yourself", "[…] activities of which it is clear to you how to conduct them", and "[…] activities which you can properly conduct by using your present knowledge", while the three items that were left out were "[…] activities which serve existing (internal) customers with existing products/services", "[…] activities primarily focused on achieving short-term goals" and "[…] Activities which clearly fit into existing company policy". By comparison, it can be observed that the three items used focus primarily on doing tasks using existing knowledge, while the ones left out were referring to more organisational-level factors. Hence it could also be argued that exploitation does not only reflect the way of completing a task, but also the aims of the tasks at a higher level, something which was not assessed.

Regarding extrinsic motivation, results from this study did not support any of the proposed hypotheses. I posited that leaders' closing behaviours would predict followers' extrinsic motivation, which will also act as a mediator between them and idea implementation, as well as a serial mediator which promotes exploitation. Surprisingly, results were not as expected.

Closing behaviours are not encouraging and do not provide autonomy or flexibility to the employee. Employees who perceive the behaviours of their leaders as very controlling, could be more extrinsically motivated than intrinsically. Workers do not find intrinsic joy and satisfaction when they have no control over the way they do their work tasks (Joo, Jeung, & Yoon, 2010), or when they are afraid of making any mistakes, hence the main reason they would go through with them could be purely out of job requirements but also fear of losing their job (Ashforth, 1997; Lim et al., 2017; Schyns & Schilling, 2013).

As opening behaviours were found to promote intrinsic motivation, it was logical that closing behaviours could promote extrinsic motivation, as the two sets of behaviours are contradictory. One might argue however, that extrinsic motivation is not contradictory to intrinsic motivation but parallel, and the two can co-exist (Amabile, 1993). On the two ends of the motivational spectrum (see Figure 9) one can find intrinsic motivation on one end and amotivation on the other end (Deci & Ryan, 2000). When leaders therefore demonstrate controlling and intimidating tactics, employees might lose all motivation to carry on with their tasks, instead of being extrinsically motivated. In addition, even though theory and past research (Rosing et al., 2010; Rosing et al., 2011, Zacher et al., 2016) denote similarities between closing and transactional leadership behaviours, closing behaviours lack the aspect of contingent rewards to instil extrinsic motivation. Hence, it could be possible therefore, that standalone closing behaviours are more related with amotivation instead of extrinsic motivation.

The next hypothesis examined the main idea behind ambidextrous leadership. It suggested that the daily interaction between opening and closing behaviours would promote the followers' daily innovation (that is creativity and implementation). Surprisingly, results from this study are not significant, hence do not evidence the existence of this relationship. Multiple past studies have found that the interaction between the two behaviours is indeed beneficial for follower innovative behaviours (Alghamdi, 2018; Oluwafemi et al., 2020; Zacher et al., 2016;

Zacher & Rosing, 2015; Zacher & Wilden, 2014), hence it was assumed that results would be consistent with them as well as the theory (Rosing et al., 2011). I suspect that the main reasons around that is due to the nature of the work task. Theory argues that leaders should use opening behaviours during tasks that focus on idea generation and closing behaviours during implementation tasks. As it is not clear whether leaders have used the appropriate behaviours when the situation demanded it (temporal flexibility) it is not safe to assume that they have, and that the theory is flawed. Innovation is a paradoxical and multi-faced concept (Miron et al., 2004), which consists of multiple processes, often contradictory which sometimes could happen simultaneously or relatively close to each other (Anderson et al., 2004; Schroeder et al., 1989l Van de Ven et al., 1999). It is necessary to know therefore not only whether the leaders portray both sets of behaviours at high levels, but whether they portray them at the appropriate times, when followers would ideally benefit from them the most (Rosing et al., 2011).

Further factors were examined for moderation effects between ambidextrous leadership and innovative work behaviours. Results were not significant for any of the three factors examined: LMX, trust towards the leader and feeling trusted by the leader. Opening and closing leader behaviours are contradictory hence paradoxical by nature. It was suggested that inconsistent leadership behaviours might have negative effects on followers (Schilling et al., 2022). When leaders portray ambidextrous behaviours, and often switch from one behavioural set to the other, followers might enter a process of sensemaking (Maitlis & Christianson, 2014; Weick, 1995), trying to figure out what is happening, which can be confusing (Sandberg & Tsoukas, 2015. I argued that although these behaviours are indeed paradoxical and can be seen as confusing, individuals who have good relationships with their leaders would believe that their leader knows what they are doing, and hence follow their direction. Individuals high on LMX belong in the in-group, which is characterised by respect, communication, loyalty, and

confidence in the leader's abilities. On the other hand, when LMX is low, meaning that employees who do the bare minimum of their job requirements, do not communicate enough, and do not engage with their leader, unless it was necessary (Graen & Uhl-Bien, 1995), might find such contrasting behaviours absurd, and might think that their leader is not in a stable condition to lead them or their project . Hence, it was logical to assume that individuals high on LMX would demonstrate a higher level of innovation, compared to those low on LMX. Results were not significant, however. It is difficult to make assumptions as to why, as the main relationship between ambidextrous leadership and innovative work behaviours was already not significant, as hypothesised priorly. Another reason could be that LMX might not play a role in this relationship, and every follower perceives ambidextrous leader behaviours the same way. Nonetheless, LMX could still be a significant moderator if standalone leaders' behaviours are used as predictors, instead of their interaction, as these were found to predict their respective innovative outcome.

Trust was also hypothesised to be a significant moderator between ambidextrous leadership and followers' innovative work behaviours; however, it was not significant. When leaders portray paradoxical behaviours, followers might find them confusing. I argued that individuals who trust their leader are more comfortable when their leader portrays ambidextrous behaviours, compared to those who do not trust them, because even though they might not understand them, they would still trust that their leader knows what is best for the project and is capable and competent in leading them. I suspect that the insignificant result of the moderation was also due to the insignificant result of the relationship between ambidextrous leadership and innovative work behaviours. Yet, there might be other explanations. Humans are creatures of habit and prefer predictability (Podolnly, Khurana & Hill-Popper, 2004; Spitzmuller & Ilies, 2010). Various scholars argued the importance of predictability and claimed that is a fundamental part of routine as well as cognition-based trust, as it gives the

followers the evidence they require when it comes to behaviours, so that they do not trust someone blindly (Wicks, Berman & Jones, 1999; Mills & Ungson, 2003). When leaders portray consistent behaviours, they can be more predictable, hence followers will be more likely to respond to them, especially if they trust them as well (Brennan & Clark, 1996). Hence, there might still be a significant moderation when behaviours are more consistent and predictable, in this case, either opening behaviours or closing behaviours.

Similarly, results were not significant when feeling trusted by the supervisor was tested as a moderator. It was hypothesised that followers who feel trusted by their leader, will exhibit higher levels of innovation as a response to their ambidextrous behaviours, compared to those that have low feelings of trust by their leader. For similar reasons as before, these individuals would justify any erratic behaviours portrayed by their leaders and act on them as theory suggests. I believe the reason that this moderator was not significant, might have to do with the followers' perception of trust being distorted upon projection of closing behaviours by their leaders. When leaders show opening behaviours one day, and then closing behaviours the next, some individuals might perceive them as loss of trust, due to the leader suddenly trying to control the way they work, monitor their process, and micromanage them in general. Individuals who might not be very familiar with the leader and their methods (e.g., low tenure) might perceive sudden switches from opening to closing behaviours as a sign of the leader losing trust in them. Hence, a consistent approach might be more appropriate for followers who feel trusted by their leader in order for them to flourish and exhibit higher levels of innovative behaviours at work. Therefore, a moderation might still exist, if examination occurs on standalone predictors of opening and closing leader behaviours.

It is also worth explaining the effects of the control variables examined. Consistent with past research (Zacher et al., 2016; Zacher & Wilden, 2014;), positive affect was amongst the strongest predictors of idea generation, idea implementation, exploration, and exploitation.

Followers who claimed their mood positive one each day, have also shown systematically higher levels of self-reported innovative work behaviours, exploration, and exploitation. This was expected, as positive affect has been found to play a significant role in the innovation process. Madrid and Patterson (2020), for example, found that positive affect is a strong predictor of innovation, but it also acts as a mediator between time control and innovation. This supports this study's arguments as well, as followers who perceive their leaders' behaviours as more opening, they have more flexibility and autonomy over their workload, which means that they have control over their time, and they decide when to start the task. Although it was not hypothesised or examined that opening leader behaviours can facilitate the followers' positive affect, it is highly likely that they might do.

Moreover, follower extraversion was another control variable that was systematically predicting innovative behaviours, exploration, and exploitation. This personality trait was added as a control variable as multiple scholars have argued about its strong association with creativity or innovation (Aguilar-Alonso, 1996; Da Costa et al., 2015; Furnham & Bachtiar, 2008; King et al., 1996; Wolfradt & Pretz, 2001). Individuals who score high on extraversion tend to seek intellectual stimulation from external sources (Eysenck & Eysenck, 1985). When they have the opportunity to work on projects that allows them to be active, experiment, be more curious and take risks, it is likely that they will be able to thrive (Batey, Chamorro-Premuzic, & Furnham, 2010). Surprisingly, the trait of open-mindedness was not significant for any outcomes apart from exploitation. Exploitation refers to behaviours of an individuals based on their existing skills and knowledge. Individuals who exploit their current resources, do not experiment, or take risks and are more likely to follow structured plans or pre-existing methods. On the other hand, an open-minded individual is open and willing to receive new information, knowledge or engage with new experiences (Reijseger, Peeters, Taris, &

Schaufeli, 2017). Hence, an open-minded individual is not someone that one might expect to be associated with exploitative behaviours.

This study assessed the ambidextrous leadership theory, at the individual level, through a longitudinal design, that lasted a full working week. Participants were from a variety of backgrounds and careers and each participant was asked to measure their leader's behaviours as well as self-report their own behaviours. Overall, this study produced mixed results. One of the novel aims of this study is to look at the effects of each behavioural set of the ambidextrous leader at the daily level. Regarding opening behaviours, many of my hypotheses were consistent with the theory and the overall model of this research project. Opening leader behaviours are positive predictors of followers' idea generation, implementation, exploration, exploitation, and intrinsic motivation, whereas closing behaviours are only positive predictors of idea implementation. As opening behaviours were positive predictors for both idea generation and implementation, it raises questions whether closing leadership behaviours are necessary. Schreiner (2017) has also found that opening behaviours predict both idea generation and implementation.

The supplementary analysis has also shown some interesting findings. I examined the relationships between leadership behaviours and followers' outcomes for lagged effect. Past studies have shown that the effect of leaders' behaviours can withstand time and crossover onto the following days, weeks, or months (see Laschinger & Fida, 2014; Nikolova et al., 2019). I examined therefore potential lagged effect through four different methods: correlations, cross-lagged panel modelling, serial mediation analyses and hierarchical linear regressions. Results suggest that leaders' behaviours do not have a significant impact on the followers' outcomes the following days, although correlated. This might be due to them being weakened by the same day's leader behaviours (which have been found significant) as well as further contextual factors, as well as the daily affect of each follower. Furthermore, I conducted multiple LMM

analyses to assess and compare the effect of leaders' behaviours (opening, closing, ambidextrous) on each outcome. Consistent with theory and past research (Rosing et al., 2011, Zacher & Wilden, 2014), results have shown that leaders' daily opening behaviours were strong predictors of multiple outcomes, above and beyond the control variables. In fact, results indicated that opening behaviours are better predictors of innovation than closing behaviours or ambidextrous behaviours. Surprisingly the interaction between leaders' opening and closing behaviours did not significantly predict followers innovative work behaviours. However, opening behaviours were positive predictors of idea generation, idea implementation, innovative work behaviours, exploration, and intrinsic motivation, and closing behaviours were positive predictors of implementation and interestingly exploration. This finding contradicts the theory, as closing behaviours are expected to facilitate follower exploitation, instead of exploration. Closing behaviours share many similarities with transactional leadership style. Transactional leadership has two distinct behaviours: contingent reward and active management by exception. When leaders use an active management by exception approach the monitor their followers' actions and control their work processes (Avolio et al., 1999). It is logical to expect that when leaders take corrective action and monitor the employees will have a negative effect on their exploration, which is purely about flexibility, adaptability and resourcefulness (Caldwell & O'Reilly, 2003). For instance, Jansen, Vera and Crossan (2009) not only found that transactional leadership is positively associated with exploitation, but it also has a negative relationship with exploration. But there might be an aspect of closing behaviours that could justify this finding. If leaders provide rewards to employees for short-term goals, then followers' cognitive process might change and they could switch to a more experimental way thinking, as they try to come up with new ideas and engage in creative debates to earn those rewards. When instructions from the leader are rigid, the only possible way employees might go out of their way to engage with such behaviours is if they have

something to gain from it (Shipton et al., 2005). Hence, this performance-pay method could promote exploration, even under closing leadership. The interaction between opening and closing leader behaviours (ambidextrous leadership) did not have a significant effect on the expected outcomes. Interestingly however, it was a positive predictor of follower intrinsic motivation. This suggests that when leaders portray high levels of opening behaviours and high levels of closing behaviours, can enhance the followers' intrinsic motivation. Followers might perceive the inconsistency of their behaviours as a sign of task complexity which could make them keener to engage with it, and thus been intrinsically motivated (Anshel, Weinberg & Jackson, 1992).

The final supplementary analysis was a last examination of the theory as a whole, which claims that the interplay between opening and closing behaviours, will facilitate the followers' exploration and exploitation respectively, which will then predict followers' innovation. Results were partially consistent with the theory and previous research (Rosing et al., 2011l Zacher et al., 2016). One of the major findings through the last longitudinal mediation analysis was that the interplay between opening and closing leader behaviours positively predicted the followers' interplay of explorative and exploitative behaviours, but only at the between-subject level. This suggests that leaders' behaviours can enhance followers' ambidexterity, but mainly between different people, and not within the same people on different days. This could suggest that different between-level characteristics, such as personalities, might perceive ambidextrous behaviours differently (Williams, 2004).

4.5.1. Contributions

Theoretical Contributions

The research findings of this study can provide valuable insight to the theory. Firstly, this study contributes to the ambidextrous leadership literature, as I examined the effects of each leader behaviour set longitudinally, which has not been examined so fat. Moreover, I found that daily opening behaviours have the strongest effect for daily innovation, which surprisingly is not consistent with the assumptions of the theory (Rosing et al., 2011), which suggests that the interplay between opening and closing behaviours will be the most beneficial for follower innovation. Recent longitudinal research also found that the interplay between opening and closing behaviours was not significant in predicting follower innovation (Gerlach et al., 2020b). Additional cross-sectional studies by Klonek et al. (2020) and Gerlach et al. (2021) also found no support that the interplay between opening and closing leader behaviours promotes follower innovation. My supplementary analysis though indicated that the interplay of leaders' behaviours is a positive predictor of the interplay of followers' exploration and exploitation, but only at the between-subject level. Hence this is not the first study that provides mixed results. If suggestions would be made based on the findings of this study, then it can be argued that closing behaviours are not as necessary, since opening behaviours have a much stronger effect on idea implementation than closing behaviours. Since daily opening behaviours can promote both idea generation and idea implementation, then it can be suggested that an opening leader may be more efficient in facilitating follower innovation, than an ambidextrous leader (or a closing leader). Upon evaluating their findings, Klonek et al. (2020) also claimed that opening leadership might be "*just as useful for stimulating innovation as using an ambidextrous style*" (p.20). Similarly, Rosing and Zacher (2017) claim that employees who engage with exploration only, can still perform innovatively, which suggests, that if a

leadership style can facilitate exploration within the followers, then they can perform innovatively. Mascareño et al. (2021) found that closing behaviours moderates the relationship between idea generation and idea implementation. This could also be the case as creative individuals might benefit from a different leadership approach when dealing with various parts of the innovation process (King & Anderson, 1993). It is crucial to note however, that this study did not examine temporal flexibility, but only the two sets of behaviours through a longitudinal design. Theory suggests that it is necessary for leaders to switch behaviours at appropriate times, hence, the reason that ambidextrous behaviours were not as effective on innovation maybe is not due to leaders portraying these behaviours, but during inappropriate times.

Another important finding of this study is the effect of intrinsic motivation. It is widely evidenced that intrinsic motivation is a key characteristic of creative individuals (Amabile et al., 2018; de Jesus et al., 2013). The present study found that daily opening behaviours can promote the intrinsic motivation of the followers, and subsequently enhance their idea generation as well. Moreover, intrinsic motivation was significantly correlated with all outcomes, including implementation, exploration, and exploitation. This finding could benefit the ambidextrous leadership literature, as it demonstrates that if leaders' behaviours could promote the intrinsic motivation within their followers, then it could benefit every part of the innovation process. Therefore, if leaders' behaviours did not focus on enhancing exploration/exploitation, but intrinsic motivation instead, then followers could show higher levels of innovation, regardless of the leaders' behaviours were flexible or restrictive. Yet, this study has also found that ambidextrous behaviours may also promote the followers' intrinsic motivation on a day-to-day basis, which might be better evidence as to why previous studies have found that ambidextrous leadership facilitates follower innovation (Alghamdi, 2018; Oluwafemi et al., 2020; Zacher et al., 2016; Zacher & Wilden, 2014). But it can also be said

that followers have agency, and many of them could be efficient in identifying when they need to engage with each innovation stages, especially if they have lots of field experience. It can be argued that although leaders may boost their followers' general motivation and provide them with the right resources, it is the followers who know when to adapt their behaviours as needed, and their own characteristics and competencies are more likely to predict whether they adapted their behaviours or not.

In addition to the findings, one of the novel parts of this study is its longitudinal study. Not many studies have examined ambidextrous leadership longitudinally. Zacher and Wilden (2014) have examined the theory through a daily diary study and Gerlach and her colleagues (2020) have used a weekly diary study. Only the former has found evidence on the interplay of opening and closing behaviours with innovation based on daily fluctuations. The longitudinal design of this study is not important due to its novelty, but due to its importance in the innovation process. The innovation process involves multiple stages, from idea generation to idea promotion and evaluation to idea implementation. The transitions between the stages do not happen instantly, but require time, therefore, examining a leadership style that aims to facilitate all the stages should be examined longitudinally, as it has more opportunities to capture more (if not all) stages of the innovation process. Therefore, using a daily diary study to look at not only the interplay of the two behaviours, but the main effects of each one individually provides essential insights into which behaviours are more effective.

Practical Contributions

In practice, findings from this study could help managers struggling to determine which behaviours to portray when their aim is follower innovation. Although the results of this study are not consistent with the theory, hence replication should be considered prior making strong

recommendations, it can be suggested that leaders should consider using opening behaviours in order to facilitate their followers' innovation. The term "innovation" might have a different meaning depending on the context (Baragheh et al., 2009). Therefore, workplace leaders should be careful when to use opening behaviours, as their working environment might not allow followers to think outside the box and experiment with new techniques (i.e., health-related fields). Similarly, practitioners should be ready for followers to resist change. Once individuals learn how to do something in a specific way for a long time, it might be difficult for them to explore new ways, hence resist the efforts of an opening leader. Managers and organisational leaders can benefit from ambidextrous leadership training, not only for its potential effects on innovation, but to learn how to be able to switch flexibly depending on the situation, as not every situation could benefit from an opening leader.

Moreover, as intrinsic motivation has a strong effect on innovation, it is also suggested that leaders learn what intrinsically motivates their followers and use it to their advantage in order to enhance their motivation, and therefore their innovation. Intrinsic motivation is a key predictor of further employee outcomes, such as performance (Joo et al., 2010) and work engagement (Thomas, 2009) hence it is of great importance to know how to enhance the intrinsic motivation of the followers. For example, according to SDT, leaders could aim to enhance the three basic psychological needs of autonomy, competence, and relatedness (Ryan & Deci, 2000). Autonomy may be achieved by providing the followers, enough flexibility and freedom on their way of working and make them feel like they are in control. Competence can be enhanced by giving them challenging tasks as well as crediting them for their work, which can book their confidence in their skills. Lastly, leaders can boost their followers feeling of belonginess by providing them with opportunities to work in teams and be part of a wider network (Ryan & Deci, 2008). Although opening behaviours are good at promoting intrinsic

motivation, it is important to mention that they are more associated with creativity tasks, hence it is not certain that they benefit intrinsic motivation for other outcomes.

4.5.2. Limitations and Future Research

As in every study, this one is not without its limitations. First of all, the sample size always plays a role. Although the data have been longitudinal, some analysis was conducted at the between-person level. Since participants were asked whether they engaged with their supervisor on each day, it was possible that they would not be able to score their leader's behaviours every day. Hence the between-person level sample size might not be sufficient to demonstrate an effect on the relationships tested ($N \approx 85$). Results produced from analysis that was conducted through single day measures (i.e., serial mediation) should be interpreted with concern. The sample size however at the within-person level ($N \approx 500$), was large enough to produce significant and valuable results, which essentially was the primary aim of this study.

Second, the data collected in this study are based on self-reported measures hence results may be subject to common method bias (Podsakoff et al., 2003). To deal with this issue, Podsakoff et al. (2003) suggest that studies should obtain multi-source data, as self-reported measures are prone to biases of overestimation or affectivity (Burke et al., 1993). Hence, future directions for researchers aiming to replicate this study, would be to obtain the same data from additional sources (i.e., leaders, clients, colleagues) and cross-examine them with the self-reported data, in order to avoid common potential common method biases. The initial plan for this study (prior COVID-19) was to also make use of leader data, as well as follower data. Nonetheless, Podsakoff et al. (2003) also claim that another way to avoid method biases is to introduce a time-lag between the predictors and the outcome variables and assess whether relationships still exist. This study has employed time-lag analysis, and showed that leaders' behaviours do

not predict followers' behaviours over time. Moreover, self-assessment measures of performance (e.g., creativity) carry their own issues, and individuals tend to respond to such measures based on social comparison, such as by comparing themselves with a close colleague or the rest of the team instead of based on their own capabilities (Chan, 2010; Rogers, Smith & Coleman, 1978).

Third, it would not be fair to claim with full certainty that the ambidextrous leadership theory (Rosing et al., 2011) does not work, as the temporal flexibility part was not assessed in this study. In order to make more sound arguments, future researchers should not only examine each behavioural set longitudinally, but also examine the situations when these behaviours are portrayed. According to theory opening behaviours should be used during idea generation tasks and closing behaviours should be used during implementation tasks. This study did not assess this theoretical element, hence, the situations at which the leaders' behaviours were portrayed were unknown. As innovation is a very long and complex process (Lager, 2010), a week might not be enough to capture every stage of the innovation. Future research therefore should use longitudinal models to capture the behaviours of the leaders, whenever the project moves from one stage to another.

Lastly, it is important to consider that a shorter version of the ambidextrous leadership scale has been used. The scale reduction was conducted based on data from the first study. Although, multiple methods of factor analysis were conducted to indicate the best three loading items for each leadership behaviour set, it is not certain if these three items are enough to grasp the essence of opening and closing behaviours, or might not map onto the behaviour set in some occasions. Therefore, future research should consider employing the entire scale as it was used in previous studies.

Future research could also assess the effect of this leadership style in different work environments, as the jobs of the participants from this study were from various fields. Since ambidextrous leadership focuses entirely on innovation as the outcome, it is important to test its effects in environments where innovation is not the company's priority, or way to gain a competitive advantage, especially in fields where low-skilled workers are necessary.

Chapter 5: General Discussion

This chapter summarises this research and its findings and discusses how it contributes to the field of ambidextrous leadership. It draws attention to the main findings from both studies and compares them with past studies. It also explains the main theoretical and practical contributions that can derive from this research. Limitations from this research project and future suggestions are discussed. In this chapter I also take a reflective approach and explain what I would do differently if I was to do this research again.

The research project this thesis explains was conducted with the aim to address three important questions about ambidextrous leadership:

1) Does temporal flexibility play a significant role in this theory?
2) What mechanisms can explain better how the relationship between ambidextrous leaders and followers' innovation works?
3) Are there any individual differences that may impact the effectiveness of ambidextrous leadership?

To examine these questions, I began this research project with an extensive review of the literature around leadership. Leadership is a vast field with decades of research around it. I focused my review on the fundamentals of leadership, leadership theories, leadership styles, as well as outcomes of leadership. One of the main outcomes of effective leadership is creativity and innovation. I then conducted a further review on further antecedents of creativity and innovation, which showed that intrapersonal characteristics were important such as intrinsic motivation or an openness to new experiences. Leadership however was found to be a consistent predictor of follower creativity and innovation. Leadership behaviours that are considered supportive are very beneficial for follower' innovation (Denti & Hemlin, 2012;

Khalili, 2016; Wang et al., 2022), as they provide the follower with the right amount of guidance and direction as well as autonomy and motivation to carry out their tasks effectively. Further factors that my literature review showed was the relationship quality between leaders and followers also had a strong effect on creativity and innovation. When followers perceive their relationship with their leader is good, they are more likely to demonstrate higher creative outcomes and behaviours (Khalili, 2018; Mascareño et al., 2020).

The ambidextrous leadership style suggests that leaders should engage with contradictory sets of behaviours which align with the innovation requirements of different situations, thus facilitating their followers' innovation. Aims of this study were not only to test the effectiveness of this theory, as it is considered a relatively new theory, compared to other traditional leadership theories (e.g., transformational), but to try and understand how and why this relationship works, as well as what other factors may contribute, or not, to its effectiveness. Using past research and theories to inform the arguments made, my conceptual model suggested that motivation and relationship characteristics between leaders and followers, can be a significant addition to the original theoretical model of Rosing and her colleagues (2011).

The new conceptual model was then tested in two studies which examined it through different lenses. The first study employed an experimental design, where participants were allocated randomly into one of the four experimental conditions and were exposed to a different combination of leadership behaviours. The main objective of this experiment was to test the full theory of ambidextrous leadership (Rosing et al., 2011) including the temporal flexibility aspect, which is a novel contribution for this field. The experiment was designed in a way that all participants had to engage in two tasks, one creativity task and one implementation task, under the leadership of an opening, closing or ambidextrous leader. It was expected that participants who were in the ambidextrous leadership group would portray the highest innovation outcomes compared to participants in the other groups. Results however

demonstrated no significant differences between the groups, raising further questions about the importance of temporal flexibility, but most importantly, the validity of the theory itself.

The second study used an experience sampling method to examine whether further factors, which are key antecedents of creativity and innovation, may in fact explain the ambidextrous leadership theoretical model better. In particular, this study examined not only the possibility that intrinsic and extrinsic motivation can be key mechanisms in the theory, but also whether the exchange quality between leaders and followers, and feelings of trust, can moderate the relationships in the theory. Moreover, since innovation is a process with various stages, of which lasting periods are never stable, it was important to examine whether leaders' behaviours fluctuate daily, whether they have a significant effect on the participants on a daily basis, as well as whether they can have lasting effect on the participants' behaviours. This study may act as both an independent study as well as a continuation of the first study, as it draws conclusions to inform arguments, uses data for scale reductions, and addresses limitations such as examination in natural settings and the role that LMX plays in the effectiveness of ambidextrous leaders.

Through a longitudinal diary study that lasted a full working week, participants provided daily data on their leaders' behaviours as well as their own self-perceived innovative behaviours, ambidexterity, and motivation. Moderating factors of LMX and trust were also measured during the initial baseline survey. The results were interesting, showing a very strong positive effect of the leaders' daily opening behaviours on the followers' daily innovative behaviours, ambidexterity, and motivation. Interestingly, analysis from this study did not show that the leaders' behaviours may have a lasting effect on the followers' behaviours.

The different designs of the two studies (cross-sectional vs longitudinal data, laboratory vs natural settings) is one of its key strengths. The two studies complement each other and provide

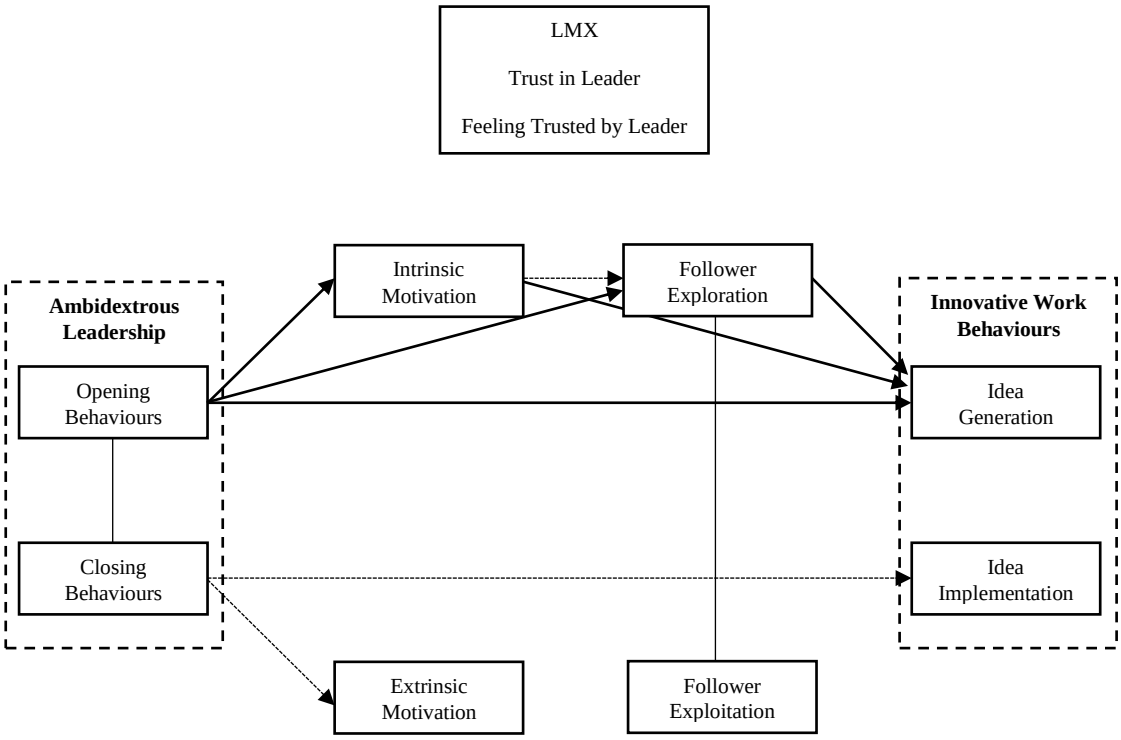
strong mutual support for many findings. The experiment and the diary study had some hypotheses in common, which can make the findings of this research project stronger, particularly when both studies show support for the same hypothesis. The table below (Table 5.1) shows the hypotheses that were the same for both studies and their results, as well as the final conceptual model based on all results (Figure 5.1). But each study also had its own important findings. For instance, the first study examined the temporal flexibility component of the theory, which was found not significant, while the second study examined whether the leaders' behaviours have a time-lagged effect, which was also not significant.

Table 5.1. Shared hypotheses of the two studies.

Overall Hypotheses	**Study 1 Results**	**Study 2 Results**	**Overall**
Leaders' opening behaviours positively predict followers' exploration.	Full Support	Full Support	**Support**
Leaders' opening behaviours positively predict followers' idea generation.	Partial Support	Full Support	**Support**
Followers' exploration mediates positively the relationship between leaders' opening behaviours and followers' idea generation.	Partial Support	Full Support	**Support**
Leaders' opening behaviours positively predict followers' intrinsic motivation.	Full Support	Full Support	**Support**
Followers' intrinsic motivation mediates positively the relationship between leaders' opening behaviours and followers' idea generation.	Full Support	Full Support	**Support**

Followers' intrinsic motivation and exploration in sequence will mediate the positive relationship between leaders' opening behaviours and followers' idea generation.	Partial Support	No Support	**Partial Support**
Leaders' closing behaviours positively predict followers' exploitation.	No Support	No Support	**No Support**
Leaders' closing behaviours positively predict followers' idea implementation.	No Support	Full Support	**Partial Support**
Followers' exploitation mediates positively the relationship between leaders' closing behaviours and followers' idea implementation.	No Support	No Support	**No Support**
Leaders' closing behaviours positively predict followers' extrinsic motivation.	Full Support	No Support	**Partial Support**
Followers' extrinsic motivation mediates positively the relationship between leaders' closing behaviours and followers' idea implementation.	No Support	No Support	**No Support**
Followers' extrinsic motivation and exploitation in sequence will mediate the positive relationship between leaders' closing behaviours and followers' idea implementation.	No Support	No Support	**No Support**
The interactive effect of leaders' opening and closing behaviours positively predicts followers' innovative work behaviours, such that followers' innovative work behaviours are highest when both leaders' opening and closing behaviours are high.	No Support	No Support	**No Support**

Figure 5.1. Conceptual model with overall findings.



Note. Full lines indicate overall support, dotted lines indicate partial support, and no lines indicate no support.

5.1. Thesis' Findings

First and foremost, both studies found some strong support for the effects of opening behaviours. Both studies have found that when leaders engaged with opening behaviours, followers' innovation, exploration, and intrinsic motivation were significantly increased. The strong effect of opening behaviours was also reported in one of the studies by Klonek et al. (2020) who argued that opening behaviours had as a strong effect as ambidextrous leadership. It was not surprising to find that opening behaviours were effective for multiple follower outcomes. Opening behaviours fall into the "supportive leadership" category, as their behaviours focus not only on supporting followers with their creative endeavours but

encourage them and motivate them to do so. Leaders who are supportive toward their followers do so not only to improve productivity and performance, but also to shape their feelings of self-efficacy. Studies show that supportive leadership is associated with various follower attitudes (Banai & Reisei, 2007; Bandura, 1986; Hersey & Blanchard, 1993; House et al., 2004; Shamir, 1990). A supportive leader does not focus only on the outcome of the job, but on the development of the subordinate as well. When leaders allow their followers to think and act independently, learn from their mistakes, motivate them, and encourage them to work in any way they want, they facilitate their development, as they allow them to find ways that make them perform to the best of their abilities. When innovation is considered, it is understandable how opening behaviours are beneficial for them. Both studies showed that when leaders engage in opening behaviours, they do not only facilitate their followers' creativity, but also their overall innovative work behaviours. Even though the experiment measured only opening behaviours that were used during the correct situation, the diary study did not take situation into account, and the fact that both studies found that opening leaders' behaviours predicts followers' innovative work behaviours, implies that opening behaviours can be beneficial at all times, despite the situation. If opening behaviours can be beneficial for innovative work behaviours at all times, then it disproves the theoretical component of temporal flexibility, as leaders may simply use opening behaviours at all times to see benefits.

Contrary to the strong effect of opening behaviours, both studies showed minimal support for closing behaviours. The only significant results regarding closing leaders' behaviours were that it predicted extrinsic motivation of the participants during idea implementation tasks (Study 1 only), and it also predicted self-reported idea implementation on a daily basis (Study 2 only). While study 1 is a simulated environment, study 2 was conducted in natural settings, and hence its results might have a greater value, as they reflect better and more accurately the impact of closing behaviours on followers. Although the theory (Rosing et al., 2011) and past studies

(Alghamdi, 2018; Oluwafemi et al., 2020; Zacher & Wilden, 2014) provide strong support that closing behaviours are still a significant component of the ambidextrous leadership theory, neither study from this research project found that to be true. The insignificance of the results may have its roots in the negative connotation that closing behaviours have. Closing behaviours are characterised by control, lack of freedom, lack of autonomy, lack of flexibility, adherence to rules and procedures, as well as punishment for errors and mistakes. It is not extraordinary to believe therefore that that when followers feel threatened, controlled, or pressured by their leader may not be able to perform to their highest of capabilities (Schilling, 2009), even during situations that require them to follow specific processes and plans (e.g., implementation tasks). Apart from conceptual and theoretical issues, it is also worth evaluating possible methodological issues. The designs of both studies may also carry issues thus impacting the results on the effects of closing behaviours. For instance, the first study that used experiment as a method, was found to have a problematic sample size, which suggests that the possibilities to find correct effects are minimal due to the small size of the sample. Another possible explanation could be issues with the implementation task that participants were asked to do, which although it was designed to capture idea implementation, it could be perceived as too demanding or difficult, in comparison with the idea generation task that preceded.

On the other hand, the second study, which employed an experience sampling method, had a better sample size than the experiment. Yet, such designs may exhibit different issues which could also have affected the results around closing behaviours. As participants came from various backgrounds, there could be situational factors that have not been accounted for. Such factors could have affected the idea implementation behaviours of the participants. For example, examining the type of work as well, by asking participants to choose some example tasks from a list, could help me distinguish whether participants engaged with creativity tasks or implementation tasks, since these vary between contexts. Another reason could be that the

followers had a fluctuating workload, or their tasks were distributed in the entire team, hence they might not have experienced or engaged in idea implementation behaviours even if the leader portrayed closing behaviours. It is important therefore to examine such factors as they may confound the effects of leaders' closing behaviours on the idea implementation of the followers. Moreover, different followers have different expectations from their leader. Followers expect their leaders to provide them the leadership they personally believe they "need" which can help them achieve their outcomes and goals (Lambert et al., 2012). If such expectations are not met, then followers may not feel motivated to put effort or engage above and beyond what is expected of them. For example, some followers might believe that they need to see closing behaviours from their leader to help them engage in idea implementation behaviours, whereas other might believe that closing behaviours would be the last thing they would expect their leader to use. Another possible reason for these results could be the timing of the tasks against the tasks. For example, if a follower engages with implementation on a day-to-day basis as part of their normal duties, then a leader acting in an opening manner and trying to inspire creativity and exploration, might be perceived as a distraction for the follower, hence causing stress instead of positive outcomes.

There are also ways to help minimise research design issues, especially regarding the data collection process. To minimise common bias issues, it would be more appropriate to collect data from leaders as well, instead of collecting self-reported data from participants only. This would allow me to get a better picture of the relationships between leaders and followers, as well as cross-examine the followers' perceptions of their self-reported outcomes, with outcomes that the leaders have observed. Moreover, collection of data during a longer period, would be more ideal as five working days, might be a short time period for participants to switch from viewing their leader as very opening to viewing them as very closing.

Implementing such design considerations could show different results, yet, due to funding and timing restrictions, this was not possible.

A key finding from both studies, regards the interactive effect of opening and closing behaviours on the followers' innovative work behaviours. Many studies have found a significant effect of the interaction between the two sets of leaders' behaviours on the followers' innovation, but some studies, especially recent ones, found that it is not always the case, and in many situations, it is argued that it depends on other factors such as contextual (Klonek et al., 2020; Gerlach et al., 2020b). Neither study of this research project found that relationship to be significant. This is an important finding and was not particularly expected, especially in one of the studies. The diary study showed that daily opening behaviours predict daily idea generation, and daily closing behaviours predict daily idea implementation. It was therefore possible that their interactive term would predict the overall innovative work behaviours. However, contrary to the theory, this was not true. A possible justification of this outcome may be explained through implicit leadership theories. Individuals tend to have a prototype leader in mind, who portrays the ideal behaviours and traits and meets their expectations (Lord & Maher, 1993). When the leaders' behaviours match the behaviours of the prototype leader, followers try to understand whether the leader is worthy of influence. If followers, therefore, perceive their leader as someone who meets their expectations and checks all their "leader prototype" boxes, then they are open to be influenced by them (Kenney, Schwartz-Kenney, & Blascovich, 1996). Every individual has a different mental leader prototype (Keller, 1999), which acts as benchmark for comparison (Van Quaquebeke et al., 2011). Every leader, therefore, that individuals encounter, is compared against the leader prototype to find out whether they match their expectations, or they fall short. It is also worth mentioning that findings from this thesis could also be supported by the study of Li et al. (2020), which showed that a punctuated ambidextrous leadership approach (high opening, low

closing) is more beneficial for radical innovation than the theoretical ambidextrous leadership model (Rosing et al., 2011).

Ambidextrous leaders are characterised by inconsistent behaviours which are opposing and contradictory and are portrayed at the same time. Followers may find their leaders' behaviours confusing thus not fitting with the prototype leader, as they constantly monitor them and compare them with their perceptions of a leader prototype. While opening behaviours can be considered ideal prototype leader behaviours as they are more humane-oriented (e.g., Epitropaki & Martin, 2004; Paris et al., 2009), some might argue that closing behaviours might belong in the anti-prototype group (e.g., Bligh et al., 2007; Schyns & Schilling, 2013; Tepper et al., 2011), as they are not behaviours that followers would expect from their ideal leader. The insignificant effect therefore of the interaction between the two sets of leaders' behaviours may be due to the followers' perception of their leader as an anti-prototype leader due to their engagement with opposing behaviours, which can be perceived as confusing and out of the norm.

On one hand, it seems interesting to claim that non-significant results are due to theoretical flaws, as without challenging new theories, science cannot advance. On the other hand, it is equally important to take a more reflective approach and assess one's own methods, research designs and chosen approaches. In this case, the main hypothesis, which argued that the interaction between opening and closing leader behaviours would facilitate follower innovation, might have been non-significant due to theoretical flaws but it could also be due to research design flaws. For instance, participants in the experiment may find the scenario unrealistic, especially, given that the time difference between the first and second email (task) was only fifteen minutes. In a workplace environment, such behavioural changes (switches) would take longer to be portrayed, depending on the stage of a project. However, this study did follow the theory and interpreted it in an objective way. Theory suggests that leaders should be

able to switch behaviours flexibly and quickly, depending the situation, without giving any specifics on timespans. Hence, according to theory, a leader switching behaviours within five minutes and a leader switching behaviours after four weeks of being consistent, should produce the same effect. Another issue could be of course the small sample size, as aforementioned. Each group had 30 participants, and the power analysis showed that an ideal sample size would be 70 participants. It is possible therefore the results of these hypotheses could change if the sample size was bigger.

In regard to the second study, the interactive effect of the leaders' daily behaviours being non-significant, could be due to the scale reduction of the two behaviours. The scale reduction occurred based on data from the first study, hence it is not known if the new shortened scales can be used universally in any study (Stanton, Sinar, Balzer & Smith, 2002). Although the scale reduction process has undergone rigorous techniques before the new scales were finalised, it is not certain if the items identified from each scale are the most appropriate for the second study, or even whether the two behaviour scales have the same ability to capture ambidextrous leadership after they have been reduced to half their size. It is important therefore to acknowledge potential design issues which may have impacted these hypotheses to result in non-significant results.

5.2. Thesis' Contributions

The present thesis makes important contributions in the field of ambidextrous leadership, as well as creativity and innovation. The two studies that were conducted as part of this research project provide evidence that both support and challenge the theory. Contributions of both theoretical and practical nature are being discussed.

Theoretical Contributions

First of all, this thesis makes some novel contributions to theory. The results from the first study, which examined temporal flexibility, showed no significant results. Theory (Rosing et al., 2011) claims that the most effective leaders are those who switch quickly between opening and closing behaviours to match the innovation requirements of the situation. The experiment conducted in study 1 showed that there were no significant differences between a leader who changes their behaviours when the situation demands it and a leader who does not. Even though the experiment fully aligned with the assumptions of the theory and used two separate tasks to capture creativity and implementation, the findings were not consistent with theory. Previous studies used either one innovation task to capture the effect of ambidextrous leaders (e.g., Klonek et al., 2020) while others who used two tasks to capture creativity and implementation, had their participants undertake only one of the two, not both (Gerlach et al., 2020a). Overall, studies neglected this part of the theory, and mainly assessed the interaction between the leaders' opening and closing behaviours. This is the first study that examines the full proposition of temporal flexibility, by using two separate tasks for creativity and innovation, as well as two separate measures of innovation (self-perceived and CAT). The two different measures of followers' innovation provide a stronger claim on the non-significance of those findings as neither the participants' self-perception about their innovative work behaviours, nor the objective outcomes increased, when they had an ambidextrous leader who engaged in opening behaviours during the creativity task, and then switched to closing behaviours during the implementation task. There are multiple implications that can be derived. For example, it could be possible that the theory only works in particular sample groups, for instance, from certain jobs, or under specific conditions. The theory needs to examine this more thoroughly and clarify whether the concept of ambidextrous leadership is a style that can be effective anywhere, or whether it is a style that only benefits certain job sectors or teams. Moreover,

temporal flexibility, although defined as the ability of a leader to switch behaviours when necessary, it can still be considered vague in terms of timing. As explained in previous sections, realistic projects may require months before they finish, hence the *switching* may not be seen for long periods of time. This means that leaders could show consistent behaviours for most of the time. It could also mean that sometimes the leaders show a slow transition from opening to closing behaviours and vice versa, to a point where it can be indistinguishable from the followers' perspective. It can also be argued that the two stages of innovation (idea generation and idea implementation) probably take different time periods, as the creativitiy phase is relatively quick compared to the implementation phase. Therefore, if the implementation phase is longer, then closing behaviours will be portrayed for longer. With closing behaviours being generally negative leadership behaviours (e.g., micromanaging, sanctioning errors etc.), if they are deployed for most of the time, then follower are more likely to create a negative mental model of their leader. Thus, over time, the cumulative effect of ambidextrous leadership would be negative due to the imbalance between the two sets of the leader behaviours.

Secondly, neither study of this research project shows that the interactive effect between opening and closing behaviours increases the followers' innovation. The first study used both self-perceived and objective measures of innovation, while the second study only used self-perceived measures. Yet, neither study found a significant effect, which is not consistent with the theory. Rosing and her colleagues (2011) claimed that opening behaviours will act as a moderator on the relationship between closing behaviours and followers' innovation, and vice versa. This means that the effect of leaders' opening behaviours on followers' innovation will depend on the leaders' closing behaviours, while the effect of the leaders' closing behaviours on followers' innovation will depend on the leaders' opening behaviours. Some studies have found that interactive effect of the two sets of leaders' behaviours is significant (Alghamdi, 2018; Zacher & Rosing, 2015; Zacher & Wilden 2014), yet some other studies did not (Gerlach

et al., 2020b; Klonek et al., 2020). A key difference between my studies and the studies that found significant results was that my studies' participants were from various backgrounds and job sectors, as there were no criteria restrictions in terms of jobs. On the other hand, the studies by Alghamdi (2018) and Zacher and Rosing (2018), recruited samples from specific industries, (i.e., academia and architecture respectively). It could be possible therefore, that innovation has different meanings or definitions across industries and sectors, and that the previously studied industries were particular in that their approach to innovation was in line with the ambidextrous leadership theory. Therefore, it can be assumed that if my studies recruited samples from one industry only and this industry was aligned with ambidexterity theory in their approach to innovation, with clean, consecutive, and explicit stages of creativity and implementation, results could be different. It is up to the theory to reassess the role of context and make stronger claims about its effectiveness in specific sectors or jobs. Nonetheless, although my findings were mixed, they were also consistent in showing that the leaders' opening behaviours were effective across both studies, whereas closing behaviours were not. These results could be attributed to opening behaviours belonging in positive leadership approaches. Positive leadership refers to behaviours that create or facilitate positive emotions within the followers (Kelloway, Weigand, Mckee & Das, 2013), and traditional leadership styles such as ethical (Toor & Ofori, 2009), transformational (Burns, 1978) or authentic (Harter, 2002) leadership styles can also be classed as such. Research shows that leadership styles that can be considered as positive can have a positive effect on followers' positive outcomes such as well-being and positive affect (Kelloway et al., 2013), performance (Bono & Judge, 2004) as well as creativity and innovation (Lee et al., 2020). It is not surprising therefore to observe that opening behaviours, which are positive throughout, facilitate positive employee outcomes, like other positive leadership styles. It is argued therefore, that opening leadership may be used as potentially a standalone leadership style, rather than in conjuxtion

with closing behaviours. Future studies could test the effect of opening leadership, not just on creativity, but on further positive outcomes, such as positive affect, mental health, performance, efficiency etc.

The interaction of the two behaviours is also suggested to increase the followers' ambidexterity, which is the interaction of the followers' engagement with explorative and exploitative activities. Some studies show that it is in fact the interaction between followers' exploration and exploitation that increase followers' innovation (Zacher et al., 2016; Rosing & Zacher, 2017). While this assumption was also tested, as a hypothesis in the first study and as part of the supplementary analysis in the second study, neither study have found that result to be significant. It is particularly important to note that these results also took other factors into consideration which are highly related to creativity and innovation, such as positive affect and openness to new experiences, and were used as control variables. Exploration and exploitation, although contradictory terms, they often work in conjunction. As they have been hypothesised to mediate between ambidextrous leaders' behaviours and followers' innovation, it is important to understand further how much they contribute to that relationship, as my studies have shown that the two do not have the same effect on innovation. It could be possible that opening and closing behaviours promote exploration and exploitation respectively, but that may not mean that a balance between followers' exploration and exploitation is fully responsible in making them perform more innovatively. Further criteria need to be assessed, e.g., the context, the difficulty of the task, or the amount of time spent on it. The theory should also make more specific claims around the effect that followers' exploration and exploitation have as mediators between ambidextrous leadership and followers' innovation. As my studies found more factors that can mediate the main relationship (e.g., motivation), then it could be argued that exploration and exploitation only partly mediate it, and there might be better reasons why the ambidextrous leadership – follower innovation relationship was significant in past studies.

Moreover, it could be that opening behaviours is more effective in facilitating both exploration and exploitation, without the support of closing behaviours. My studies showed some evidence (i.e., correlation) that opening behaviours is positively associated with both exploration and exploitation, as opposed to closing behaviours. Hence, regarding ambidextrous leadership, which is the interaction between opening and closing behaviours, it can be possible that the existence of closing behaviours may hinder follower ambidexterity from occurring. Furthermore, as it was previously mentioned, the timing of opening and closing behaviours can differ dramatically in real-life situations. Implementation can take a significantly larger amount of time being present compared to creativity, hence if followers only spend a small percentage of their time exploring, and more time of their daily schedule exploiting their skills and knowledge, then their exploitation score would be much higher compared to their exploration score, potentially leading to an imbalance between the two. It would be ideal if future studies examined the amount of time followers spend on exploration and exploitation, and cross examine those with the amount of time the leaders spend portraying opening behaviours and closing behaviours. If for example, such studies show that a leader who portrays opening behaviours around 80% of the time in a week, and their followers show that they spend 60% of their time engaging in exploitation, then this is not in line with theory, and it needs to be revised alongside the importance of timing.

Although the first two theoretical contributions were testing parts of the theoretical model by Rosing and her colleagues (2011), the next two are part of the conceptual model that I have developed in Chapter 2 and was tested in both studies. The third theoretical contribution to the ambidextrous leadership field is the role of motivation. Although multiple studies in the past have evidenced how motivation, and in particular intrinsic motivation, is a vital part of innovation (Fischer, Malycha, & Schafmann, 2019; Siyal et al., 2021; Yidong & Xinxin, 2012), this study is the first to examine motivation alongside ambidextrous leaders. The most

interesting finding was not that intrinsic motivation increased creativity and innovation, but that opening behaviours increased intrinsic motivation. No previous studies have assessed the impact of opening behaviours on anything other than creativity, innovation, or exploration. This finding is not only important because of its effects on innovation-related outcomes, but for its potential to influence different outcomes too. Opening behaviours are motivational, supportive, and encouraging, hence their benefits may not be limited to creative outcomes. Studies show that similar behavioural styles (e.g., transformational, or supportive) have positive influences on outcomes such as job satisfaction (Atmojo, 2015), trust (Gillespie & Mann, 2004) or performance (Wang et al., 2011). Moreover, intrinsic motivation is an intrapersonal feeling that was found to increase multiple employee outcomes, such as engagement (Thomas, 2009), affective commitment (Kuvaas et al., 2017), and performance (Cerasoli, Nicklin, & Ford, 2014; Kuvaas et al., 2017). Hence, as both of my studies found that opening behaviours can instil the intrinsic motivation of the followers, there is evidence that opening behaviours may have potential benefits in other areas, apart from creativity. The key theoretical contribution however from these findings, is the mediating role of intrinsic motivation. Studies so far, have not examined any other mediators between ambidextrous leadership and followers' innovation, apart from followers' exploration and exploitation (Alghamdi, 2018; Zacher et al., 2016), as proposed by the theory (Rosing et al., 2011). Therefore, this is not just the only study that shows that opening behaviours may instil intrinsic motivation of the followers, but most importantly, it is the only study that found a new mechanism in the relationship between ambidextrous leadership and followers' innovation. Both studies presented in this thesis found significant results that opening behaviours can increase the followers' intrinsic motivation, which can lead them to demonstrate higher idea generation behaviours. The results were significant not only between the subjects (Study 1), but also within the subjects (Study 2) from day to day. In addition, the first study also showed

that a serial mediation also exists, where intrinsic motivation leads to followers' exploration before leading to their idea generation behaviours. This finding is also of significant importance, as the main research question of this study is to find out how ambidextrous leaders facilitate their followers' innovative behaviours. This finding is an initial justification of the relationship between ambidextrous leaders and followers' innovation as it shows that something else can in fact explain the process. The reason this finding is so important it is for what it means for the behaviours of an ambidextrous leader, as well as the theory overall. It was assumed that ambidextrous behaviours would directly motivate the followers to engage with either explorative or exploitative activities. When a leader portrays opening behaviours, meaning they are being encouraging and actively requesting from the participant to take risks and experiment, then it is expected from the followers to act based on those instructions, as it is a positive request. The new findings around intrinsic motivation demonstrate that these leader behaviours can also unknowingly target the internal thought processes of their followers, which can make them more keen on engaging with the task. It essentially shows us not how followers become more creative, but "*why*" they are so keen on engaging with exploration, or keen on responding to opening behaviours in general, as opposed to closing behaviours. It can also give us an answer to the question "*why opening behaviours are more effective than closing behaviours*". A finding as such aligns with other research findings which show that intrinsic motivation is an outcome of positive leader behaviours (e.g., Shafi et al., 2020). The ambidextrous leadership theory may be expanded to demonstrate further possibilities of the opening leadership style and how it can benefit both leaders and followers if leaders decide to use it. Although it is very clear that this style was purely designed to enhance innovation outcomes, its use can be developed, since there is evidence that it could benefit further outcomes. This is an avenue that the theorists and further researchers may need to explore and make further research recommendations.

Moreover, it is worth noting that although closing behaviours did not have as a big influence on followers' innovation as expected, the first study found that closing behaviours may enhance followers' extrinsic motivation, during tasks that require followers to engage in idea implementation tasks. This finding is also a novel contribution to the theory, as no other studies have investigated further possible outcomes of leaders' closing behaviours. This finding could also align with the finding about intrinsic motivation, and it makes the argument that ambidextrous leadership affects the followers' cognitions before anything else. Similarly, therefore, the theorists should consider how a leader's behaviours are perceived by the follower first, before making assumptions on what they can promote directly (i.e., exploration and exploitation).

The fourth and last theoretical and novel contribution of this thesis regard the moderators that were examined in the second study. It was argued that since ambidextrous behaviours can be perceived as confusing, followers who got along and trusted their leader would be more likely to understand them and respond to them as the theory predicts, while followers who did not trust or have a good relationship with their leader would be more confused and even reluctant to change their behaviours. The insignificant findings from this set of hypotheses suggests that the relationship between ambidextrous leadership and followers' innovation may not be influenced by relationship factors. The two-way as well as three-way interaction effects were not significant for either the three moderators of LMX, trust towards leader, and feeling trusted by the leader. It was important to understand how interpersonal factors play a role in the effectiveness of ambidextrous leadership. LMX is one of the most studied leadership theories (Hooper & Martin, 2008) and has been found many times to moderate relationships (Nishii & Mayer, 2009; Niu et al., 2018) as well as being related to creativity (Volmer, Spurk & Niesen, 2012). Although it was hypothesised that individuals in the in-group for example, would behave differently from the individuals in the out-group, the findings from this study suggest

that leaders' behaviours may not be strong enough to show an effect. The moderators of LMX and trust were tested in order to elaborate on the boundary conditions of ambidextrous leadership theory. For example, it is widely known that LMX is an important boundary condition because it can affect how people perceive and respond to different leader behaviours (e.g., Tröster & Van Quaquebeke, 2021), but also because it is known that constructs as such tend to interact with other variables to predict creativity or innovation (e.g., Qu, Janssen & Shi, 2017). Moreover, it must be noted that even the insignificant results hold lots of value, as the correlation analysis showed a positive association of LMX and outcomes, but when opening behaviours are added in the mix, the effect of LMX disappears. This means that LMX explains same variance as opening behaviours, such that high LMX of a leader could be portrayed as high opening behaviours, thus the two may not interact. It is important for the theorists, to examine the role of LMX for example, and assess whether it is conceptually distinct from opening behaviours (or closing behaviours for low LMX). The nuance meanings of such findings need to be taken into account when revisiting theories and trying to refine them.

Practical Contributions

Findings from this thesis may also provide some important contributions to managerial practice. Firstly, and the most important practical implication that this thesis has found, is the positive effect of opening behaviours. Both studies that were conducted have shown that leaders' who engage in opening behaviours, no matter the nature of the task, or the situation, are able of increasing multiple employee outcomes. Workplace leaders are encouraged to adopt opening behaviours, if their aim is creativity and innovation. If leaders are not used to portray such behaviours, then proper training and development, as well as performance appraisal are encouraged. By being encouraging, motivational and flexible, employee feelings and attitudes

can change dramatically, and not only improve their outcomes, but the way the perceive themselves and the way they feel about their work. It can be said, that when managers show a more opening approach, employees can perceive this as a sign of trust, which can make them more confident in their skills and more engaged in their work. Even though multiple employee outcomes have been evidenced from both studies, such as higher engagement with explorative behaviours, intrinsic motivation, creativity, innovative work behaviours, and flow, it is highly likely that opening leader behaviours can hold more benefits to them and influence further employee outcomes in a positive way. Hence, organisations who aim to facilitate their employees' innovative behaviours, they can train their leaders into engaging with opening behaviours.

The second practical contribution from this thesis is about closing behaviours. The first study showed no effects of closing behaviours on innovation, while the second one showed that closing behaviours were effective for idea implementation. From one point of view, leaders are encouraged to limit their portrayal of closing behaviours, due to their restricting nature and minimal effect. From another point of view, as the second study was conducted in natural settings, through a longitudinal design, it can be argued that findings regarding the effects of leaders' behaviours carry a slightly higher value. Hence it can be suggested that if leaders require a leadership approach to facilitate the followers' idea implementation, then they can use closing behaviours.

Although the theory suggests that both sets of behaviours (opening and closing) should be used in a balanced way, this thesis examined not only their joint effect, but their independent effect as well. Based on the results of this thesis, it is not suggested for managers to engage in ambidextrous behaviours as evidence from this thesis, as well as prior studies during the past decade, is mixed, and by following an ambidextrous approach may compromise their aims and

objectives. However, as aforementioned workplace leaders are encouraged to use opening behaviours whenever they can, as the support for these is great.

Last but not least, the effects from opening behaviours are independent of the relationship managers have with their subordinates. This implies that managers who portray opening behaviours will have the same effect on their employees, despite whether they have good or bad relationships with them. As multiple creativity-related antecedents were controlled for in both studies, and a strong effect was still present, opening behaviours may also be effective despite the personality of the employee.

5.3. Thesis' Limitations

As with every research, this one is not without its limitations. Firstly, I will discuss two key limitations that were present in both studies. Following, I will focus on two limitations from each study and explain how they are important and why they still need to be considered.

First of all, one of the main methodological limitations of this thesis is the operationalisation of the ambidextrous leadership concept. Ambidextrous leadership is comprised of two dimensions; opening and closing behaviours. The two sets of behaviours are clearly described in the theoretical paper of Rosing and her colleagues (2011), as they provide the reader a list of behaviour characteristics that ambidextrous leaders may portray. Each set of behaviours contains seven characteristics such as "encourages experimentation with new ideas" (opening) and "sanctions errors and mistakes" (closing). All studies that have been conducted so far have transformed those 14 items and used them as a scale to capture ambidextrous leadership. Although many studies have found significant results using the same process of capturing ambidextrous leadership (Alghamdi, 2018; Zacher & Rosing, 2015; Zacher & Wilden, 2014), it is still not widely acknowledged that the operationalisation of the scale may not be quite

effective, as it has never been developed and validated through an appropriate and rigorous method. The list of characteristics provided by Rosing and her colleagues (2011) may be good in describing the behaviours, but not to operationalise them. Nonetheless, the first study that examined the ambidextrous leadership theory (Zacher & Wilden, 2014) adapted their items from the list of behavioural characteristics by the theoretical paper (Rosing et al., 2011) and since then, everyone who followed has used the same scale, some with success, some without. Ambidextrous leadership, although it is comprised of opening and closing behaviours, there is not a standard process that explains which of those characteristics can be found in the workplace or which of them may be adapted to items. As this process involves innovation, each job sector might have a different approach to innovation, where not all opening behaviour characteristics might be applied for example or situations where closing behaviours may be portrayed differently. For instance, a leader in an educational field (e.g., primary school) might engage with opening behaviours that are completely different from those that a leader in a military context would engage with.

Moreover, Hinkin (1995) argues that scale development is a multi-stage process where researchers need to conduct thorough reviews and follow certain procedures. In the first stage researchers need to focus on item generation where they must choose the items, they believe are applicable to capture the construct and have content validity. The second stage is the scale development. During the scale development, a rigorous study needs to be conducted to ensure the importance of the items and thus aiding with the scale construction. When data are collected, the researchers need to run reliability analyses in order to test the new measure and ensure that all items are required. The final stage is the evaluation of the scale which aims to ensure the construct validity of the scale. Hence, trying to capture and assess behaviours from various job fields and various work or task situations through simply a list of behavioural characteristics instead of validated scale, may not indicate research rigor.

The second limitation that this thesis had was regarding the data collection process. Due to COVID-19, and the fact that data collection had taken place during lockdowns, both studies used online recruitment platforms to find participants. Although the recruitment platform used is famous for having quality users, and a speedy service, the compensation might be problematic in this research. Although it is very common for participants to get paid for their time, and their help with research surveys, it has to be noted, that when creativity is in the equation, then it can have a moderating effect. Scholars debate whether extrinsic rewards may hinder or foster creativity (Shalley & Gilson, 2004). For instance, some scholars argue that intrinsic motivation is the key driver of follower creativity, and not extrinsic rewards (Amabile, 1979; Amabile et al., 1990). Yet, others believe that when rewards are given to acknowledge competence and effort, then they might have a positive effect on creativity (Eisenberger & Armeli, 1997). Therefore, participants who agreed to take part in this study for the money, and not a genuine interest, might not portray the actual effect of ambidextrous behaviours. Essentially, if individuals completed these studies as part of their jobs, and not because they got paid extra to do them, then results might have been different. As pay was generous, it is possible, that results of creativity were not influenced by the desire of the reward, rather than the effect of the ambidextrous leader, especially for the participants of the experiment.

There are also two key limitations that have to be acknowledged from the first study. The first one being that a lab experiment is in fact a simulation of a real hypothetical scenario. Results from this scenario may not reflect the real world (Falk & Heckman, 2009). Participants undertook this study online, in their own time and place without any environmental factors being controlled, as well as having no consequences for their outcomes (Murphy et al., 1986). Ideally, natural settings would be better to examine such phenomena, as they would provide a more realistic picture of the effect of the ambidextrous leaders. If participants, for example, knew that their ideas and implementation plans, are part of their actual job, the emails received

are from the actual managers, and their output could have a real impact on them and their career, then results might have been different. Since experiments are not a true representation of natural settings, it can be argued that if the aim is to examine the effect of leaders' behaviours, then a simulation might not be the best way forward, as it does not take in consideration factors that actually have the power to influence the efforts and outputs of the participants, such as existing relationships between leaders and followers (Dobbins et al., 1988; Ilgen, 1986), real work benefits, as well as real consequences.

This limitation can therefore lead to their ability to generalise results effectively. This issue stems not only from the inability of the lab experiments to reflect behaviours in real life, but also because they are being conducted over a relatively short period of time, which may not be enough to capture social phenomena that can be found in work settings (Podsakoff & Podsakoff, 2019). Laboratory experiments are characterised by controlled factors and manipulated variables in a way that they may not entirely capture other social psychological phenomena that occur, hence making the results of such studies difficult to be generalised. Nevertheless, some scholars have found that results from laboratory experiments often match the results from field studies, not only in direction (Anderson et al., 1999; Locke, 1986; Vanhove & Harms, 2015) but also in effect size (Anderson et al., 1999; Mitchell, 2012). In order to find a strong effect size and be able to confidently generalise the results, a large sample size is always necessary. Unfortunately, another issue that this study experienced is an adaptation due to COVID-19, forcing it to be conducted online and thus having to compensate all participants. That led to obtaining a much smaller sample than desired as the funds only allowed for about 120 individuals to be recruited. Ideally, a sample of about 300 participants would have been better. In the original plan of conducting face-to-face sessions for this experiment, I aimed to reach a sample size of that magnitude, as the compensation would have been in prize draws and vouchers, hence not everyone would have been compensated. Yet, it

is acknowledged that this process would have taken much longer compared to an online experiment, which obtained data within 2 days. Nonetheless, the small sample size (and the small power) of this study suggests that the results should not be relied heavily upon to make strong inferential claims.

The second limitation of lab experiments is their potential problem to fully explain mediation models. Spencer et al. (2015) suggest that measuring the mediator and the dependent variable at the same time may prime participants to respond to the dependent variable based on the mediator. In this case if the mediator was intrinsic motivation, participants could have been primed to believe that because they enjoyed the task, they were more creative. Due to this potential issue, such designs may also be vulnerable to further issues such as common method bias (Podsakoff et al., 2012), which led researchers to believe that laboratory experiments are not very effective in suggesting causation, even if the indirect effects are significant (Judd et al., 2001; Kenny, 2008).

The diary study also had some key limitations. Firstly, unlike the experiment, this study did not examine the nature of the task. As the theory suggests that opening behaviours should be used only during creativity tasks, while closing behaviours should be used during implementation tasks, it would be appropriate to capture the nature of the task that participants were working on during each day (creativity, implementation, or both). The reason however why this question was not asked to the participants was because they all came from a mixture of jobs and backgrounds. A creativity task in one field might not look the same as a creativity task in another. Not only that, but individual perceptions of what constitutes as a creativity task and what as an implementation task may not be as obvious to workers, as it is organisation studies scholars. Hence, even if participants were asked “Today, I engaged with a creativity task”, it could have definitional differences from person to person, as well as contextual differences from sector to sector (De Vries, Bekkers & Tummers, 2016). If such questions are

to be asked in a study about innovation, then it would be ideal that all participants come from a specific organisation/company and share similar responsibilities, thus eliminating those probable issues. Due to COVID-19 however, this study changed its scope and instead of using tech and manufacturing companies in Sheffield as initially proposed and planned, I ended up using an online platform to recruit participants from all over the UK. Setting more filters to find individuals with specific backgrounds, job roles or education, would limit my possibilities to find an adequate number of people.

The second limitation of the diary study that needs to be addressed is its measures. Outcomes of creativity and implementation were only captured through self-reported measured which may not reflect the reality, as they might be biased (Rosenman, Tennekoon, & Hill, 2011). Individuals may respond in a different way than what they feel or believe in order to make them look good (Rosenman et al., 2011). Moreover, different personalities (e.g., narcissism) may perceive themselves as more creative (high self-efficacy) than others, but not produce as many new ideas as them (idea quantity). This also aligns with research suggesting that narcissistic followers are not as creative as they think they are (Goncalo, Flynn & Kim, 2010). Issues such as these may distort the data, yet it is impossible to control for everything. If, however, the study was conducted with participants from only one company, then creativity and implementation could have been measured through tangible outcomes through their participants' managers.

5.4. Directions and Suggestions for Future Research

The findings and limitations of this thesis provide opportunities for further research in this field in order to understand how ambidextrous leadership works organically in a natural setting. The first suggestion is to measure temporal flexibility in real life settings. The first study, as it was

conducted under laboratory settings and in a limited time, does not provide much room for understanding a complex phenomenon such as innovation. Ambidextrous leaders should be able to switch flexibly between creativity tasks and implementation tasks when the situation requires it. This theoretical component should be captured in natural settings to understand whether workplace leaders who engage in opening behaviours during creativity tasks and closing behaviours during implementation tasks, are more effective in facilitating the innovative work behaviours of their followers compared to other leaders. Hence, it is suggested that future studies also measure the nature of the task. However, as this theory is about dynamic behaviours that fluctuate daily, then it is necessary that an experience sampling method is to be used, capturing leaders' behaviours once or twice a day, while capturing the nature of the task at the same time. This will provide data for a more thorough analysis on the effectiveness of ambidextrous leadership and temporal flexibility in natural settings.

Furthermore, it is vital to conduct a longitudinal study that lasts more than a week, as a week is not enough to show all the stages that individuals go through when innovating. Ideally a longitudinal study that lasts between three months to one year, could be better, as it may capture more stages of innovation as possible, from the generation of ideas to their evaluation, idea promotion, and implementation, as well as all the in-between stages. In addition, as innovation is not a linear process, individuals may move between stages in a non-linear way. For example, employees might be promoting an idea for one week, without success, and thus having to move back to the idea generation stage. A longitudinal study that lasts for months, is more appropriate to capture such transitions and the corresponding leaders' behaviours.

If, however, researchers believe an experimental design is more appropriate, then the main suggestion that can be derived from this thesis is to consider the natural non-linear process of innovation and examine temporal flexibility through multiple tasks. The first study of this thesis used one creativity task, and one implementation task in a linear way. This provided the

leader with an opportunity to make one successful behavioural switch from opening to closing behaviours. It would be ideal that the leader in the experiment has more opportunities to switch between behaviours, which might reflect a more realistic scenario. Hence, by creating more tasks that focus on creativity and implementation, there will be more chances for the leader to switch between opening and closing behaviours successfully, and thus understanding better whether flexible switching between behaviours is effective or not.

The fourth recommendation is about measures. The first study of this thesis captured innovation through self-reported measures as well as through scores from experts, while the second study only used self-reported measures. Capturing innovation can be a tangible outcome (Cropley & Kaufman, 2012; Smith, 2004) as well as self-perceived outcome (Zacher et al., 2016; Zacher & Wilden, 2014). One may feel creative but not necessarily produce creative ideas, as the first study has demonstrated. It is recommended that future studies use innovation measures that capture the outcome objectively. This can be through the ideas they generated, the time taken to produce new ideas, the amount of people who endorsed their idea, or even the number of resources they used to implement their idea. Moreover, the leaders' can provide their own scores on their employees' creativity and implementation outcomes. By having an objective measure as a standard, it would be more evident whether ambidextrous leadership is responsible for that.

The fifth suggestion for future research is about the sample. It can be argued that creativity and innovation are not present in every job (Müller, Rammer, & Trüby, 2009). Some individuals may have to work in departments (e.g., R&D) that their sole focus is on experimenting and coming up with new ideas, or even specific job sectors (e.g., Advertising, marketing, or engineering) who work on innovative projects all the time or try to pioneer to get ahead of the competition. Future studies would benefit if the focus their attention in such sectors or jobs, as

those employees are more likely to go through all the stages of innovation, from idea generation to idea implementation.

The last suggestion for future research is topical. Ever since the COVID-19 pandemic has begun, many businesses have turned to remote working and online meetings. Many workers who used to commute every day to their place of work, have switched to working from home and using technology to communicate with their colleagues as well as their leaders. This change might also impact the dynamics in communication, as it can be seen as less formal (Korzynski, 2013). A recent study also showed that a face-to-face approach of leadership can make employees more attracted to the overall organisational mission (Jensen, Moynihan, & Salomonsen, 2018). It is therefore important for future research to examine the mode of communication between leaders and followers. It is possible therefore that leaders who are present and give directions to their employees face-to-face, might have a stronger effect than those who only communicate through texts.

5.5. Reflections

Everyone can agree that undertaking Ph.D. degree is not a simple straightforward process. It consists of drawbacks, successes, and emotional rollercoasters. My experience during the last four years has not been any different. There were many difficult times, where things did not go my way, but there were also successful moments, where the outcomes of my efforts paid off.

My aim with this thesis, was to understand better the ambidextrous leadership theory. As creativity and innovation are skills that employers currently look for in potential employees, it is important to examine what steps leaders to take to facilitate innovation, as leadership is one of its' key drivers. The scope was to understand how ambidextrous leaders facilitate this process, by examining the ambidextrous theory of leadership for innovation (Rosing et al.,

2011), using two quantitative methods that would provide complementary results, thus allowing me to have a better overview of the theory and its effectiveness. Testing not only the theory in full, but also further mediators and moderators that could explain the relationship better, and using multilevel approaches, I was able to produce results that have a significant contribution to theory and practice. By doing this, I believe that I achieved my aim of understanding whether ambidextrous leaders are effective, as well as what can benefit the followers' innovative work behaviours.

Reflecting on this journey, I can recall what went well and what did not. For starters, I was quite happy with my data collection process. The platform that I used (Prolific) saved my research at a time when everything was shutting down due to COVID-19. The process of using Prolific to collect data for both of my studies went smoothly and was speedy. It is common for research participants to delay the data collection process for one reason or another, however, I did not experience any major issues of waiting on people to respond to surveys, or due to people dropping out. As I was very prepared for such challenges during the data collection process, I implemented techniques that would minimise that issue, which were successful. In both studies I had a relatively small percentage of dropouts, and the participants who remained in the studies provided quality data and passed their attention checks.

Furthermore, as part of the online experiment, I had to learn a new platform (Gorilla Experiment Builder). This was an intense process as the platform is complicated and involves programming as well. Being on a strict deadline of having this study completed in two and a half months and having to adapt my laboratory experiment to an online experiment was not a straightforward process. I had to consult further literature on online experiments, submit new ethics application forms, learn new platforms (Gorilla & Qualtrics), and apply for funding for participant recruitment (Prolific). However, the University was very helpful, as it provided me with financial support for my data collection, but also because it already had a subscription to

Gorilla Experiment Builder, hence I did not need to spend more of my funds subscribing in a new platform in order to conduct one study. The university also understood the urgency of the situation and I have received ethics approval for my new study within a couple of weeks. Moreover, as the programming part of the Gorilla platform was challenging for me, and as I was running out of time, I sought help from the customer support team of Gorilla, who were extremely helpful and provided me immediately with the syntax that I needed to run some specific widgets and processes.

Nonetheless, there are always going to be things that do not work out as easily as one expects. The first thing that did not go as planned is the potential contributions of this research. When this research was proposed back in early 2018, there were only a few published papers examining ambidextrous leadership. This gave me the opportunity to read the theory, understand it in depth, and examine what others have done and what parts of the theory have been neglected, which helped me develop a plan and propose this research. As of now, there are many more published studies on ambidextrous leadership which examined the theory through experiments and diary studies. Although these studies are great for supporting some of my arguments, at the same time they took away many of my novel contributions, as this research would have been the first to examine ambidextrous leadership through an experimental design (see Klonek et al., 2020), as well as the first study to examine how the nature of the task plays a role in this theory (see Gerlach et al., 2020a). Moreover, this thesis would have been the first to produce studies that examined mediators and moderators alongside ambidextrous behaviours, yet other scholars examined such relationships in the past two years (see Haider et al., 2021; Kung et al., 2020; Wang et al., 2021; Zuraik et al., 2020). Nevertheless, the fact that those studies tested this theory in ways that I was planning to be the first one to do so, is an indication of my clear understanding of the theory, its limitations, possibilities as well as directions for future research.

Lastly, this section would not be a robust reflection, unless I mentioned the impact of the COVID-19 pandemic. As the pandemic has started as soon as I began data collection for my first study, I realised that it was not going to be an easy ride. The ongoing lockdowns and the transition of people now working remotely, made it extremely difficult for me to follow what I initially proposed. Due to the COVID-19 pandemic I had to adapt both of my studies which made me lost important parts from my research scope. Firstly, regarding the experiment, I not only lost control of the environmental factors, which are a crucial benefit of laboratory experiments, but I also lost a measure of innovation. Participants from the laboratory experiments' trials, received an envelope with the material and had to create a prototype of their chosen idea. Participants from the online experiment, on the other hand, were deprived from this opportunity, and I lost another measure of creativity. Secondly, regarding the diary study, one of the things I suggested for future research is something that I was initially proposed on conducting. It would be better for participants to come from the same organisation, as their understanding of creativity and implementation would be the same and obtaining data from leaders would be much easier as well.

In retrospect, if I was able to do this research all over again, and without the impact of a global pandemic, I would make two key changes. First of all, regarding the diary study, I would measure follower innovation through leaders' assessments, as well as through self-reported measures. As the experiment used two different methods to measure innovation, one subjective and one objective, it would be also ideal for the diary study to implement two measures of innovation, self-reported and leader assessment. By doing that, I would be able to make more definite statements about the effect of ambidextrous leadership, as using only self-reported measures is not highly advisable to make causal claims.

Moreover, if I had more time, I would probably conduct a longer diary study, which would allow me to capture temporal flexibility. Innovation is a very complex process and difficult to

be captured fully within one week. If the study was conducted for a few months however, there would be more opportunities for the leader to switch behaviours multiple times. Yet, this approach would raise more issues, as participants filling out daily surveys for months, would most likely dropout before the first month ends. On the other hand, if this study was to be conducted on a weekly basis over a few months, then dropout rate would be much better, but it would be impossible to capture the moment that leaders switched behaviours throughout the week, as participants would be asked about leaders' behaviours only once per week. Also, the weekly diary study was what has been initially proposed for this research, yet it also carries limitations. The best way forward, therefore, based on the new knowledge that I acquired throughout this process, would be a diary study that would last for two to three weeks, as any more than that, participants would fall into a repetition mode and simply respond to the survey because they had to, thus providing non-quality data. Hence, if I was to do this study again, I would still choose a daily diary study, but instead of 5 working days, I would aim for 15 working days, as well as ask participants about the nature of the task they were working on, on each day, given that they all came from the same job field.

5.6. Conclusion

In conclusion, this thesis constitutes a great way forward for the ambidextrous theory of leadership for innovation (Rosing et al., 2011). This study aimed to test the theory and all of its components, as well as enhance it by introducing new mechanisms and moderators that could its effectiveness better.

Through two rigorous quantitative studies, I managed to achieve my research objectives. The first study followed an experimental design approach, where participants were exposed to ambidextrous leaders' behaviours and engaged with innovation tasks. Results from this study

were mixed, but the key findings were related to the effect of ambidextrous leaders on the followers' innovation. This study failed to support the theory (Rosing et al., 2011), which suggests that leaders who engage in opening behaviours during creativity tasks and closing behaviours during implementation tasks would facilitate their followers' innovation. This finding is of high significance, as through the thorough experimental approach that was followed, and the two different measures of innovation, the theory was still not supported. This finding challenges the theory, as well as findings from initial studies that were conducted before this (Alghamdi, 2018; Oluwafemi et al., 2020; Zacher & Rosing, 2015; Zacher & Wilden, 2014).

The second study followed an experience sampling method, where participants had to respond to daily surveys for a week, rating their leaders' and their own behaviours. This study has many significant findings, many of which suggest that leaders' behaviours fluctuate daily. Although this study also failed to provide support for the interactive effect between the leaders' opening and closing behaviours, it has found significant effects of opening behaviours on idea generation, as well as closing behaviour on idea implementation.

Through this thesis, I provide a better understanding on whether the nature of the task plays a role in the relationship between ambidextrous leadership and followers' innovation. Moreover, by examining the separate effects of opening behaviours and closing behaviours on idea generation and idea implementation respectively, I was able to provide evidence on which set of behaviours is more effective for innovation. As most scholars neglected the separate effects of the two sets of leaders' behaviours (Mascareño et al., 2021), one of this study's contribution to theory is that one set of behaviours is more effective than the other.

Additionally, this study found great support for the role of motivation. This is also novel theoretical contribution, as no other study so far has investigated other factors that may explain

why ambidextrous behaviours increase the followers' innovation. Moreover, this thesis also found that the effectiveness of the leaders' behaviours is not influenced by interpersonal factors (i.e., exchange quality and trust) that could moderate the key relationships.

The research presented in this thesis makes significant contributions to theory and practice, not only about the effectiveness of ambidextrous leadership, but also about antecedents and drivers of creativity and innovation. The ambidextrous theory of leadership for innovation (Rosing et al., 2011) , therefore, although flawed, has a great potential to be further reassessed, developed and improved. This thesis is one of the first solid pieces of research that may aid in the future redesign of the ambidextrous leadership model, as it enhances our understanding of this dynamic leadership style and the nuances that revolve around it. Science can only be advanced if researchers are confident enough to challenge theories and embrace insignificant findings, as every finding has its own meaning.

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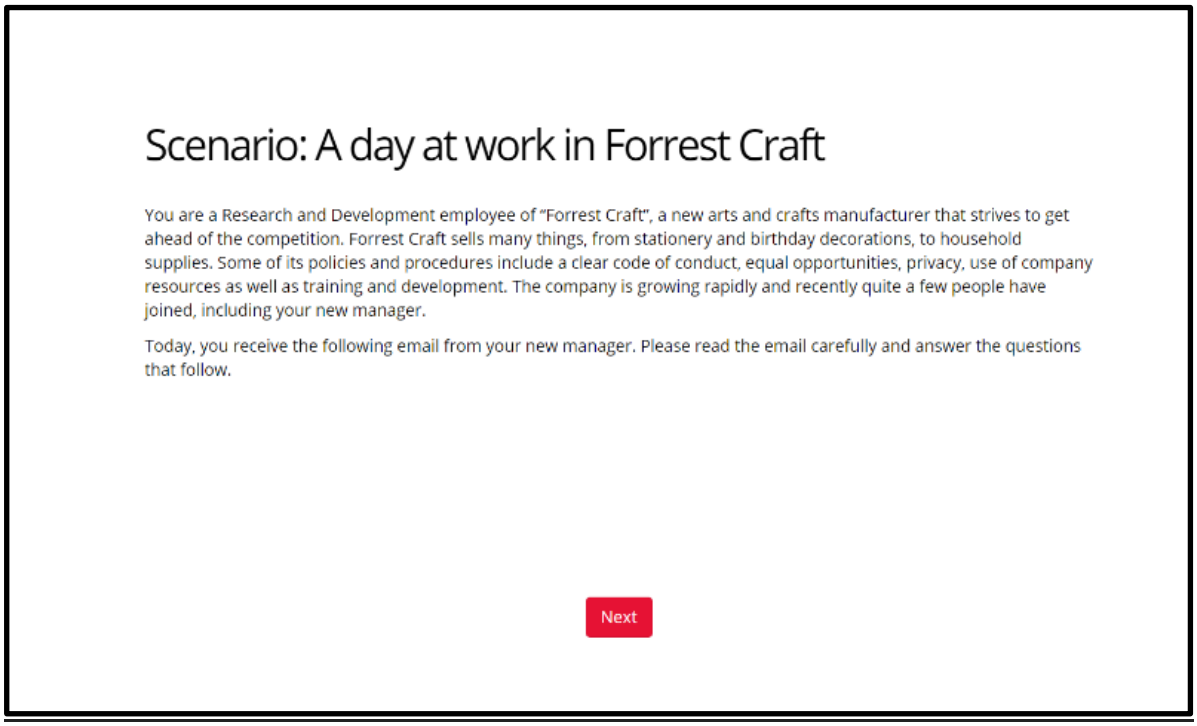
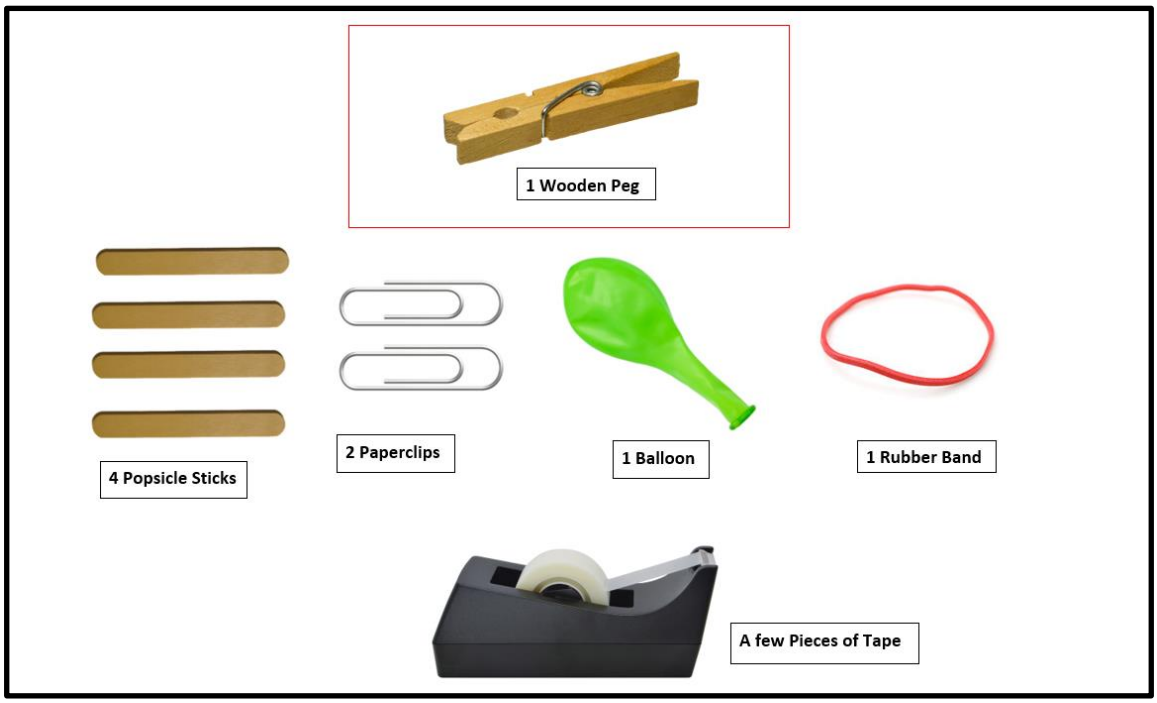
Appendix List

Chapter 3 Appendices

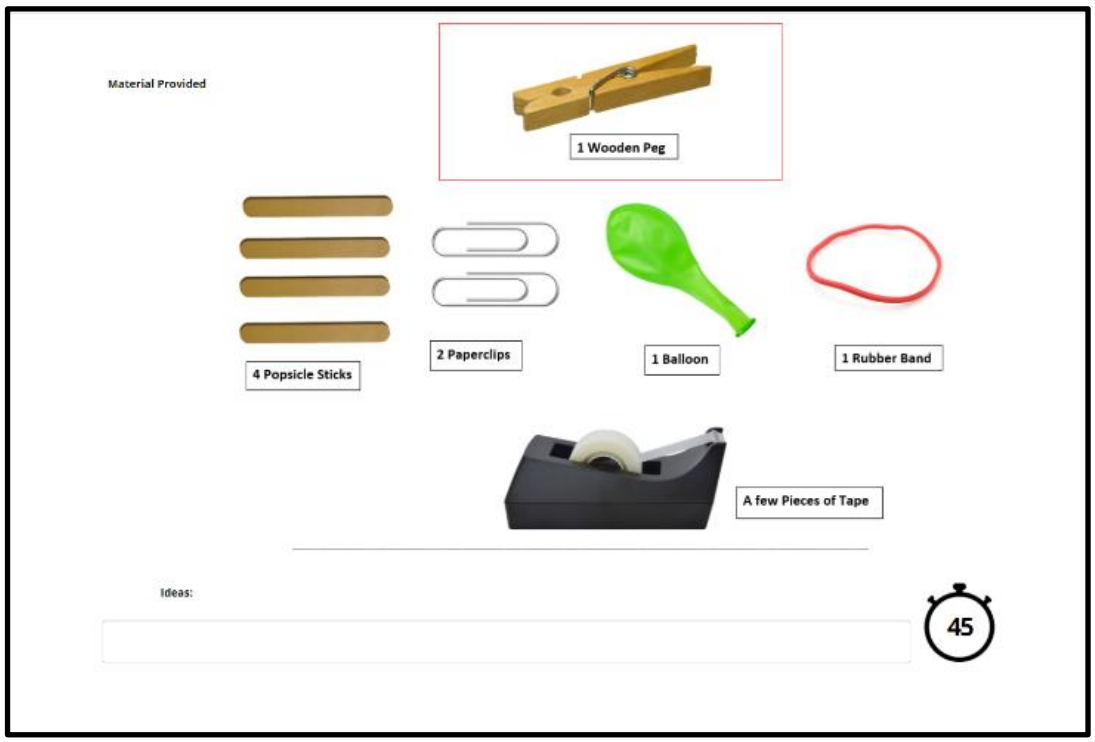
Appendix A. The scenario screen.



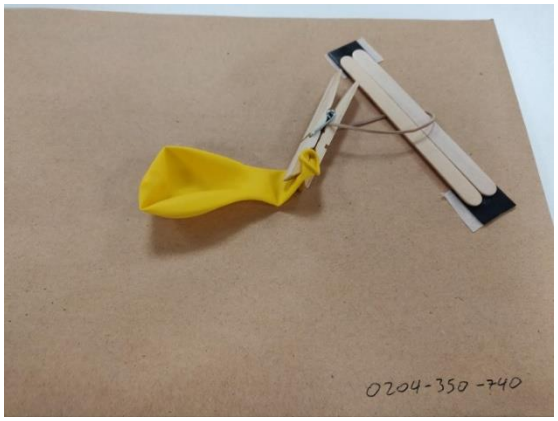
Appendix B. The materials provided for the idea generation task.



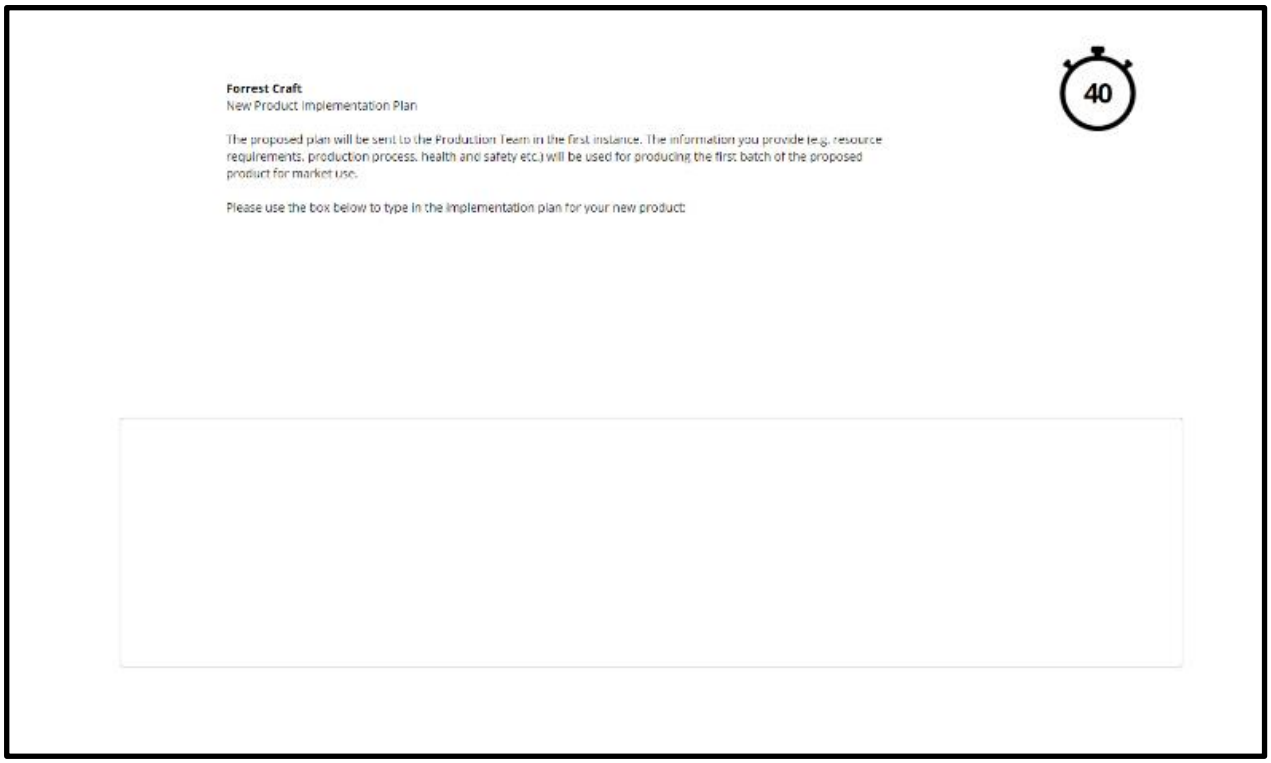
Appendix C. The screen that participants saw during the first task.



Appendix D. Examples of prototypes created during the pilot sessions.



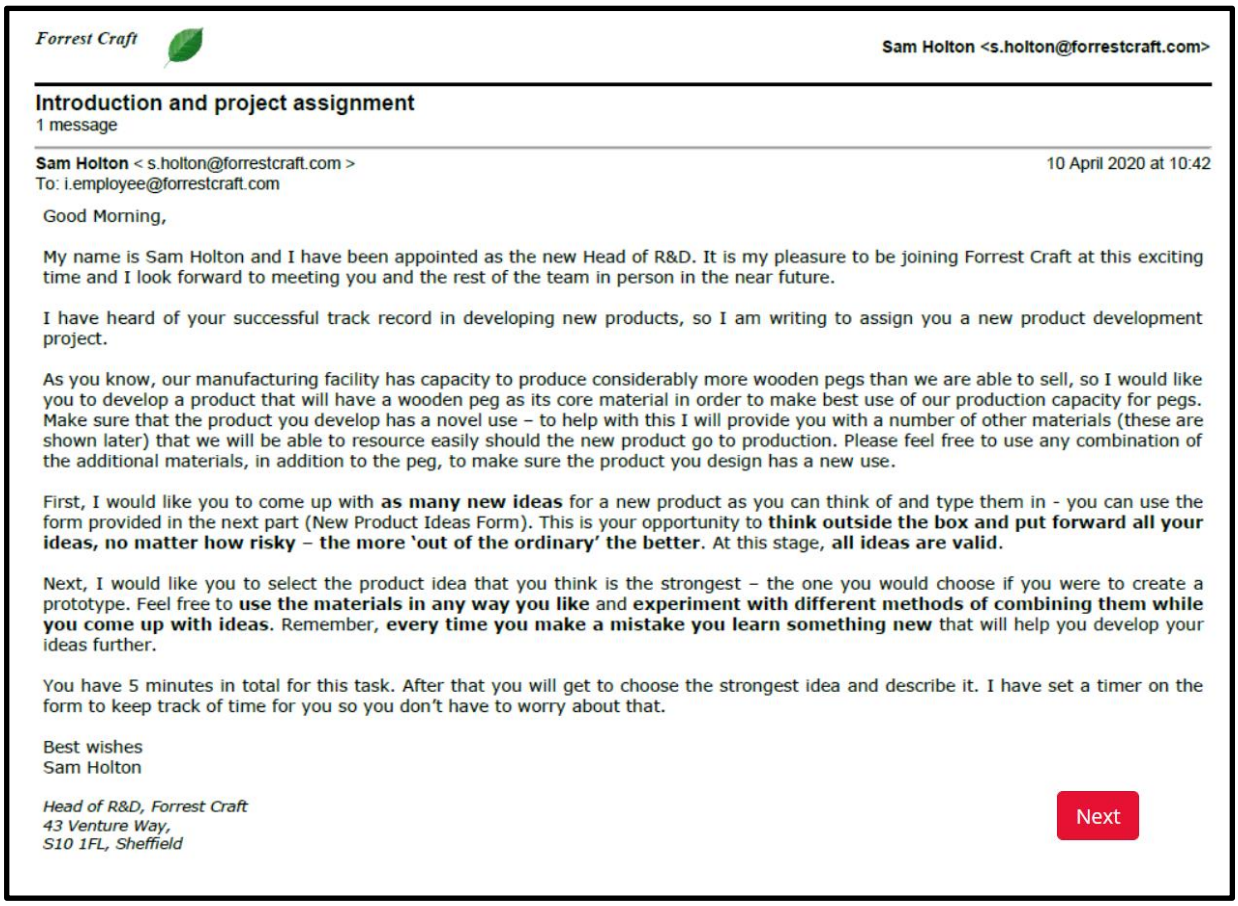
Appendix E. The screen that participants saw during the second task.



Appendix F. The four vignettes.

Vignette for first task: Opening leader.

Participants who were allocated in a group with a leader who portrays opening behaviours during the first task, saw this email.



Forrest Craft

Sam Holton <s.holton@forrestcraft.com>

Introduction and project assignment
1 message

Sam Holton < s.holton@forrestcraft.com >
To: i.employee@forrestcraft.com

10 April 2020 at 10:42

Good Morning,

My name is Sam Holton and I have been appointed as the new Head of R&D. It is my pleasure to be joining Forrest Craft at this exciting time and I look forward to meeting you and the rest of the team in person in the near future.

I have heard of your successful track record in developing new products, so I am writing to assign you a new product development project.

As you know, our manufacturing facility has capacity to produce considerably more wooden pegs than we are able to sell, so I would like you to develop a product that will have a wooden peg as its core material in order to make best use of our production capacity for pegs. Make sure that the product you develop has a novel use – to help with this I will provide you with a number of other materials (these are shown later) that we will be able to resource easily should the new product go to production. Please feel free to use any combination of the additional materials, in addition to the peg, to make sure the product you design has a new use.

First, I would like you to come up with **as many new ideas** for a new product as you can think of and type them in - you can use the form provided in the next part (New Product Ideas Form). This is your opportunity to **think outside the box and put forward all your ideas, no matter how risky – the more 'out of the ordinary' the better**. At this stage, **all ideas are valid**.

Next, I would like you to select the product idea that you think is the strongest – the one you would choose if you were to create a prototype. Feel free to **use the materials in any way you like** and **experiment with different methods of combining them while you come up with ideas**. Remember, **every time you make a mistake you learn something new** that will help you develop your ideas further.

You have 5 minutes in total for this task. After that you will get to choose the strongest idea and describe it. I have set a timer on the form to keep track of time for you so you don't have to worry about that.

Best wishes
Sam Holton

Head of R&D, Forrest Craft
43 Venture Way,
S10 1FL, Sheffield

Next

Vignette for first task: Closing leader.

Participants who were allocated in a group with a leader who portrays closing behaviours during the first task, saw this email.

Forrest Craft

Sam Holton <s.holton@forrestcraft.com>

Introduction and project assignment
1 message

Sam Holton < s.holton@forrestcraft.com >
To: i.employee@forrestcraft.com

10 April 2020 at 10:42

Good Morning,

My name is Sam Holton and I have been appointed as the new Head of R&D. It is my pleasure to be joining Forrest Craft at this exciting time and I look forward to meeting you and the rest of the team in person in the near future.

I have heard of your successful track record in developing new products, so I am writing to assign you a new product development project.

As you know, our manufacturing facility has capacity to produce considerably more wooden pegs than we are able to sell, so I would like you to develop a product that will have a wooden peg as its core material in order to make best use of our production capacity for pegs. Make sure that the product you develop has a novel use – to help with this I will provide you with a number of other materials (these are shown later) that we will be able to resource easily should the new product go to production. Please feel free to use any combination of the additional materials, in addition to the peg, to make sure the product you design has a new use.

First, I would like you to come up with ideas for a new product **using the standard company form** provided in the next part (New Product Ideas Form). **This is the form that you and your colleagues will use from now on** for all new product development projects**.** Please enter only one idea per line and do not include any of your draft notes – **I will check this when I receive the form.**

Next, I would like you to select the product idea that you think is the strongest – the one you would choose if you were to create a prototype. That idea will be used at a later stage. **It is important that you type your chosen idea precisely as it appears on the list of ideas. Any mistakes in the Product Ideas Form may result in a reduced bonus for you this year.**

You have 5 minutes in total for this task. After that you will get to choose the strongest idea and describe it. I have set a timer on the form to keep track of time for you, so **I can be sure that you stick to the time allocated** and to **monitor the process to make sure you followed my instructions to the letter.**

Best wishes
Sam Holton

Head of R&D, Forrest Craft
43 Venture Way,
S10 1FL, Sheffield

Next

Vignette for second task: Opening leader.

Participants who were allocated in a group with a leader who portrays opening behaviours during the second task, saw this email.

Forrest Craft

Sam Holton <s.holton@forrestcraft.com>

Peg Project - Preparing for Production
1 message

Sam Holton < s.holton@forrestcraft.com >
To: i.employee@forrestcraft.com

10 April 2020 at 15:53

Hello again,

Thank you for sending me your ideas and your chosen idea. I am keen to get this product into production asap. Before we can start production, we need your implementation plan to go to the production team. **There are many ways to do this and I am happy for you to choose your preferred approach.** I will send you an implementation plan form template as an example (see form in the next part) but **feel free to try different approaches while doing it.**

Use your chosen idea to estimate the information and quantities required for the production of 1000 products. Below I include some general guidance on what you might want to cover in your pan, but **I would encourage you to consider this a starting point. There is always room for new ideas when it comes to implementation planning, even if they seem a little risky at first.**

- What resources are needed for the production of 1000 products? (e.g. material quantities, material costs, time to produce, number of workers needed)
- Production process (i.e. step-by-step instructions to the workers on how to assemble this product)
- Any health and safety concerns that the production team need to bear in mind during production?

Once you have finished, please send the plan to the production team and myself. We will not be able to make any changes once it goes to the production team, but **don't be too concerned over making any errors. I will read your implementation plan when I'm back in the office and we will discuss any lessons learned from any mistakes** at our next review meeting. Please send us your implementation plan in 8 minutes. I have set a timer to keep track of time, so you don't need to worry about that while you prepare your plan.

Best wishes,
Sam Holton

Head of R&D, Forrest Craft
43 Venture Way,
S10 1FL, Sheffield

Next

Vignette for second task: Closing leader.

Participants who were allocated in a group with a leader who portrays closing behaviours during the second task, saw this email.

Forrest Craft

Sam Holton <s.holton@forrestcraft.com>

Peg Project - Preparing for Production
1 message

Sam Holton < s.holton@forrestcraft.com >
To: i.employee@forrestcraft.com

10 April 2020 at 15:53

Hello again,

Thank you for sending me your ideas and your chosen idea. I am keen to get this product into production asap. **It is important that you follow established company practices** and before we can start production, we need your implementation plan to go to the production team. **I have prepared an implementation plan template (you can see the template in the next part). You will need to use this one from now on for all new products that will be developed; use this form to write up your plan.**

Use your chosen idea to estimate the information and quantities required for the production of 1000 products. While completing your implementation plan, **make sure you include all the required information as outlined below and avoid adding any non-essential information, as this may cause delays in the production process.**

- What resources are needed for the production of 1000 products? (e.g. material quantities, material costs, time to produce, number of workers needed)
- Production process (i.e. step-by-step instructions to the workers on how to assemble this product)
- Any health and safety concerns that the production team need to bear in mind during production?

Once you have finished, please send the plan to the production team and myself. **Make sure it is error-free**, as we will not be able to make any changes once it goes to the production team. **I will check for errors when I'm back in the office and, if I find any, we will address them at our next review meeting.** Please send us your implementation plan in 8 minutes. I have set a timer to keep track of time and **I will monitor whether you followed my instructions in preparing the implementation plan.**

Best wishes,
Sam Holton

Head of R&D, Forrest Craft
43 Venture Way,
S10 1FL, Sheffield

Next

Appendix G. The evaluation form that the three assessors have used as part of the CAT.

New Product Evaluation Form

Participant ID Number:

Ideas:

Quantity: How many ideas in total has the participant came up with? *(Definition: The total number of ideas generated.)*					
	Not at all	**Very Little**	**Somewhat**	**To some extent**	**To a great extent**
Variety: The ideas the participant came up with, differ from each other. *(Definition: Ideas that are conceptually different)*	1	2	3	4	5

Feasibility: The chosen idea of the participant sounds feasible. (*Definition**:** A measure of feasibility of the chosen idea based on the resources provided)*	1	2	3	4	5
Novelty: The chosen idea of the participant sounds original. *(Definition: How novel the chosen idea is compared to what you know that already exists in the market.)*	1	2	3	4	5
Overall: Overall, considering all the proposed ideas, to what extent is this individual creative.	1	2	3	4	5

Implementation Plan:

	Not at all	Very little	Somewhat	To some extent	To a great extent
The implementation plan contains a detailed description of the 3 suggested sections (Resources, Production Process, Health & Safety).	1	2	3	4	5
The implementation plan provides information on the resources needed for the production of 1000 products.	1	2	3	4	5
The implementation plan provides a step-by-step guide on how to assemble the product.	1	2	3	4	5
The participant has explained any potential health and safety concerns.	1	2	3	4	5

The participant has written less than the 3 suggested sections.	1	2	3	4	5
The implementation plan contains mistakes such as grammar or wrong calculations.	1	2	3	4	5
The implementation plan includes suggestions that are flawed and cannot be implemented.	1	2	3	4	5
The implementation plan seems realistic.	1	2	3	4	5
The participant has completed all necessary sections of the implementation plan within the allocated time.	1	2	3	4	5

Overall, considering all aspects of the proposed plan, to what extent is this implementation plan of good quality?	1	2	3	4	5

Appendix H. Dictionary Version of the measures.

Measures	**Reference**	**Range**	**Reliability (Cronbach's Alpha)**	**No. of items**	**Items**
Opening Behaviours	Rosing et al., (2011)	1 (Strongly Disagree) – 5 (Strongly Agree)	*T1:* .92 *T2:* .95	7	1) My new manager allows me different ways of accomplishing the task. 2) My new manager provides me with opportunities to think and act independently. 3) My new manager allows room for new ideas. 4) My new manager encourages me to learn from my errors. 5) My new manager motivates me to take risks. 6) My new manager allows me to make errors. 7) My new manager encourages me to experiment with different ideas.
Closing Behaviours	Rosing et al., (2011)	1 (Strongly Disagree) – 5 (Strongly Agree)	*T1:* .89 *T2:* .87	7	1) My new manager wants me to stick to the plans. 2) My new manager establishes routines for working. 3) My new manager checks whether I stick to the rules.

					4) My new manager wants to monitor and control how I achieve a goal. 5) My new manager indicates that they may take corrective action. 6) My new manager pays attention to uniform task accomplishment. 7) My new manager does not allow any errors.
Idea Generation	Janssen (2000)	1 (Strongly Disagree) – 5 (Strongly Agree)	.75	3	1) In this study, I came up with new ideas for unfamiliar situations. 2) In this study, I looked for new methods or techniques that could work. 3) In this study, I generated original solutions to the problems.
Idea Implementation	Janssen (2000)	1 (Strongly Disagree) – 5 (Strongly Agree)	.71	3	1) In this study, I have transformed my innovative ideas into useful applications. 2) In this study, I believe I have introduced many innovative ideas. 3) In this study, I evaluated how useful my innovative ideas were.
Innovative Work Behaviours (IWB)	Janssen (2000)	1 (Strongly Disagree) – 5 (Strongly Agree)	.82	6	(All Idea Generation & Idea implementation Items)
Creativity (CAT)	-	1 (Strongly Disagree) – 5 (Strongly Agree)	.87	4	1) The ideas the participant came up with, differ from each other.

					2) The chosen idea of the participant sounds feasible. 3) The chosen idea of the participant sounds original. 4) Overall, considering all the proposed ideas, this is individual is creative.
Implementation (CAT)	-	1 (Strongly Disagree) – 5 (Strongly Agree)	.92	10	1) The implementation plan contains a detailed description of the 3 suggested sections (Resources, Production Process, Health & Safety). 2) The implementation plan provides information on the resources needed for the production of 1000 products. 3) The implementation plan provides a step-by-step guide on how to assemble the product. 4) The participant has explained any potential health and safety concerns. 5) The participant has written less than the 3 suggested sections. 6) The implementation plan contains mistakes such as grammar or wrong calculations. 7) The implementation plan includes suggestions that are flawed and cannot be implemented. 8) The implementation plan seems

					realistic. 9) The participant has completed all necessary sections of the implementation plan within the allocated time. 10) Overall, considering all aspects of the proposed plan, this implementation plan is of good quality.
Innovation (CAT)	-	1 (Strongly Disagree) – 5 (Strongly Agree)	.90	14	(All Creativity (CAT) and Implementation (CAT) Items)
Intrinsic motivation	Guay et al., (2000) (SIMS)	1 (Strongly Disagree) – 5 (Strongly Agree)	*T1:* .91 *T2:* .91	4	1) I have engaged with this task because I thought it was interesting. 2) I have engaged with this task because I thought it was pleasant. 3) I have engaged with this task because it was fun. 4) I have engaged with this task because I felt good doing it.
Extrinsic Motivation	Guay et al., (2000) (SIMS)	1 (Strongly Disagree) – 5 (Strongly Agree)	*T1:* .88, *T2:* .89	4	1) I have engaged with this task because I was supposed to do it. 2) I have engaged with this task because it was something I had to do. 3) I have engaged with this task because I did not have a choice. 4) I have engaged with this task because I felt that I had to do it.

Exploration	Mom et al., (2007)	1 (Strongly Disagree) – 7 (Strongly Agree)	.72	5	Today, in this study, to what extent did you engage in work-related activities that can be characterized as follows: 1) Searching for new possibilities with respect to products/services, or processes. 2) Evaluating diverse options with respect to products/services or processes. 3) Focusing on strong renewal of products/services or processes. 4) Activities requiring quite some adaptability of you. 5) Activities requiring you to learn new skills or knowledge.
Exploitation	Mom et al., (2007)	1 (Strongly Disagree) – 7 (Strongly Agree)	.70	6	Today, in this study, to what extent did you engage in work-related activities that can be characterized as follows: 1) Activities of which a lot of experience has been accumulated by yourself. 2) Activities which serve existing (internal) customers with existing products/services. 3) Activities of which it is clear to you how to conduct them.

					4) Activities primarily focused on achieving short-term goals. 5) Activities which you can properly conduct by using your present knowledge. 6) Activities which clearly fit into existing company policy.
Follower Ambidexterity	Mom et al., (2007)	1 (Strongly Disagree) – 7 (Strongly Agree)	.79	11	(All Exploration and Exploitation Items)
Positive Affect	Watson et al., (1988) (PANAS)	1 (Very slightly or not at all) – 5 (Extremely)	.90	10	1) Today I am feeling interested. 2) Today I am feeling excited. 3) Today I am feeling strong. 4) Today I am feeling enthusiastic. 5) Today I am feeling proud. 6) Today I am feeling alert. 7) Today I am feeling inspired. 8) Today I am feeling determined. 9) Today I am feeling active. 10) Today I am feeling attentive.
Negative Affect	Watson et al., (1988) (PANAS)	1 (Very slightly or not at all) – 5 (Extremely)	.89	10	1) Today I am feeling distressed. 2) Today I am feeling upset. 3) Today I am feeling guilty. 4) Today I am feeling scared. 5) Today I am feeling hostile. 6) Today I am feeling irritable. 7) Today I am feeling ashamed. 8) Today I am feeling nervous. 9) Today I am feeling afraid.

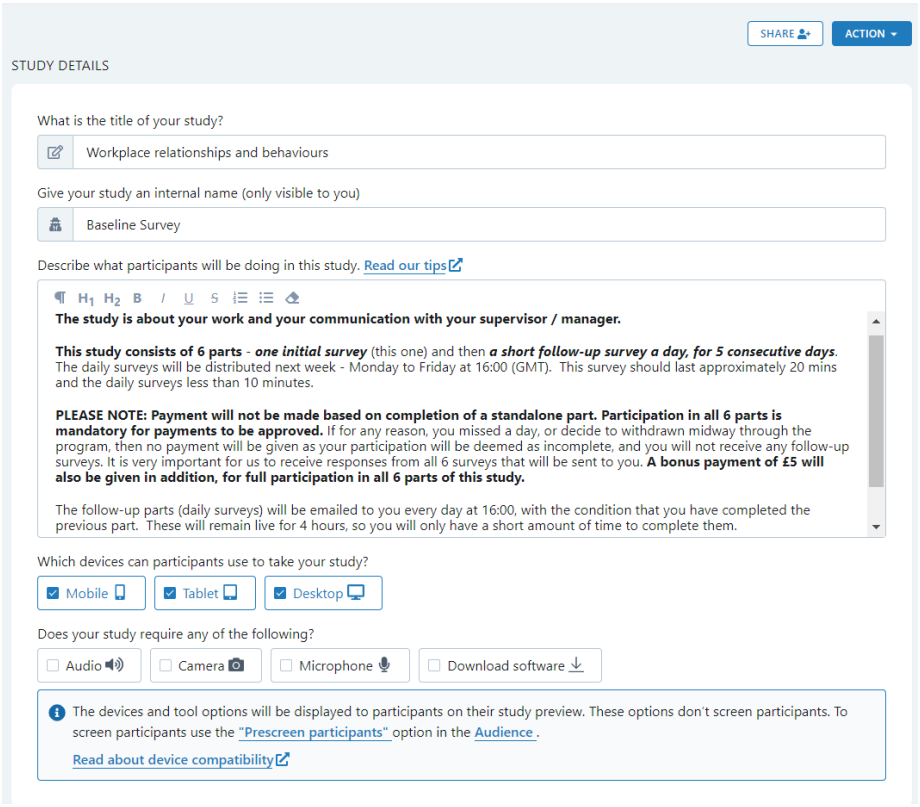
					10) Today I am feeling jittery.
Openness	John & Srivastava (1999) (BFI)	1 (Strongly Disagree) – 5 (Strongly Agree)	.80	10	I see myself as someone who: 1) Is original and comes up with new ideas. 2) Is curious about many different things. 3) Is ingenious and a deep thinker. 4) Has an active imagination. 5) Is inventive 6) Values artistic and aesthetic experiences. 7) Prefers work that is routine. (R) 8) Likes to reflect and play with ideas. 9) Has not many artistic interests. (R) 10) Is sophisticated in art, music or literature.
Creative Self-Efficacy	Tierney & Farmer (2002)	1 (Strongly Disagree) – 5 (Strongly Agree)	.91	4	1) I feel that I am good at generating novel ideas. 2) I have confidence in my ability to solve problems creatively. 3) I have an ability for further developing the ideas of others. 4) I am good at finding creative ways to solve problems.
Paradox Mindset	Miron-Spektor et al., (2018)	1 (Strongly Disagree) – 5 (Strongly Agree)	.87	9	1) When I consider conflicting perspectives, I gain a better understanding of an issue.

					2) I am comfortable dealing with conflicting demands at the same time. 3) Accepting contradictions is essential for my success. 4) Tension between ideas energizes me. 5) I enjoy it when I manage to pursue contradictory goals. 6) I often experience myself as simultaneously embracing conflicting demands. 7) I am comfortable working on tasks that contradict each other. 8) I often feel uplifted when I realize that two opposites can be true. 9) I feel energized when I manage to address contradictory issues.
Flow	Jackson & Eklund (2002) (DFS-2)	1 (Strongly Disagree) – 5 (Strongly Agree)	.69	9	1) I felt that I was competent enough to meet the high demands of the tasks 2) I performed automatically (without having to think). 3) I had a strong sense of what I wanted to do. 4) I had a good idea while I was performing, about how well I was doing. 5) I was completely focused on the tasks at hand.

					6) I had a feeling of total control over what I was doing. 7) I was not worried about what others may have been thinking of me. 8) The time passed seemed to be different from normal. 9) The experience today was extremely rewarding.

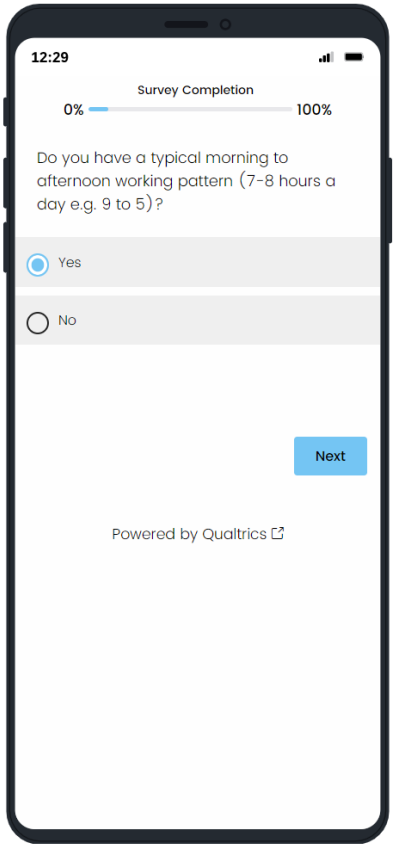
Chapter 4 Appendices

Appendix A. Screenshot of the setup for the study – description and invitation.

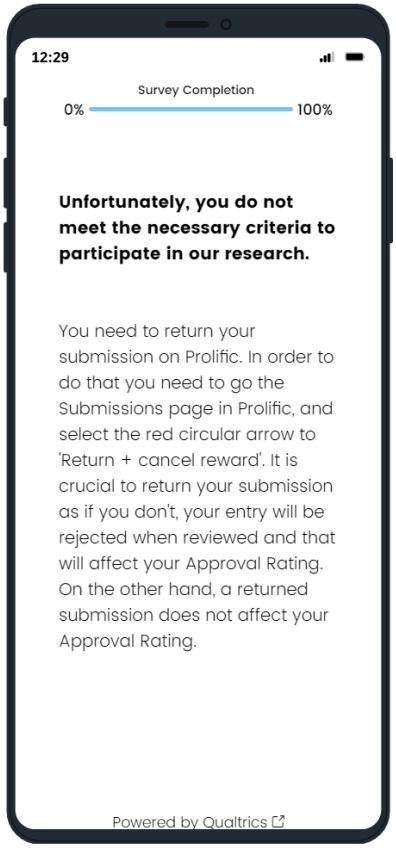


Appendix B. Phone preview of study – Asking participants for prolific ID.

Appendix C. Phone preview of study – Eligibility questions.



Appendix D. Phone preview of study – Not eligible to participate.



Appendix E. Participant Information Sheet.

Participant Information

Research Project Title: Workplace Behaviours and Relationships

Dear Participant,
As you meet all the necessary criteria for our research, please take a couple of minutes to read and understand the following important information about the study and your payment. Please feel free to ask any questions you have about our research by emailing cmavros1@sheffield.ac.uk
Thank you very much for your time.

1. Participating in the project

This study is about workplace behaviours. We aim to examine behaviours that occur in your work including those of your manager/supervisor as well as yours. As you fulfil the necessary criteria to be part of this research, we kindly ask you to read this page to understand what you will have to do as a participant.
You do not have to take part if you do not want to. Participation is voluntary. If you decide throughout the study that you would like to withdraw, then you can simply do so, no questions asked.

If you have any further questions, please do not hesitate to contact the researcher Christos Mavros (cmavros1@sheffield.ac.uk) or anyone from the supervision team:
Dr Kamal Birdi (k.birdi@sheffield.ac.uk)
Dr Anna Topakas (a.topakas@sheffield.ac.uk)

2. What do I have to do?

We only require a small amount of your time and you can do it from your phone, tablet, or PC/laptop. This study is divided into 6 Parts - one initial survey that you will complete today and then a short-follow-up survey every day for 5 days (Next week - Monday to Friday). To participate in this research you need to respond to ALL 6 surveys.

The first survey (PART 1) will require about 20 minutes of your time and will ask you questions about your personality, your work, and your background.

If you complete the first survey in full, then you will be enrolled to receive the daily surveys (PART 2-PART 6). As a participant, you will receive an email from Prolific every day with a link to the daily survey which you have to complete. The daily survey is a short questionnaire (less than 10 minutes) that you must complete at the end of each working day. The daily survey will be sent at 16:00 (UK time) and will remain live until 20:00 (UK time), so make sure you check your emails. This means that you will only have 3 hours to complete it before the link expires. If you fail to respond to a daily survey your participation in the study will be ended, as it will be deemed as incomplete.

This study is divided into 6 parts (in the form of surveys) which as participant you need to complete all of them. Please note that payments will be made per full participation in this study, not based on submission of a part. Each survey is one part of the study and not a study by itself. This means that your participation will be checked daily. If you do not respond to or miss a part, then you will be automatically withdrawn from the study, without receiving any payment, and you will not receive any follow up questionnaires. Payments will be made the next weekend, after reviewing that you have completed all 6 parts of the study. When you have completed all the parts of the study, all your submissions will be approved at once and you will receive the full amount for your participation in

all parts of the study. A bonus payment of £5 will also be given to everyone who fully participates in the study and responds honestly and reliably in all surveys.

The daily questionnaire will ask you questions about your interaction with your manager/supervisor on each day and about the activities you have engaged with. All of your daily responses will be matched through your Prolific ID, which you will have to provide at the beginning of each daily survey. Your Prolific ID should appear automatically in the box, however, keep it to hand just in case it does not.

The completion codes for Prolific will show up at the end of each survey which you have to copy and paste in Prolific after you are done with each survey.

We will not ask for any personal information such as names, phone numbers or home addresses. All the information that you provide will be treated with strict confidentiality and anonymity and you will not be identified in any reports or publications.

3. What is the legal basis for processing my personal data?

Please note we will NOT be collecting any personal data (such as names, emails, addresses or phone numbers) as part of this research, however, according to data protection legislation, we are required to inform you that the legal basis that we apply for processing your personal data is that "processing is necessary for the performance of a task carried out in the public interest" (Article 6(1)(e)). Further information may be found in the University's Privacy Notice https://www.sheffield.ac.uk/govern/data-protection/privacy/general.

4. Who is organising and funding the research?

The researcher and the extended research team who are based at the University of Sheffield are responsible for this research. It is funded by the Economic and Social Research Council of the UK (ESRC).

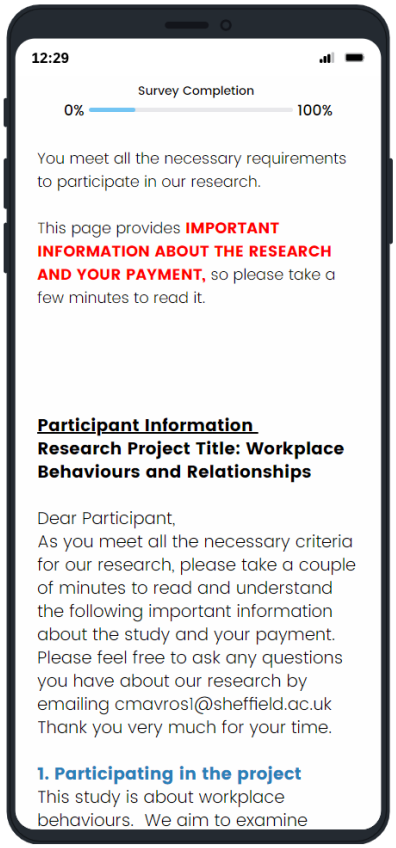
5. Who has ethically reviewed the project?

This project has been ethically approved through The University of Sheffield's Ethics Review Procedure. The University of Sheffield's Research Ethics Committee is responsible for monitoring the application and delivery of the University's Ethics Review Procedure across the University.

6. Contact for further information

If you have any further questions or issues before or during the project, please do not hesitate to get in touch! We are more than happy to explain this project in depth and provide help whenever necessary. Feel free to contact the principal researcher Christos Mavros at cmavros1@sheffield.ac.uk, or any of the project's supervisors (Dr Kamal Birdi: k.birdi@sheffield.ac.uk, Dr Anna Topakas: a.topakas@sheffield.ac.uk) located at Sheffield University Management School, Conduit Road Sheffield S10 1FL. In case of any further complaints that the research team is not able to handle, please contact Sophie May at s.may@sheffield.ac.uk.

Appendix F. Phone preview of study – Information Screen.



Appendix G. Participant consent form.

Consent to Participate in Research Project

Thank you for considering taking part in this research project. Please read the following statements and confirm that you understand them, and if you agree, provide your consent to participate in the project by indicating so at the end of the page.

Taking Part in the Project

o I have read and understood the project through the information I have read in the previous page.

o I have been given the opportunity to ask more questions about the project.

o I agree to take part in this project. I understand that taking part in this project will include completing daily surveys (6 in total) for a period of 6 working days.

o I understand that my taking part is voluntary and that I can withdraw from the study at any time. I do not have to give any reasons for why I no longer want to take part.

o I understand that I will be paid the full amount for my participation only after all 6 surveys have been submitted, so long as these are submitted within their allocated time window and I have completed them reliably.

o I understand that I will be paid the full amount for all 6 surveys as soon as all 6 surveys have been submitted.

How my information will be used during and after the project

o I understand that no personal data (e.g. names, email address, phone numbers) will be collected during this research project.

o I understand and agree that authorised researchers will have access to this data only if they agree to preserve the confidentiality of the information as requested in this form.

o I understand and agree that authorised researchers may use my data in publications, reports, web pages and other research outputs, only if they agree to preserve the confidentiality of the information as requested in this form.

o I give permission for the anonymised questionnaire responses that I provide to be deposited in the University of Sheffield and UK Data Archive so they can be used for future research and learning.

So that the information you provide can be used legally by the researchers:

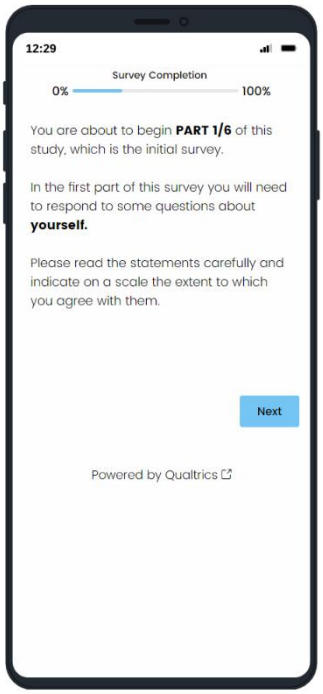
o I agree to assign the copyright I hold in any materials generated as part of this project to the University of Sheffield.

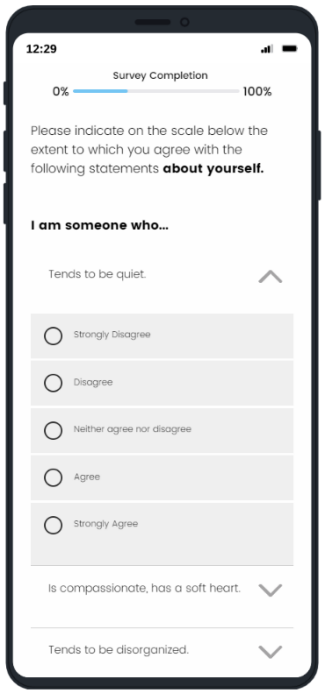
For further questions, please contact the principal researcher Christos Mavros (cmavros1@sheffield.ac.uk).

Having read the above terms:

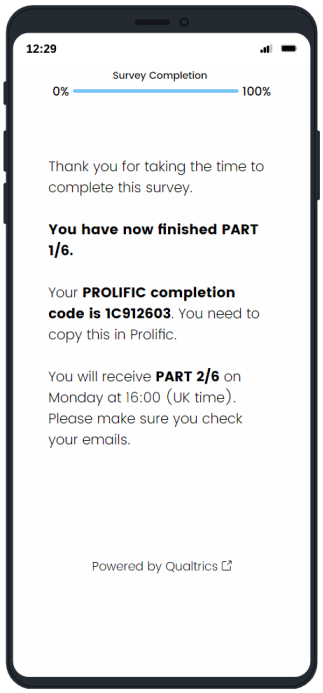
- I Agree to take part in this study.
- I Do Not Agree to take part in this study.

Appendix H. Phone preview of study – Baseline Survey.

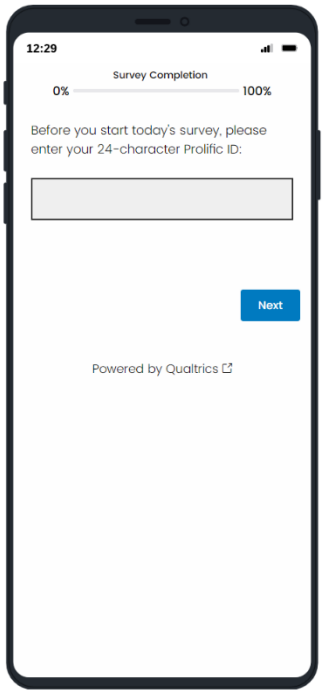


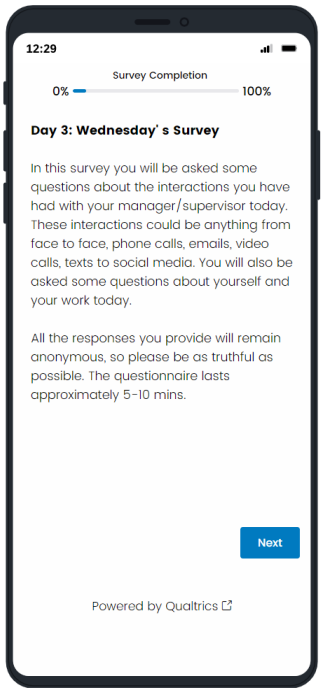


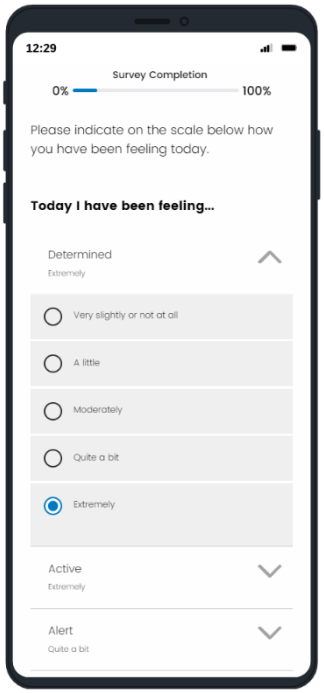
Appendix I. Phone preview of study – Baseline Survey end screen.

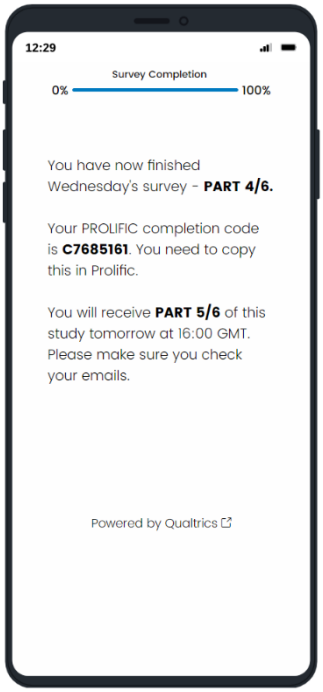


Appendix J. Phone preview of study – Daily survey.









Appendix K. Dictionary Version of the measures.

Measure	**Reference**	**Range**	**Reliability (Cronbach's Alpha)**	**No. of items**	**Items**
Personality	Soto & John (2017) (BFI-2-S)	1 (Strongly Disagree) – 5 (Strongly Agree)		30	I am someone who: 1) Tends to be quiet. (R) 2) Is dominant, acts as a leader.
Extraversion			.71	6	3) Is full of energy.
Agreeableness			.79	6	4) Is outgoing, sociable.
Conscientiousness			.71	6	5) Prefers to have others take charge. (R)
Negative			.89	6	6) Is less active than other people. (R)
Emotionality			.78	6	7) Is compassionate, has a soft heart.
Open Mindedness					8) Is sometimes rude to others. (R) 9) Assumes the best about people. 10) Can be cold and uncaring. (R) 11) Is respectful, treats others with respect. 12) Tends to find fault with others. (R) 13) Tends to be disorganized. (R) 14) Has difficulty getting started on tasks. (R) 15) Is reliable, can always be counted on. 16) Keeps things neat and tidy. 17) Is persistent, works until the task is finished. 18) Can be somewhat careless. (R) 19) Worries a lot. 20) Tends to feel depressed, blue. 21) Is emotionally stable, not easily upset. (R)

					22) Is relaxed, handles stress well. (R) 23) Feels secure, comfortable with self. (R) 24) Is temperamental, gets emotional easy. 25) Is fascinated by art, music, or literature. 26) Has a little interest in abstract ideas. (R) 27) Is original, comes up with new ideas. 28) Has a few artistic interests. (R) 29) Is complex, a deep thinker. 30) Has little creativity. (R)
Paradox mindset	Miron-Spektor et al., (2018)	1 (Strongly Disagree) – 7 (Strongly Agree)	.88	9	1) I am comfortable dealing with conflicting demands at the same time. 2) When I consider conflicting perspectives, I gain a better understanding of an issue. 3) Accepting contradictions is essential for my success. 4) Tension between ideas energise me. 5) I enjoy it when I manage to pursue contradictory goals. 6) I often experience myself as simultaneously embracing conflicting demands. 7) I am comfortable working on tasks that contradict each other. 8) I feel uplifted when I realize that two opposites can be true. 9) I feel energized when I manage to address contradictory issues.

Trust in supervisor	Robinson & Rousseau (1994)	1 (Strongly Disagree) – 5 (Strongly Agree)	.89	7	1) My manager/ supervisor is open and upfront with me. 2) I believe my manager/ supervisor has high integrity. 3) In general, I believe my manager's/ supervisor's motives and intentions are good. 4) My manager/ supervisor is not always honest and truthful. 5) I don't think my manager/ supervisor treats me fairly. 6) I can expect my manager/ supervisor to treat me in a consistent and predictable fashion. 7) I am not sure I fully trust my manager/ supervisor.
Feeling trusted by supervisor	Mayer & Gavin (2005) Baer et al., (2015)	1 (Strongly Disagree) – 5 (Strongly Agree)	.89	10	1) My manager/ supervisor doesn't feel the need to "keep an eye" on me. 2) My manager/ supervisor lets me have significant influence over how I do my job. 3) My manager/ supervisor is comfortable relying on me for something that is critical to them, even if they can't monitor my actions. 4) If someone questions my motives, my manager/ supervisor gives me the benefit of the doubt. 5) If I ask my manager/ supervisor for a favour, they don't ask a lot of questions.

					6) My manager/ supervisor informs me about mistakes he/she has made on the job, even if those mistakes could damage their reputation. 7) My manager/ supervisor shares their opinion about sensitive issues with me, even if their opinion is unpopular. 8) My manager/ supervisor lets me have an impact on issues that are important to them. 9) If I ask why a problem occurred, my manager/ supervisor speaks freely even if they partly to blame. 10) My manager/ supervisor doesn't have a problem increasing their vulnerability to me.
Leader-Member Exchange	Graen & Uhl-Bien (1995)	1 -5 (Options vary for each question)	.89	7	1) Do you know where you stand with your manager/supervisor, and do you usually know how satisfied your manager/supervisor is with what you do? 2) How well does your manager/supervisor understand your job problems and needs? 3) How well does your manager/supervisor recognize your potential? 4) Regardless of how much formal authority he/she has built into his/her position, what are the chances that your manager/supervisor would use his/her power to help you solve problems in your work? 5) Again, regardless of the amount of formal authority your manager/supervisor has, what

					are the chances that he/she would "bail you out," at his/her expense? 6) I have enough confidence in my manager/supervisor that I would defend and justify his/her decision if he/she were not present to do so? 7) How would you characterize your working relationship with your manager/supervisor?
Innovative Work Behaviours Idea Generation Idea Implementation	Janssen (2000)	1 (Strongly Disagree) – 7 (Strongly Agree)	 B: .87 D: .84-.92 B: .90 D: .91-.94	6 3 3	In general, over the past 3 months (baseline survey): Today (daily survey): 1) I came up with new ideas for difficult issues. 2) I have searched out new working methods, techniques, or instruments. 3) I have generated original solutions for problems. 4) I have transformed innovative ideas into useful applications. 5) I have introduced innovative ideas into the work environment in a systematic way. 6) I have evaluated the utility of innovative ideas.
Ambidextrous Leadership	Rosing et al. (2011) Zacher & Wilden (2014)	1 (Strongly Disagree) – 5 (Strongly Agree)		6	In our communication today, my manager/supervisor:

Opening Behaviours Closing Behaviours			.78-.80 .48-.75	3 3	1) Provided me with opportunities to think and act independently. 2) Encouraged me to experiment with different ideas. 3) Allowed room for new ideas. 4) Monitored and controlled how I achieved a goal/objective 5) Was checking whether I am sticking to the rules. 6) Paid attention to consistency in approach to task completion.
Follower Ambidexterity	Mom et al., (2007)	1 (Strongly Disagree) – 7 (Strongly Agree)		6	Today at work, to what extent did you engage in work-related activities that can be characterized as follows:
Exploration Exploitation			.70-.77 .83-.91	3 3	1) Searching for new possibilities with respect to products, services, or processes. 2) Evaluating diverse options with respect to products, services, or processes. 3) Activities requiring quite some adaptability of you. 4) Activities of which a lot of experience has been accumulated by yourself 5) Activities of which it is clear to you how to conduct them. 6) Activities which you can properly conduct by using your present knowledge.

Affect Positive Negative	Watson, Clark & Tellegen (1988) (PANAS)	1 (Very slightly or not at all) – 5 (Extremely)	 .88-.91 .78-.86	10 5 5	Today I have been feeling: 1) Determined 2) Active 3) Inspired 4) Attentive 5) Alert 6) Nervous 7) Upset 8) Ashamed 9) Hostile 10) Afraid
Motivation Intrinsic motivation Extrinsic Motivation	Guay, Ballerand & Blanchard (2000) (SIMS)	1 (Corresponds not at all) – 7 (Corresponds exactly)	 .87-.93 .83-.92	8 4 4	I have engaged with my work tasks today, because: 1) I think they were interesting. 2) I think that they were pleasant. 3) I think that they were fun. 4) I felt good when I was working on them. 5) It is something I had to do. 6) I felt that I had to do them. 7) I was supposed to do them. 8) I did not have a choice.

Note.

For daily measures, Cronbach's Alpha is shown as a range (Monday – Friday). For baseline measures, Cronbach's Alpha is shown as a single value. IWB was measured in both baseline survey and daily survey.

Appendix L. Correlation matrix (with control variables)

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Opening Behaviours	-													
2. Closing Behaviours	.015	-												
3. Idea Generation	.521**	.012	-											
4. Idea Implementation	.448**	.135**	.788**	-										
5. Exploration	.403**	.199**	.581**	.625**	-									
6. Exploitation	.167**	-.051	.077	.062	.134**	-								
7. Intrinsic Motivation	.460**	.024	.412**	.364**	.395**	.228	-							
8. Extrinsic Motivation	-.194**	.149*	-.220**	-.234**	-.123**	.207**	-.149**	-						
9. LMX	.359**	-.212**	.125**	.085*	.069	.077	.265**	.004	-					
10. Trust	.327**	-.159**	.080	.072	.033	.100*	.278**	.010	.774**	-				
11. Feeling Trusted	.309**	-.309**	.198**	.187**	.118**	.058	.206**	-.109**	.771**	.674**	-			
12. Extraversion	.292**	-.011	.403**	.382**	.355**	.012	.362**	-.223**	.171**	.060	.189**	-		
13. Open-Mindedness	.040	-.089	.130**	.167**	.140**	.165**	.112**	-.061	.084*	.054	.110**	.172**	-	
14. Positive Affect	.358	.108*	.353**	.296**	.342**	.362**	.549**	-.005	.160**	.127**	.116**	.409**	.103*	-

Note. * $p < .05$, ** $p < .01$, Variables 1 – 8 & 14 (daily) Variables 9 – 13 (baseline).

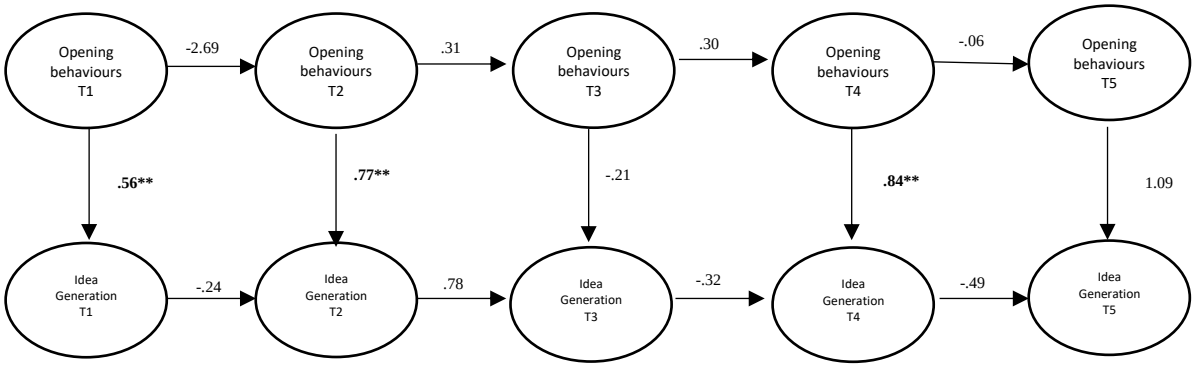
Appendix M. Cross-lagged Models for opening behaviours (with paths).

All path coefficients indicate standardised regressions.

* p < .05, ** p< .001

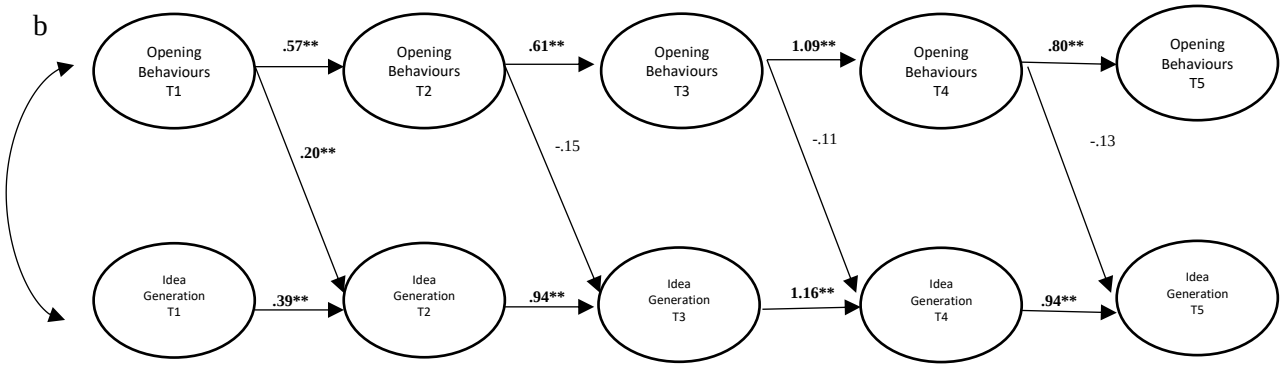
Model 1: 0-day lag

a



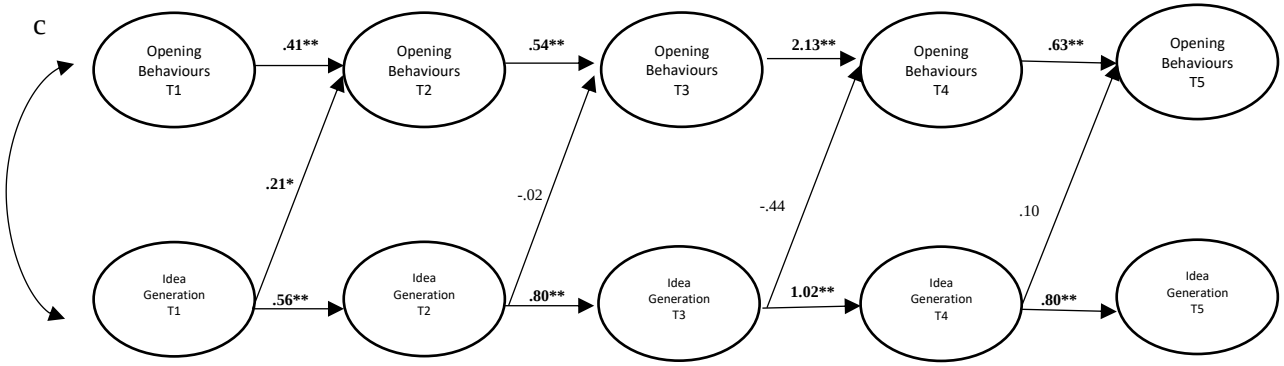
Model 2: 1-day lag

b



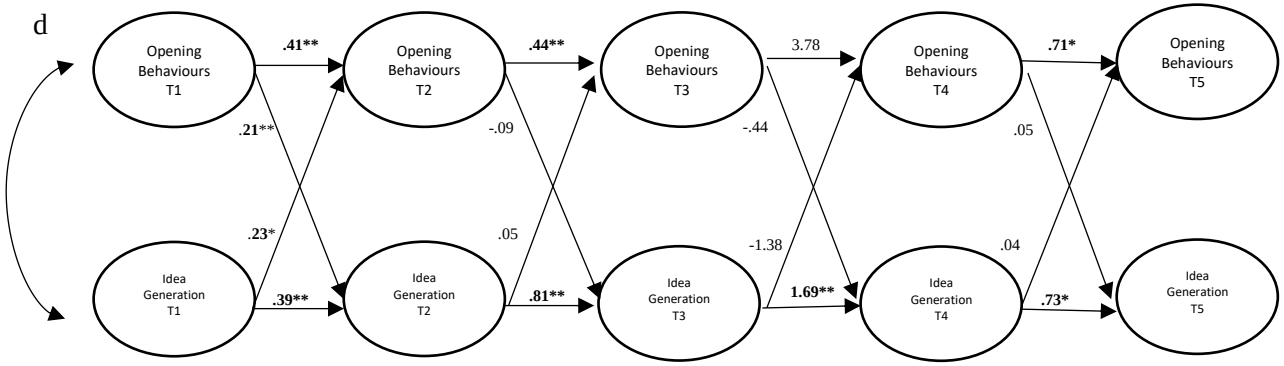
Model 2: 1-day lag

c



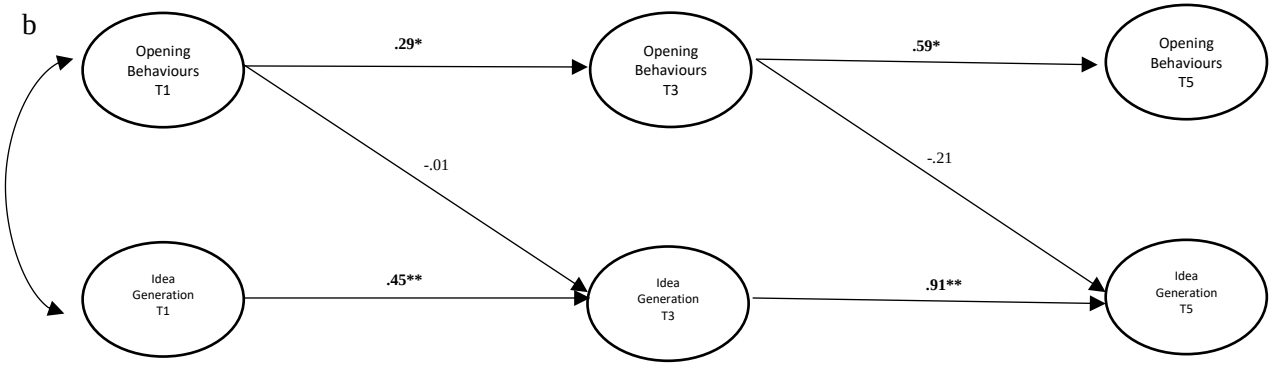
Model 2: 1-day lag

d



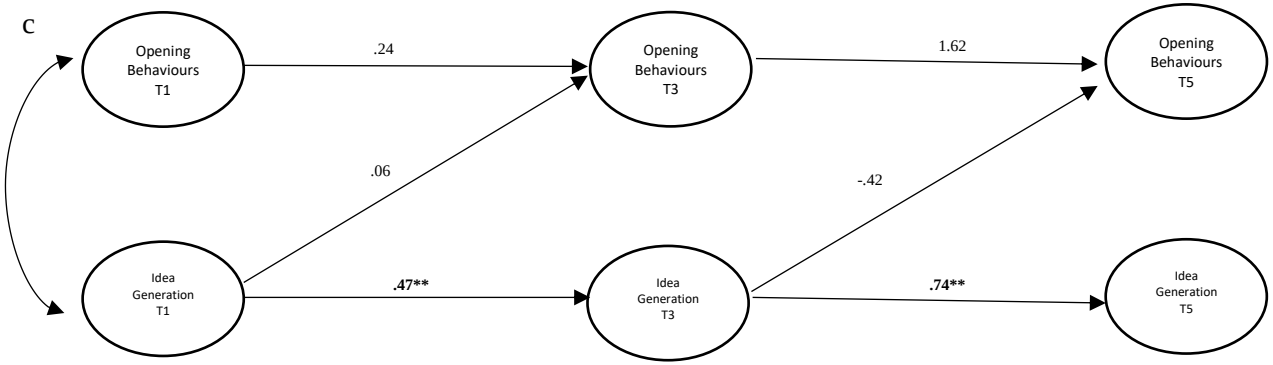
Model 3: 2-day lag

b



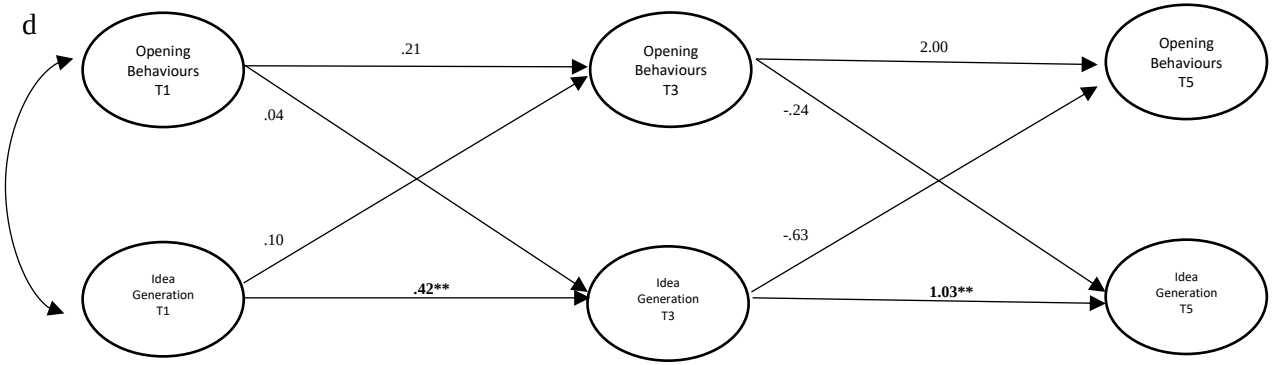
Model 3: 2-day lag

c



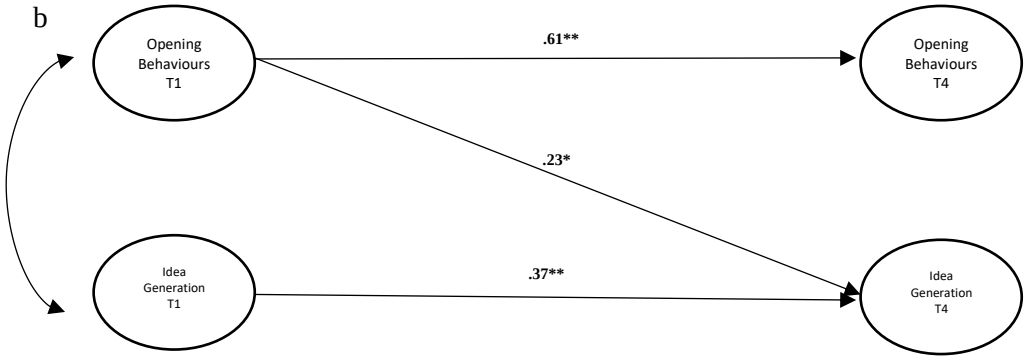
Model 3: 2-day lag

d



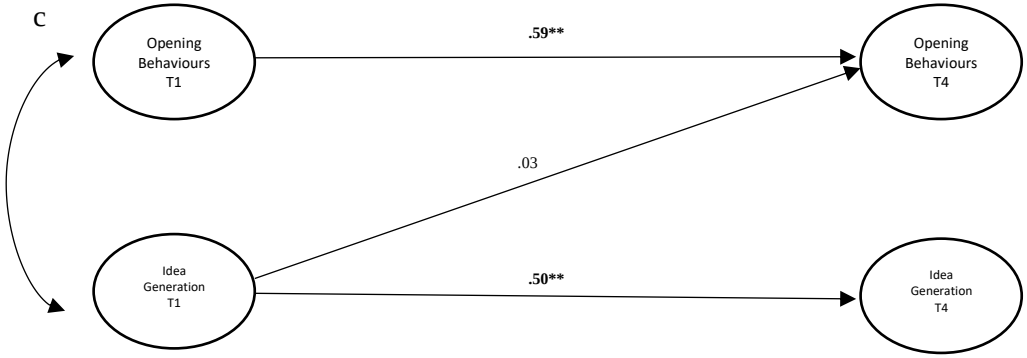
Model 4: 3-day lag

b



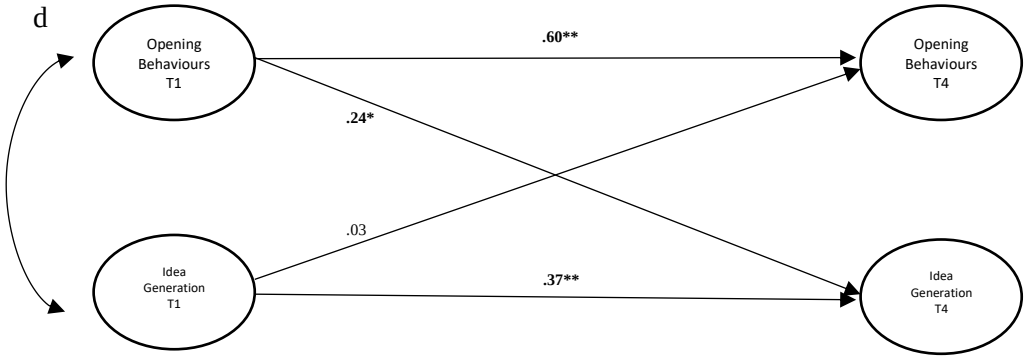
Model 4: 3-day lag

c



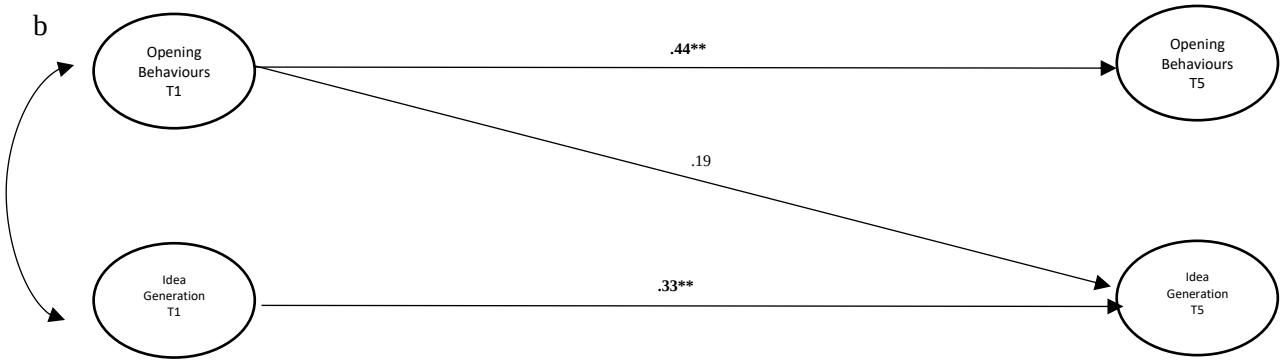
Model 4: 3-day lag

d



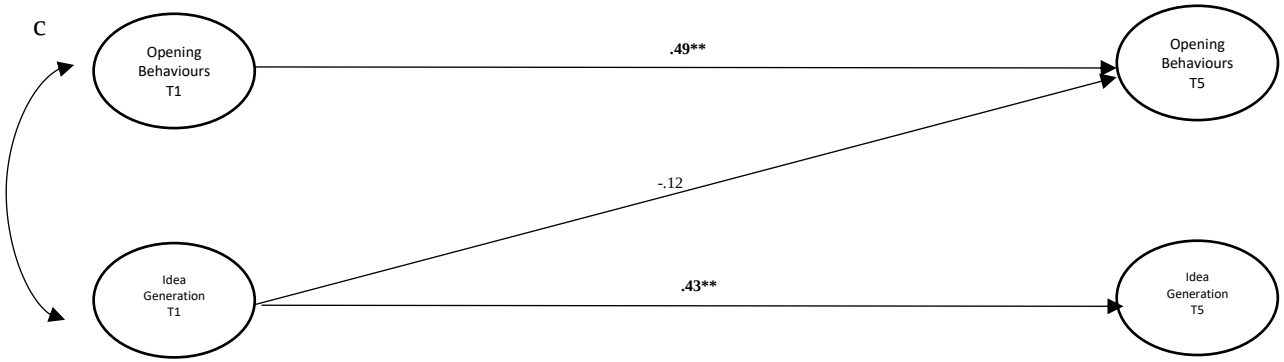
Model 5: 4-day lag

b



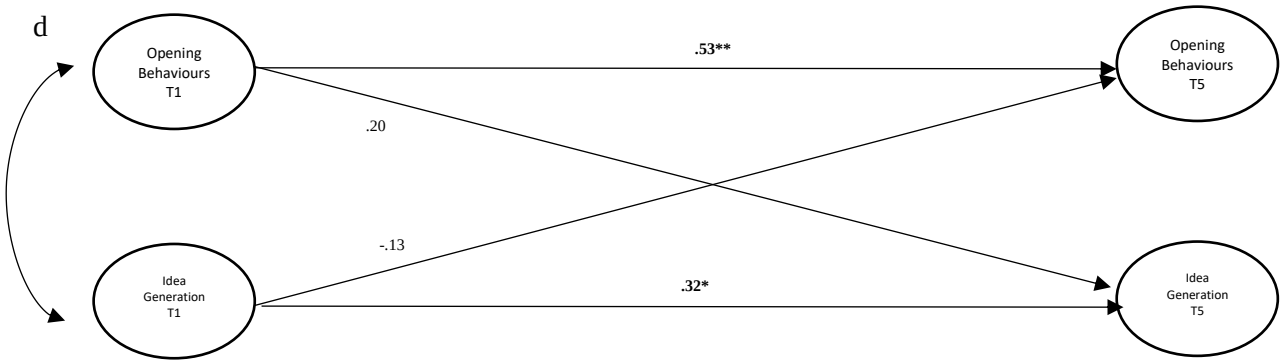
Model 5: 4-day lag

c



Model 5: 4-day lag

d



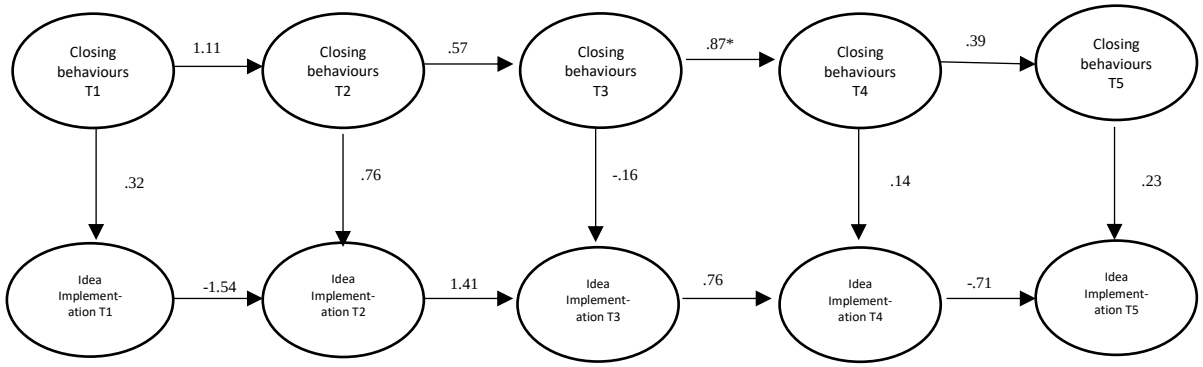
Appendix N. Cross-lagged Models for closing behaviours (with paths).

All path coefficients indicate standardised regressions.

* p < .05, ** p< .001

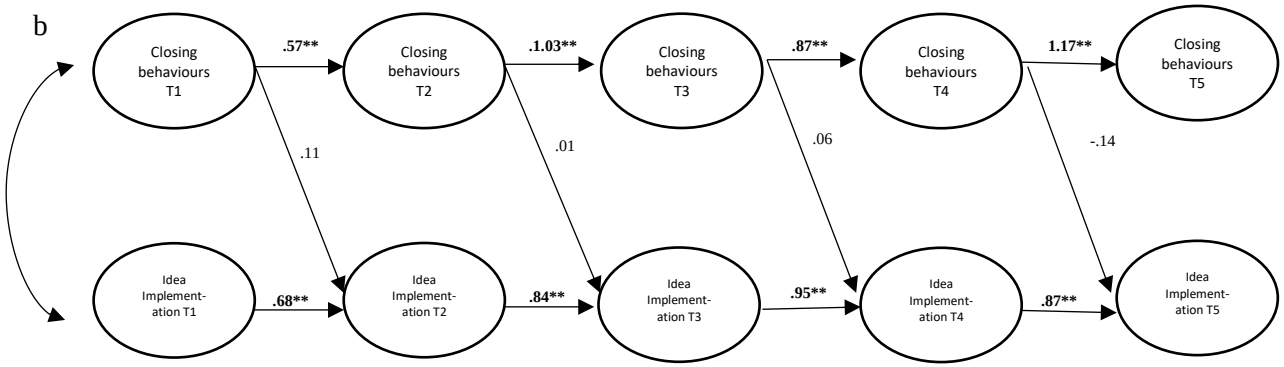
Model 1: 0-day lag

a



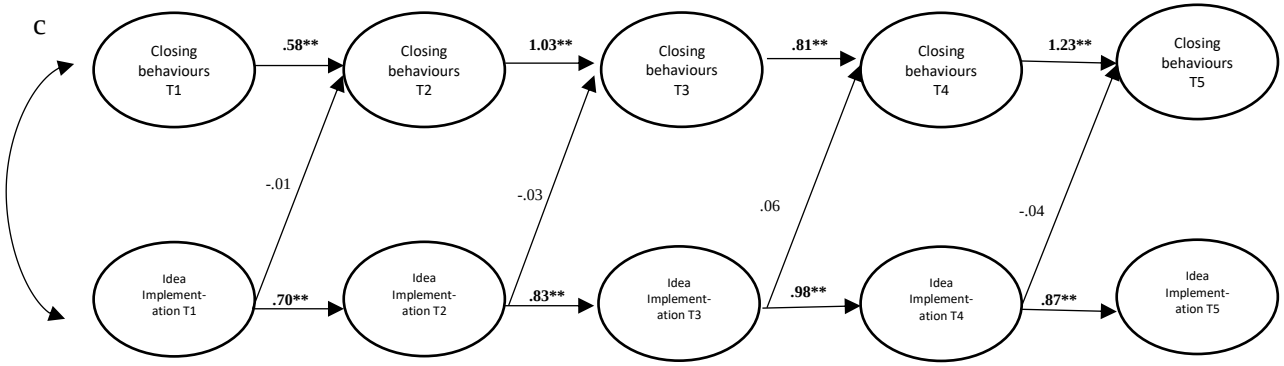
Model 2: 1-day lag

b



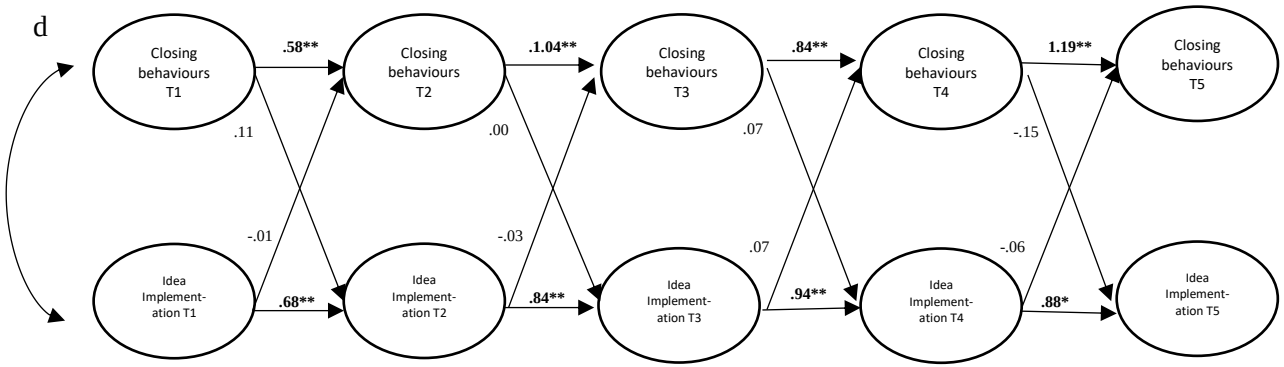
Model 2: 1-day lag

c



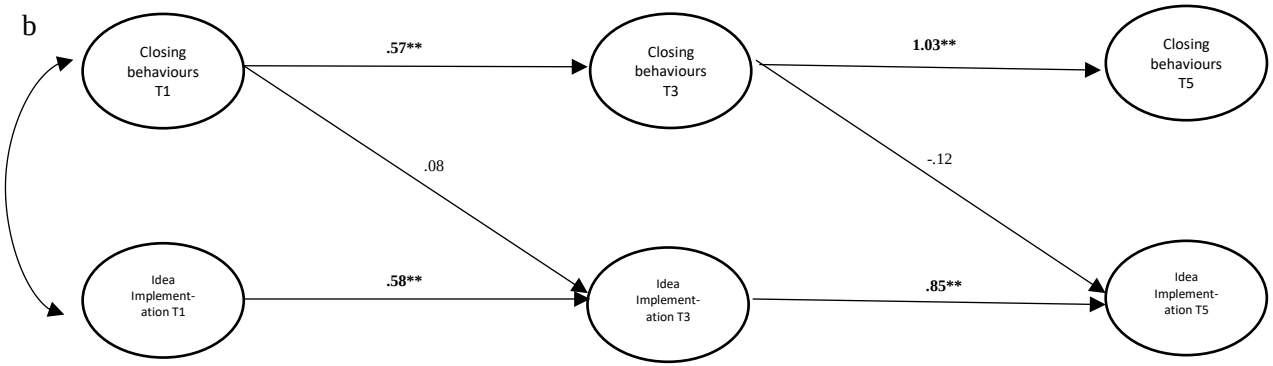
Model 2: 1-day lag

d



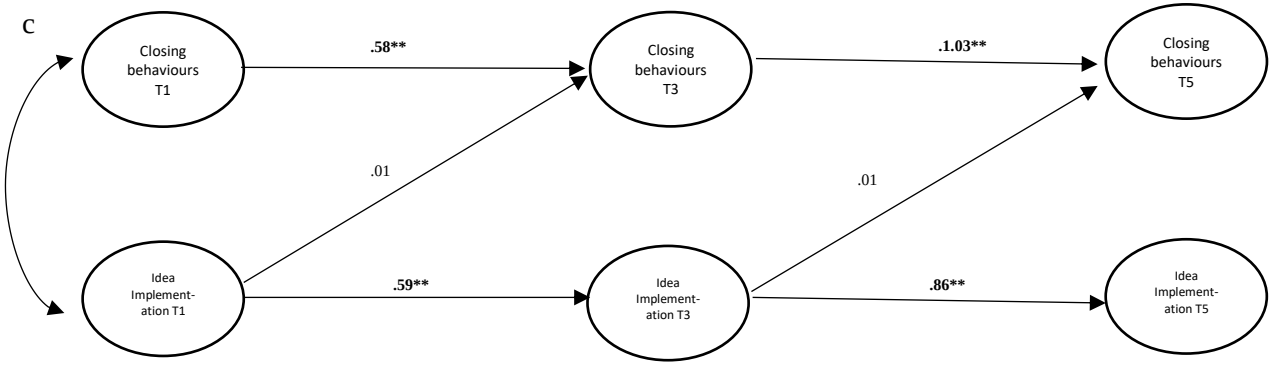
Model 3: 2-day lag

b



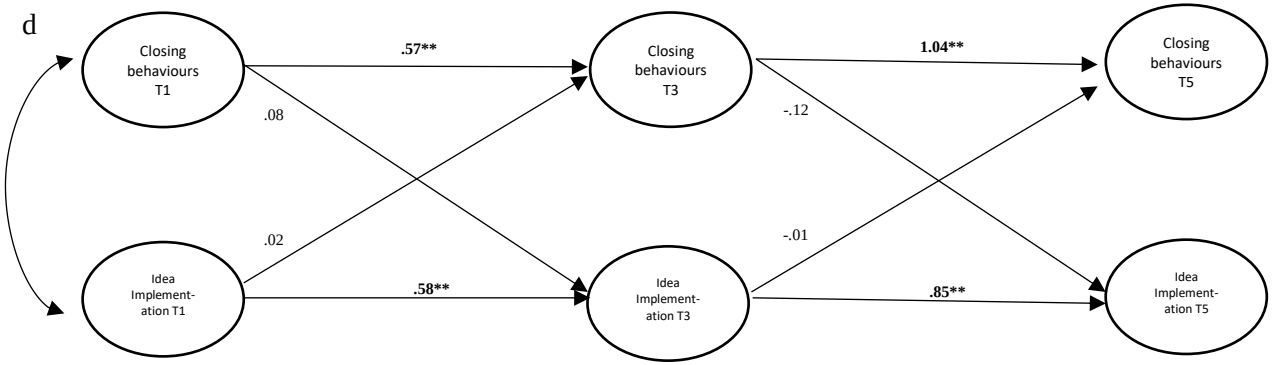
Model 3: 2-day lag

c



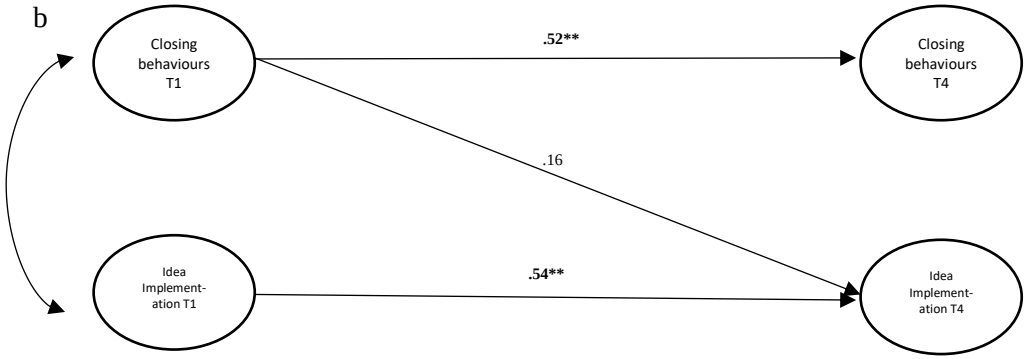
Model 3: 2-day lag

d



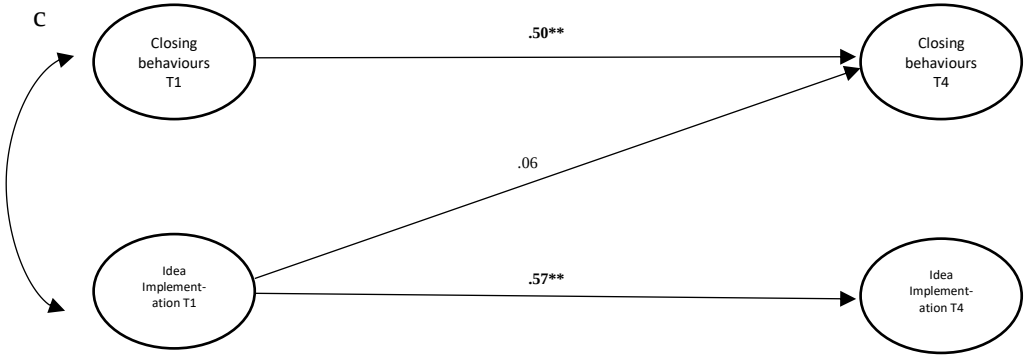
Model 4: 3-day lag

b



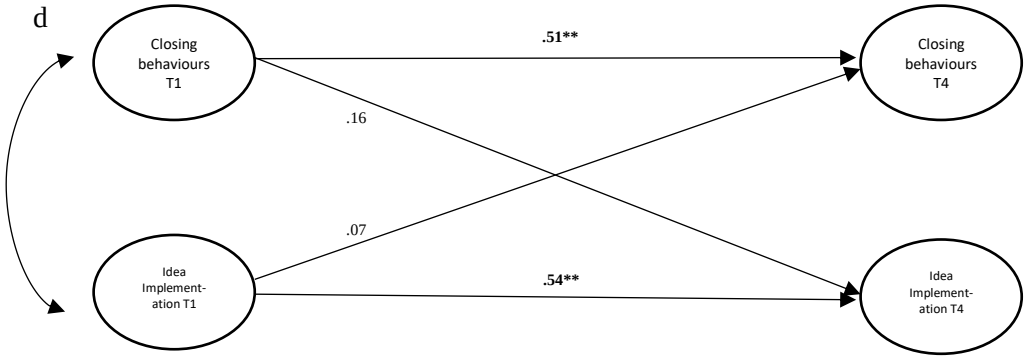
Model 4: 3-day lag

c



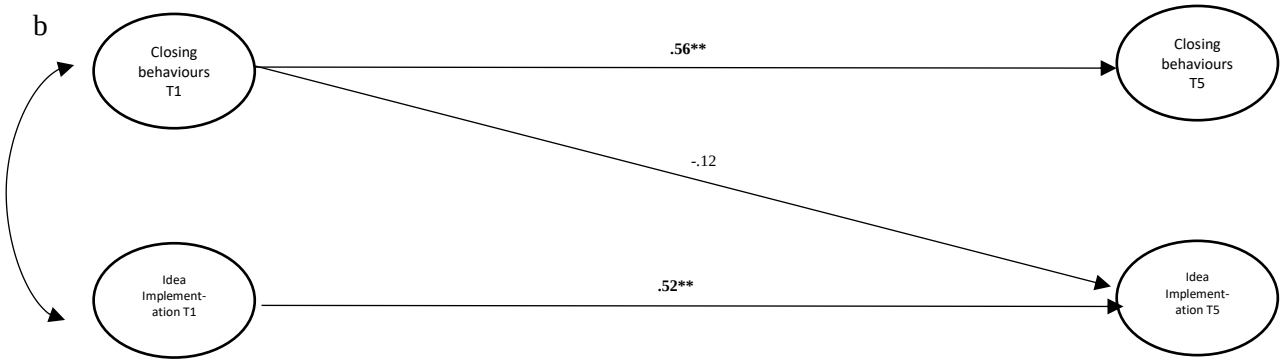
Model 4: 3-day lag

d



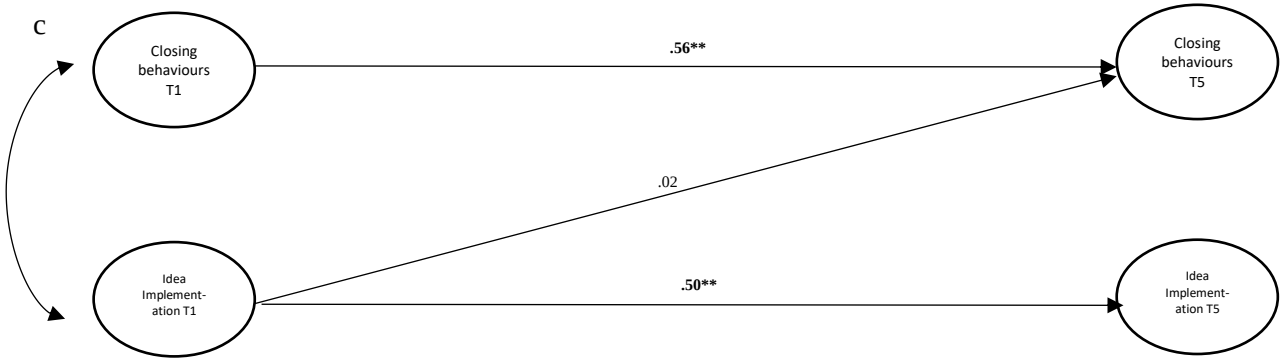
Model 5: 4-day lag

b



Model 5: 4-day lag

c



Model 5: 4-day lag

d