

**Promoting travel behaviour change of attendees at sport venues - an extended
transtheoretical approach**

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The candidate confirms that the work submitted is his/her own and that appropriate credit has been given where reference has been made to the work of others.

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*This thesis is dedicated to my wife and my children. Thank you, Sarah, for your endless love and faith in me. Without your support over the past 6 years I would not have come so far. Thank you Isaac and Elsie for keeping me grounded and for helping me to realise the **real truth** in all this.*

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Abstract

Limited research has been applied to testing intervention effects on travel behaviour of attendees at major sport events. As travel to sport events accounts for a large percentage of carbon emissions there is a need to alter travel behaviour. The underlying premise is that it may be possible to influence intentions and promote change using marketing interventions mapped to the Transtheoretical Model of Change (TTM). A quasi experimental design was adopted using a case study approach in the execution of the experiment. 4 studies were employed in this research. Study 1 articulated how the TTM was incorporated into the design of the social marketing interventions. Participants (N = 14) helped to identify the most influential marketing interventions. Using an adapted questionnaire based on the Theory of Planned Behaviour (TPB), it was concluded that sports fans were not intending to change and their use of the car was supported by peers. In determining the relationship between TPB scores and level of influence of each marketing intervention, the indication was that Subjective Norm (SN) had a mediating impact. In study 2, participants (n =192) were categorised into Stages of Change (SoC) using an adapted TTM questionnaire. The remaining TTM constructs were also assessed. In study 3, a post-intervention questionnaire was distributed to a Control (N=22) and Experimental group (N = 20). The collective results revealed that the interventions did not work. Participants did not recognise travel by car as a problem behaviour despite an awareness of the environmental and health implications. Contextual determinants dominated decisions. It was challenging to determine the theorised relationship between SoC and other TTM constructs as the majority of participants were categorised as Precontemplators or Contemplators. Findings indicated difficulty in aligning Process of Change (PoC) items with the SoC characteristics in this context. Yet the relationships between SoC and decisional balance and self-efficacy suggested alignment to the prescribed theory. In study 4 interviewees evaluated the interventions and gave their reaction. In spite of a sense of engagement, there was no change in travel behaviour. The car was seen as the solution to a problem – getting to the match on time. The findings formed the basis of recommendations which furthered the application of the TTM and its applicability within a specific leisure context.

Publications

The following publications and conference papers are prepared during the course of this research.

Musgrave, J., Jopson, A. & Jamson, S (In Review) "Profiling the travel behaviour of sport fans against constructs of the Transtheoretical Model of Change". Submitted to Transport Policy October 2015 (In review).

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Abbreviations

CO₂	Carbon Dioxide
DB	Decisional Balance
DfT	Department for Transport
EIA	Environmental Impact Assessment
NAM	Norm Activation Model
NGO	Non-Government Organisations
PBC	Perceived Behavioural Control
PoC	Process of Change
SCT	Social Cognitive Theory
SE	Self Efficacy
SN	Subjective Norm
SoC	Stages of Change
SCQ	Situational Confidence Questionnaire
TPB	Theory of Planned Behaviour
TRA	Theory of Reasoned Action
TTM	Transtheoretical Model of Change
UK	United Kingdom
UNWTO	United Nations World Travel Organisation
US	United States of America

Section I
Introduction

Chapter One Introduction

1.1 Introduction to the thesis

This first chapter provides a justification for the study and outlines key trends in modal growth and the externalities arising from road traffic. An introduction to the use of traffic psychology and change behaviour as a tool to reduce road traffic emissions is established. Trends in sport fan tourism and travel is also explored in this chapter. These outline arguments provide an underlying context to the study and help articulate the need for the research and the research objectives.

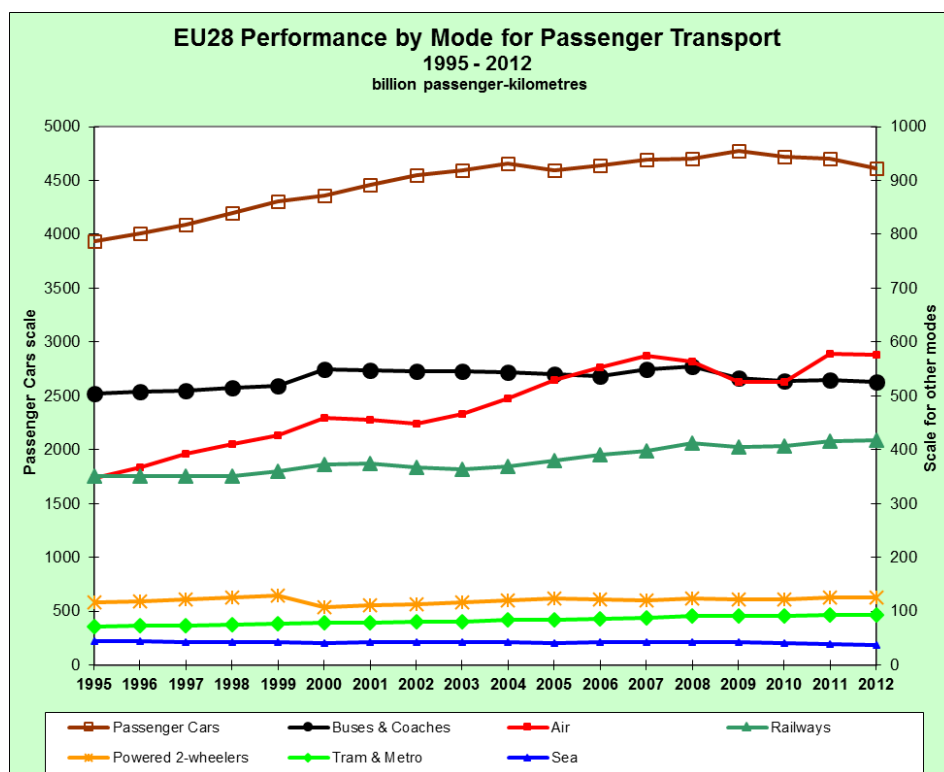
1.1.1 The need for sustainable transport solutions

Atmospheric emissions arising from road traffic continue to increase and contribute to climate change (Gardner and Abraham, 2008; May, 2013; Borgstede et al. 2013). Private car use proliferates as populations prosper, consumption increases and developing countries increase their wealth, their consumer habits and their status. Within Organization for Economic Cooperation and Development (OECD) member countries, transport accounts for 30% of total CO₂ emissions¹ (OECD, 2010). Of this, two-thirds are attributable to road use with, according to May (2013), significant increases expected over the coming decade. Indeed the European Commission annual transport figures (2014) reported that in 2012 total passenger transport activities by means of motorised transport (including intra-EU air, sea transport) resulted in 6391 billion km – averaging out to 12,652 km per person. Of this, passenger cars accounted for 72.2 % of the total mileage (see figure 1).

According to the Department of Energy and Climate Change (2015), transport accounted for 25% of all UK CO₂ emissions – similar to 1990 levels - with the most

¹ The OECD (2010) report that CO₂ is one of the main pollutants and gases from human activities. Often referred to as Greenhouse gas (GHG) emissions – CO₂ may lead to temperature changes and other consequences for the earth's climate.

significant emissions from passenger cars. In 2014 the Department for Transport (DFT) (2015a) suggested that private car use in the UK increased by 1.9%, to 244.5 billion vehicle miles – the largest annual increase since 2002. Across all motor vehicles there was a 2.4% annual increase (2013 to 2014) representing the highest annual increase since 1996. The National Travel Survey (DFT, 2015b) supports this trend. Trips by car accounted for 64% of all trips in 2014, 3% of the population took the train and 7% took the bus. Walking continued to deteriorate to 22% as a modal choice whilst car ownership increased to 76% of the UK population.



Source: Eurostat (2014)

Figure 1 EU28 Performance by Mode for Passenger Transport

Clearly it can be seen that achieving sustainable travel policies and reducing the levels of private car use requires interventions of mammoth scale and efficacy. And it also requires politicians to fully support such interventions no matter how difficult the interventions are (Cairns and Okamura, 2003; Gossling and Cohen, 2014). Nilsson and Kuller (2000) and May (2013) suggest that these interventions must include the development of public transport infrastructure; changes in social attitude and

behaviour towards different modes of transport; transitional cultural acceptance; investment in research and development and new technology to induce an increase in the use of public transport. Yet Gossling and Cohen (2014) suggest that there is conflict between that political rhetoric and action. They suggest that due to economic and development factors, curbing mobility across the EU is not a well-received political option. Consequently there is a debate between climate change policies and EU transport strategies and how to deal with carbon emission targets.

In order to manage the increase in private car use, Ioncică, Petrescu, and Ioncică (2012) suggest that applying change behaviour techniques to travel can help increase the adoption of sustainable travel. These approaches are commonly referred to as 'Smarter Choice' programmes which try to establish change in individual travel behaviour (Rose and Ampt, 2001) and aim to reduce the negative impact of private travel. Changing individual behaviour continues to be an essential tool used in the achievement of pro-environmental travel policies (Ratchford and Parker, 2011). Although 'hard' policies, such as infrastructure change, taxation, new technology and an integrated services/information model (Grotenhuis, Eiegmans and Rietvel, 2007) can play a major role in reducing the use of private car journeys, Cairns (2004) and Sloman, Cairns, Newson, Anable, Pridmore and Goodwin (2010) argue that it is 'smarter choices' which will dominate a short and long term shift in modal choice. Bamberg (2007) and Grotenhuis et al. (2007) go on to suggest that it is the accessibility of information, the methods of communication, the various format of information and the behavioural motivation to use infrastructural change which should be at the forefront of any integrated car reduction strategy. In support Ratchford and Parker's (2011) study of smarter travel techniques highlights the positive response to soft strategies whilst Whitmarsh and Kohler (2010) suggest the vast majority of the public are more supportive of policies that encourage behaviour change rather than increased taxes or tolls (hard policies).

According to Roby (2010) sustainable travel policy first emerged in local authorities in 1990s, with the government's White paper, "A New Deal for Transport: Better for everyone" (1998). Whilst the white paper set out overall transport policy there was

discussion on the design and implementation of travel plans, and on changing behaviour of the individual. Although Ratchford and Parker (2010) state there has been much less use of behaviour change techniques in transport schemes in the UK compared to 'hard' policy introductions, Sloman et al. (2010) conclude that smarter choice programmes offer value for money and a high degree of success in reducing travel by car (Cairns, 2004, DfT, 2011). Indeed the DfT White Paper 'Making Sustainable Local Transport Happen' (2011) refers to 'nudge' interventions to encourage and enable more sustainable modal choices. What is more, the trend away from centralised government-led initiatives to regional and individual travel change events, signifies a strategic shift towards the responsibility of the individual and provides further support for localised smarter choice programmes to be adopted.

Yet there is continuing debate over the evidence that underpins the justification of smarter choice programmes. In favour of smarter choice programmes Brog and John in Philp and Taylor (2010) argue that in encouraging minor alterations to the travel decision making process, 40% of trips could be completed without a car. They go on to suggest that these types of lifestyle and behaviour changes in private car use can contribute to a reduction of CO₂ emissions. Coupled with low infrastructure impacts and relatively lower costs, softer and smarter travel behaviour change strategies offer an attractive proposition to regional, national and international policy makers (Stern 2007; Chapman 2007; Henderson and Thornicroft, 2013). However the House of Lords Science and Technology Select Committee (2011) investigated the use of behaviour change interventions to achieve policy goals and concluded there is a lack of applied research on changing behaviour at a population level. The committee's recommendation mirrors that of Moser and Bamberg (2008) whereby an improvement in the evaluation of interventions will help build a body of research that could strengthen effective policies targeting population-level behaviour change. Indeed in spite of a proliferation of research over the last decade, Carreno, Gauche and Welsch (2011) state that there is no consensual theoretical framework that explains behavioural change process in travel choice and its effectiveness. This is similar to Gardner and Abraham (2008) and Santos, Behrendt and Teytelboym (2010) who conclude that psychologically based driving reduction programmes offer effective low cost approaches to travel behaviour change. Nonetheless, the effect of these

approaches need clarification. Yet there are broad areas of agreement. For example Meijkamp (1998) Rose and Marfurt (2007) and Bamberg and Schmidt (1998) insists that smarter choice programmes must relate to the psychological processes of change before any interventions will facilitate change in travel behaviour.

Whilst the merits of change behaviour studies are purported, questions remain over the constructs behind the interventions. In a recent review of behaviour change interventions Michie, van Stralen, and West (2011) conclude that features of the behavioural target - the target population and context - should underpin intervention design. Unfortunately their 'behaviour wheel' is more a classification of interventions rather than an exploration of how and why interventions are designed. Glanz and Bishop (2010) also found in their review of health interventions that a number of studies have not rationalised the constructs behind the interventions. Similarly, within travel behaviour studies more effort is spent on running the range of events and reporting on participant levels rather than an evaluation of the mechanisms behind the interventions (Grayson and Helman, 2011). Kenyon and Lyon (2003) support the idea that within travel behaviour studies a detailed consideration of what the intervention is (an ontological analysis) and an examination of the cultural and social forces that have led to the construction of the elements of the intervention may well encourage a model shift in participants. Thus, there remains a need to clarify the underpinning theory behind intervention design. Moreover, if this clarification is applied to travel behaviour change, it needs to reflect the psychological processes of change (as noted earlier by Meijkamp, 1998, Rose and Marfurt, 2007, and Bamberg and Schmidt, 1998) in order to facilitate the intended change.

1.1.2 Traffic psychology and change behaviour

The need to understand how and why travel behaviour changes derives from an environmental, social and political (to a lesser degree) will (Borgstede, et al. 2012, and De Groot and Schuitema, 2012). Whilst Taniguchi and Fujii (2015) suggest there is limited understanding of how smarter travel polices and interventions actually modify travel behaviour, evidence suggests otherwise. Highman, Cohen, Peeters and Gossling (2013) summarise various conceptual models that focus on psychological factors that encourage voluntary travel behaviour changes. These factors include

linear relationships between information setting and an individual's values and norms. These values and norms are negotiated by specific attitudes and habits that may lead to a change in mobility patterns. Empirical evidence also points to a more heuristic and contextual viewpoint. Schwanen and Lucas (2011) suggest social and cultural settings derived from institutional, political and legislative patterns can shape early learning and influence personal intentions. This is also supported by Gifford (2011) who suggest that action and inactions in travel is created by various social and political bias. Alongside these factors Murtagh, Gatersleben and Uzzell (2012a) reveal a desire for autonomy, status, self-identity and privacy as mediating factors in travel.

Anable (2005) suggests that the ability to reach a consensus in changing travel behaviour is diminished due to the diverse situational and psychological factors that affect travel choice within different segments of the population. Yet evidence from Haustein and Hunecke (2013) and indeed Anable (2005) suggests a priori segmentation can support targeted interventions. Nevertheless, Thornton, Evans, Bunt, Simon, King and Webster (2011) and Davies (2012) agree that a lack of consensus is due, in part, to the range of factors that affect choices in travel mode behaviour including cognitive beliefs, feelings of responsibility, perceived effectiveness of changes and personal norms, social orientation and aspirations and trust in the type of information received. Studies have also shown that environmental attitudes or ecological norms are positively related to people's willingness to support a temporary reduction in car use (Golob and Hensher, 1998; Rose and Marfurt, 2007). Murtagh, Gatersleben and Uzzell (2012a) further this by accepting the melting pot of factors that can and do influence travel mode. Indeed these instrumental, affective and symbolic factors are also found within studies by Spears, Houston & Boarnet (2013). They state that individuals adapt their travel as a direct result of their perceptions, attitudes and preferences.

This exhaustive combination of attitude-behavioural factors stems from social and environmental psychology such as the Theory of Planned Behaviour (TPB); its forerunner the Theory of Reasoned Action (TRA); the Norm Activation Model (NAM); Social Cognitive Theory (SCT) and the Transtheoretical Model (TTM). These have been frequently used in transport behaviour change research (refer to chapter 3) and are seen to capture the factors articulated earlier (Spears et al. 2013). For example

Bamberg and Schmit (2003), Gardner and Abraham (2008) and Anable, Lane and Kelay (2006) report that attitude, norms and perceived behavioural control influence the travel decisional making process.

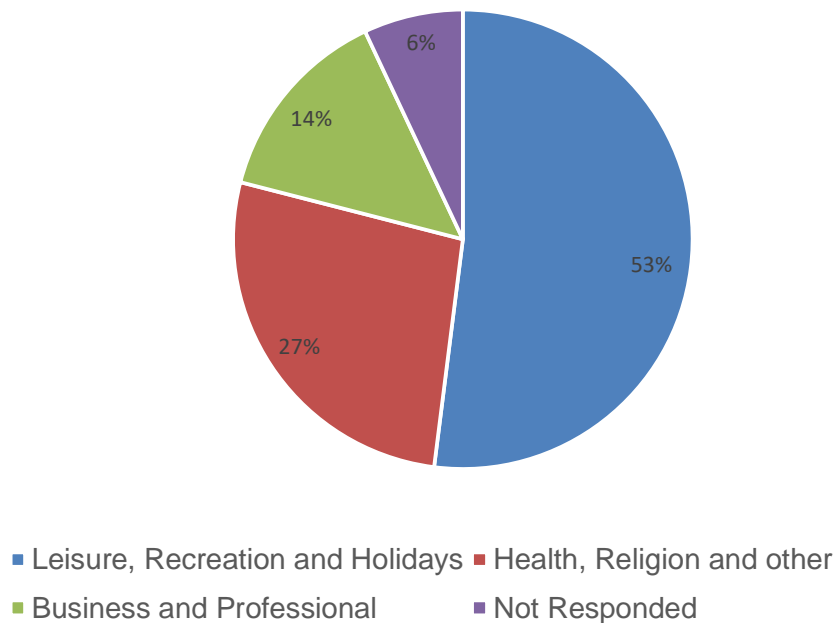
Predominantly this thesis will use the TTM to assess change behaviour within sport fans. The thesis will also use the Theory of Planned Behaviour (TPB) to explore intention but to a lesser degree. Whilst there are merits and limitations of both (refer to chapter 3), the TTM and TPB have been used in a variety of contexts (Migneault, Adam and Read, 2005) from pro-environmental behaviour change to adopting healthy lifestyles. According to Prochaska and Norcross (2007) the TTM has been described as an integrative and comprehensive model as it draws from a spectrum of psychotherapy and behaviour change (Boswell, Castonguay and Wasserman, 2010). Moreover, the comprehensiveness of the TTM is attributed to a variety of methods used to assist change; it's a model of intentional behaviour change which can address individual and group change and professional intervention; it can cover the whole range of change – stages of Change (SoC), process of change (PoC), self-efficacy and decisional balance. Finally, and more important to this study, the TTM recognises that the individual or group of participants may not acknowledge their 'problem' behaviour and to change the behaviour participants do not need to be in a "therapy" programme. Therefore, theoretically, exploring the travel behaviour of sport fans against the principles of the TTM is a reasonable approach.

With this in mind it is important to assess the scale of the problem and the contribution sport fans makes to traffic related atmospheric emissions. Indeed investigating the travel behaviour of sport fans and determining antecedent factors that may influence the travel behaviour of sport fans, may contribute to the realisation of sustainable tourism. As Wheeller (2012: 39) in Highman et al. (2013:949) states "All tourism involves transport, all travel involves tourism, no form of transport is sustainable".

1.1.3 Transport, sport fans and sport events

Ettema and Schwanen (2012) suggest that travel for social and leisure pastimes has increased across Europe. For example, in the Netherlands travel related to leisure

accounted for 44% of total distance travelled in 2010. In 2006 this was 39% (Jorritsma and Korteweg, 2009). Moreover, Holden and Linnerud (2011) reported that one third of all trips in Europe is now dedicated to leisure. This is furthered by Gossling (2010), in Holden and Linnerrud, who suggests that over the next 20 years further leisure journeys may take place due to an ageing European population. These trends are also supported by Valek et al. (2014). According to their study 75.3 million adult Americans travelled for or because of sport. The United Nations World Tourism Organization (UNWTO) also report that 55% of Germans participated in sport related tourism in 2014 and that 52% of Dutch and 23% of French were also sport active while travelling. Figure 2 reinforces the value of leisure travel (53%) by outlining the share of inbound tourism purposes across the globe.



Source: World Tourism Organisation (2015)

Figure 2 Inbound Tourism by Purpose of Visit 2014

In contrast Visit Britain (2014) report that in 2014 39% of inbound visits to the UK were for leisure, recreation and holidays. Despite a significant difference between UK tourism and the global outlook in this category– leisure, recreation and holidays in the UK still accounts for over 13.5 million visitors. And it can be argued that major and mega sport events are conceptualised as tourism based attractions or sub-sets of

tourism (Hall, 2012; Bowdin, Allen, O'Toole, Harris and McDonnell, 2009 and Getz, 2008).

Whilst the proposition of sustainable travel by sport fans would help achieve political and social strategies outlined in the Carbon Plan (Department for Energy and Climate Change (2011), the impetus to reduce travel by the UK Government has many barriers. For instance, according to the DfT (2011) economic growth is one of the UK's biggest challenges and the role of transport is integral in getting people to work, to services and to "leisure activities in order to enhance people's spending power" (DfT, 2011:16). In 2003 the direct economic activity attributed to sport was around £13.5 billion and created 421,000 jobs; approximately 1.8% of all employment in England (Rydin, Seymour and Lorimer, 2011). Indeed, despite the uncertainties of the UK economy the country's appetite for live sport in the UK is rising (PwC 2011). Mintel (2014) suggest that spectator sport is to grow by 31% by 2017. Patently any increase in demand and supply of live sport events creates an increase in visits to venues, resulting in an increase in personal travel and subsequent carbon emissions (Bowdin et al., 2009 and Raj and Musgrave, 2009). Travel by participants and supporters are a major element of sports' environmental impact. The largest share of carbon emissions attributable to an event is typically from transportation (Bottril et al. 2009; Harvey, 2009). Collins, Flynn, Munday, and Roberts (2007) found that visitor travel was the largest environmental impact in staging a major sport event (FA Cup, 2004), citing 73,000 attending the FA cup at the Millennium Stadium, resulting in an estimated 43 million kilometres travelled, with 47% of that distance covered by private car. More recently Collins, Munday and Roberts (2012) assessed the Tour De France, Grand Depart, 2007. Results found that visitor travel accounted for 75% of the total ecological footprint of the event. And by attending the event, visitor's travel footprint was 2.6 times greater than their ecological footprint at home for the same period.

Given these trends and externalities from leisure travel Farber and Paez (2009), Tarigan and Kitamura (2009) and Bhat and Lockwood (2004) suggest that there is a need for further research. They argue that there are differing factors that influence leisure and social travel such as travelling in the company of others, sociodemographic

factors that influence frequency of travel and modal choice and seasonal effects. However, the lack of studies related to travel in a leisure setting provides limited insight and a poorly constructed understanding of why certain travel choices are made and how travel behaviour in a leisure setting can be influenced. This lack of understanding may generate and encourage broad assumptions and stimulate the development of inappropriate transport policies at regional and national levels. Thus, further insights into how and why individuals travel the way they do for leisure pastimes will assist in a more accurate understanding of a specific population.

As a resolution, Rydin, Seymour and Lorimer (2011) insist that the development of travel interventions have a role to play. Yet they claim that any successful travel intervention has to be fully integrated and aware of the logistics surrounding the venue in order to simplify public transport routes and offer realistic alternatives to a venue during match times. Moreover, Grotenhuis et al. (2007) argues that any travel interventions should also be cognisant of targeted behaviour and their predicted responses to targeted interventions. Evidently understanding sport fans and their psychological makeup is crucial prior to any kind of intervention programme and reflects earlier comments made by Santos et al. (2010).

1.2 Need for research

Given the projected increase in leisure travel over the coming decades, there is a need to focus on the travel behaviour of the leisure market rather than the traditional urban commute. Moreover, the increase in sport events and increase in travel to sport events by private car provides further underlying reasons for the need to change travel behaviour in this leisure sector. However, research into travel by sport fans has been dominated by motivation to travel and watch sport rather than an exploration of the act of travelling to a sport event or venue (Wann, Bilyeu, Brennan, Osborn and Gambouras, 1999; Yu, 2010; Funk and Bruun, 2007). This apparent lack of understanding in the decision making process of the individual sport fan and their travel behaviour brings into focus the work of Faraq and Lyons (2012). They note that understanding the psychological characteristics of the sport fan and applying these

elements to theoretical constructs is essential if alternatives to the car are to be used in leisure trips. Indeed existing work is dominated by studies in work or academic institutions such as Redding, Mundorf, Kobayashi, Brick, Horiuchi, Paiva and Prochaska (2015) and Bamberg and Schmidt (2003). Such dominance narrows the sample frame and can add bias to the results where employees may have a vested interest in travel behaviour change or where students/academics have a greater access to, or understanding of, the underlying reasons for travel behaviour change. A sport event based context will also move knowledge forward in sport event management and transport management. In support, Henderson (2011) notes the adoption of sustainable strategies has the potential to strengthen the brand and longevity of events. Paterson and Ward (2011) go further and propose that the requirements of an employer, an individual, regulatory bodies and consumers will be better met if industry practitioners adopt an ethos of sustainable management.

Whilst the application of TTM constructs has proven to be effective in examining the promotion of alternatives to the car (Gatersleben and Appleton, 2007; Rose and Marfurt, 2006; Heath and Gifford, 2002 and Kenyon and Lyons, 2003), Aveyard, Massey, Parsons, Manaseki and Griffin (2009) indicate that studies using the TTM have often been incomplete in their analysis and methods are found wanting. Hutchison et al. (2009) agrees and found TTM studies are often based on a single item of the TTM. This criticism is furthered by Kim and Bradley (2009). In their meta-analysis of the TTM they suggests that many studies fall short of testing the relationship with all the TTM constructs including self-efficacy, decisional balance, PoC and SoC in a longitudinal manner. Evidently there is a precedent of using TTM constructs in the design and implementation of travel behaviour change programs. Nonetheless, the efficacy of TTM based approaches, the analysis and the application of the entire model against participant responses cannot be determined with frequent ease. It is only when they are combined with all four constructs of the TTM that any explanatory power can be assumed and commentary made as the utility of the model within the context of travel behaviour change in sport fans.

1.3 Research objectives

These discussions have underlined the contextual and theoretical need for the thesis. Notwithstanding, in order to respond to the key points made within the introduction the aim of this thesis is to:

“Promote travel behaviour change of attendees at sport venues by extending and evaluating the Transtheoretical Model of Change”.

In order to achieve this aim and answer the unresolved issues outlined in the introduction certain objectives have to be met:

1. The first objective is to apply TTM constructs to social marketing interventions targeted at sport fans. The purpose of this objective is to design a range of marketing interventions, mapped to the constructs of the TTM in order for these to be ranked against measures of intent.
2. By adapting measures from the TPB that explore attitudinal and behavioural items, the purpose of the second objective is to establish the level of individual intent against theoretically designed marketing interventions. This will assist the study in two ways. First, it will establish the cognitions that underpin change in travel behaviour intention of sport fans and second, it will ascertain the most salient marketing interventions. The utility of the marketing interventions can then be empirically tested in further studies.
3. The third objective is to ascertain the extent of travel behaviour change in individuals using the TTM. By adapting measures that are used to test SoC and the relationship with the PoC, self-efficacy and decisional balance, this objective will be able to examine how effective the model is when applied to a sports fan context. It will also assist in determining which aspects of the TTM may facilitate travel behaviour change within sport fans.
4. Finally, the fourth objective is to explore the cognitive and behavioural effects of the theoretically developed marketing intervention. By using a more

qualitative approach to data collection the purpose of this objective is to discuss cognitive and behavioural pathways implied by TTM and TPB theory.

1.4 An overview of the thesis

Chapter one has provided an underlying context to the study and outlined the key, unresolved issues found within travel behaviour change and the travel behaviour of sport fans. Chapter two presents a more specific review of the underlying context of sport events and reviews the psychology of sport fans and their travel behaviour. Chapter three critically reviews the psychological models used in transport behaviour change and provides a justification for the predominant use of the TTM in this study. This chapter also critically discusses the use of social marketing interventions as a tool for social change. Chapter four set out a justification for the research approach, strategy and data analysis. Chapter five defines the hypotheses of the study and outlines the stages to the research. Chapter six presents study one – identifies the procedures, presents the results and provides a comprehensive summary of the intervention design and testing. This approach is repeated in chapter seven which presents study two– focusing on the results of the TTM survey prior to interventions. Chapter eight presents study three – focusing upon the results of the TTM survey post intervention. Chapter nine reports on study four - a more qualitative approach – that explores findings of the post intervention interviews. These feed into and supports chapter ten which presents conclusions focused towards the achievement of the hypotheses and recommendations for further study.

Chapter Two

Sport fans and their travel behaviour

2.1 Introduction

This chapter aims to provide a underlying context to the thesis and focus on the characteristics of sport events, the growth of sport events and an exploration of the psychological makeup of the sport fan. This is furthered by a critical review of research into sport fans and their travel behaviour. The understanding gained will support the development of social marketing interventions and assist in the achievement of the objectives of this thesis.

2.2 Sport events and the growth of the sport events industry

According to Hall (2012), Bowdin et al. (2009) and Getz (2008) major and mega sport events are conceptualised as tourism based attractions or sub-sets of tourism. Getz (2008) refers to sport events as 'big business' and recent studies by Kaplanidou et al. (2012) and Fourie and Santana-Gallego (2011) seem to support this view by reporting sport tourism as the fastest growing sector in the global travel and tourism industry. Mintel (2013) corroborate this commentary. According to their most recent report on global tourism trends, spending on leisure travel and tourism is expected to rise in every region of the world over the next five years (Mintel, 2013). Table 1 outlines these growth trends and indicates that 48% of the growth will come from Asia and Latin America travel with Europe spending the most on leisure travel by 2017.

Table 1 - Outlook for growth in spending* on leisure travel & tourism by major world region, 2011-17

Region	2011	2012	2013	2014	2015	2016	2017	2011-17 % change
	US\$bn**	US\$bn**	US\$bn**	US\$bn**	US\$bn**	US\$bn**	US\$bn**	
Caribbean	32.8	33.7	34.7	36.2	37.6	38.9	40.1	+22.5
Europe	996.7	1,004.7	1,015.6	1,049.0	1,087.7	1,123.0	1,156.0	+16.0
EU-27	805.6	806.0	812.2	836.4	865.4	892.3	916.8	+13.8
Latin America	203.0	217.2	229.2	244.2	256.6	272.3	285.1	+40.5
Middle East	100.7	103.2	105.8	111.7	116.4	120.9	125.7	+24.8
North Africa	39.6	41.6	43.3	46.0	48.4	50.8	53.0	+33.7
North America	723.4	731.7	746.8	776.3	806.9	835.4	863.6	+19.4
North East Asia	601.4	644.0	689.1	741.6	797.6	854.6	914.9	+52.1
Oceania	104.6	106.8	110.0	113.4	117.6	120.3	123.4	+17.9
South East Asia	125.7	131.2	140.0	149.6	158.9	167.8	176.0	+40.0
Sub-Saharan Africa	41.6	44.1	46.1	48.7	51.6	54.6	57.4	+37.9
World	3,775.1	3,864.2	3,972.6	4,153.1	4,344.7	4,530.7	4,712.0	+24.8

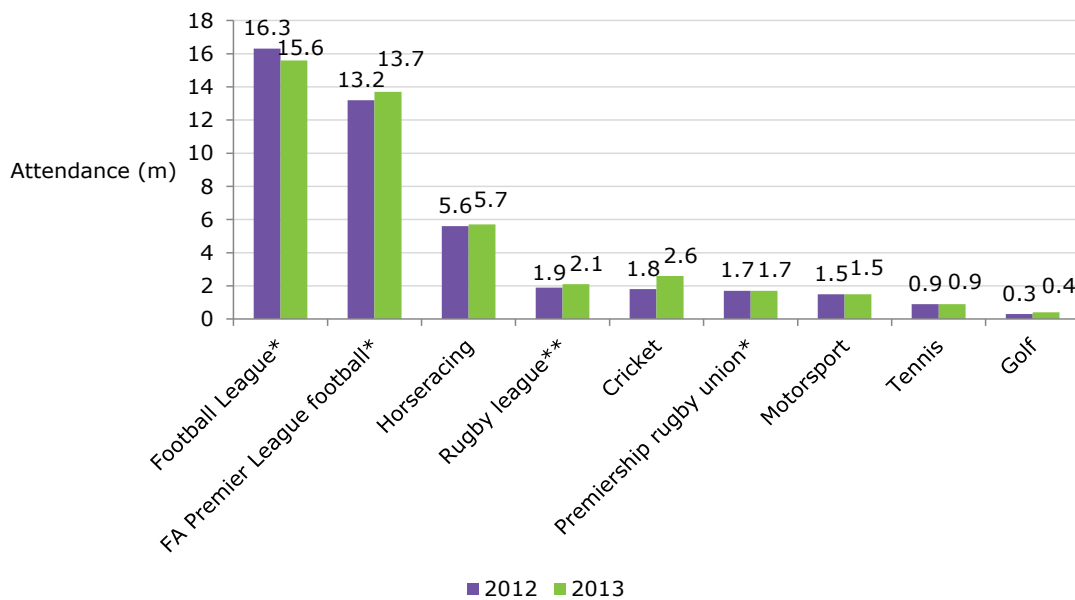
Source: World Travel and Tourism Council in Mintel (2013); Note: *domestic and inbound; **2011 US\$.

The term 'big business' seems to be an enduring theme in sport tourism literature. The US Travel Association and Sports Business Market Research Network emphasise major sport events, entertainment and tourism as a source of growth for major cities. For example Regan, Carlson and Rosenberger III (2012) report the Australian Formula 1 Grand prix returns \$A170 million to \$A200 million; the Rugby World Cup in 2015 UK is estimated to return ticket sales £70-80 million (Mintel, 2014) across UK cities and the recent World Cup in Brazil estimated to produce an additional US\$ 58.9 billion to the Brazilian economy (Melo, Siqueira, Santos, Alvares-de-Silva, Ceballos and Bernard, 2014).

Whilst these mega sport events are attractive to all levels of government due to their economic value, Kaplanidou, Jordan, Funk and Rindinger (2012) suggests that the growth in the sport events industry can also be attributed to host communities organising their own major events. They go on to suggest that just about every form of sport organisation will generate planned events – at a local, regional or national

level . As a consequence this increase in planned events gives rise to an increase in spectator travel at regional and national levels.

Within the UK the value of spectator related sport tourism is expected to grow by 31% by 2017 (Mintel, 2014). Mintel suggest that the increase in growth to pre-2011 levels is due to upturns in ticket prices and the impact of special events. Consumer expenditure is expected to reach in excess of £1.6 billion by 2018 and as can be seen from figure 3 attendance at grass root sports (Football League) is to top 16 million attendees. In terms of UK professional football Keynote (2015) suggests that a 24% year on year growth is due in part to an increase in stadium capacity and a subsequent increase in attendance.



* 2011/12 and 2012/13 seasons; ** Rugby league shows Super League attendance in 2012, and combined total for Super League and Rugby World Cup (for matches taking place in the UK only) in 2013. Source: Mintel 2014

Figure 3 UK spectator sport attendances, by leading segments, 2012 and 2013

Conversely mega and major events impact upon local, national and international ecosystems and contribute to the direct and indirect carbon emissions from travel to and attendance at sport events (Collins, Munday and Roberts, 2012; Patterson, Niccolucci, Bastianoni, 2007). So whilst attendance at sport events is seen as a positive economic contribution by governments and policy makers, there is also concern regarding the environmental impact. This is exemplified by the introduction of

FIFA's Green Goal programme (Collins, Jones and Munday, 2009), the UN's Global Forum for Sports and the Environment, and the introduction of environmental practices as a key performance indicator for the Olympic Games as noted by David Stubbs, Head of Sustainability for the London Olympics:

“Environmental quality and sustainability are critical aspects of the London bid” (GamesBids, 2004).

2.2.1 The environmental impact of travelling to a sport event

From a sport event management perspective discussion continues as to the extent of influence, responsibility and control that venue management has over the travel choices sport fans make to and from the venue (Collins et al., 2007; Burke and Woolcock, 2009). Indeed Kaplanidou et al. (2012) suggest that current Environmental Impact Assessment (EIA) methodologies focus on the boundary of an event site (Direct) and do not consider the environmental consequences that occur outside of that remit (Indirect), such as associated visitor travel. Whilst Gössling, Scott, Hall, Ceron and Dubois (2012) and Collins et al. (2012) suggest more inclusive approaches to tourism and sport event carbon emission assessments, at a global level debate continues as to what is being measured and what is termed a responsibility. For example, UNWTO (UNWTO, 2008) calculations for worldwide CO₂ tourism emissions only includes direct emissions related to consumption for transport at the destination, accommodation and other tourism activities. Thus according to the UNWTO worldwide tourism emissions are between 3.9% - 6% of global CO₂ emissions. Yet Vecina, Angeles, Nuria, Santiago, Antonio, Gomez and Angeles (2014) concludes that by using a more inclusive methodology transport is responsible for almost 94% of the tourism impact on global warming, while other energy consumption and emissions related to leisure activities are negligible.

Certainly travel by participants and supporters are a major element of sports' environmental impact. The largest share of carbon emissions attributable to an event is typically from transportation (Bottril et al. 2009, Harvey, 2009). Collins et al. (2007) found that visitor travel was the largest environmental impact in staging a major sport

event (FA Cup, 2004), citing 73,000 attending the FA cup at the Millennium Stadium, resulting in an estimated 43 million kilometres travelled, with 47% of that distance covered by private car. Nonetheless, the article only presents one paragraph related to visitor travel and the estimated carbon emissions. So whilst the findings are informative (private car use accounted for 47% of total distances travelled with total visitor travel creating an ecological footprint of 1670 global hectares) the study only identifies the present and offers little suggestion of how to alter travel behaviour. More recently Collins et al. (2012) assessed the Tour De France, Grand Depart, 2007. Results found that visitor travel accounted for 75% of the total ecological footprint of the event. And by attending the event, Visitor's travel footprint was 2.6 times greater than their ecological footprint at home for the same period.

Bottrill et al. (2009) state that if a group of people are encouraged to congregate in a particular location by a specific event, event organisers should be responsible for the development and implementation of strategies to reduce the negative impact of getting to a venue. Whilst certain sectors of the UK Event Industry, namely outdoor music festivals (Julie's Bicycle, 2009) and the National Outdoor Event Association, have taken action to measure, evaluate and report their carbon emissions, according to Collins et al. (2007) only a handful of professional sport venues (such as Manchester United FC and Wembley Stadium) implement transportation schemes to reduce the carbon emissions of attendees. These are limited to infrastructure provision rather than soft measures to promote travel behaviour change.

Nonetheless, there are some logistical points to consider which are unique to sport events and their spectators. For example, spectator sport typically involves travelling during off-peak hours on evenings and weekends and can enhance the yield of off peak capacity in public transport and on the roads. Yet many stadiums are located in urban spaces which heighten intercity travel, and demands a large number of aggregate miles travelled by spectators and where public transport options at these hours are more limited than during the working day. Although market, political and social pressures are pushing stadium investments into closer proximity to public transport, Burke and Woolcock (2009) are under no doubt that it is inner city locations,

coupled with the mass convergence of thousands of spectators which generates heavy traffic flow, congestion and problems in surrounding streets. These factors continue to antagonise host communities (Burke and Woolcock, 2009). Burke and Woolcock go on to suggest that without managing private vehicle travel and traffic at major sport events the irritation index will increase.

2.3 Sport fans and their travel behaviour

Clearly there are environmental and social issues associated with sport fans and their travel to sport events. In order to reduce these externalities associated with travel to a sport event there is a need to gain a greater understanding of the sport fan and their behaviours.

According to Regan et al. (2012) leisure travel is complex, with many related thoughts, decisions, behaviours, and evaluations occurring pre and post the event. Kaplanidou et al. (2012) reinforce these complexities by adding that sport tourism arises from unique interactions between people, the place and the activity. This furthers the sense of realism as described by Green (2008) in that modal choice is a bodily, social and political practice and linked to space, ethnicity and class. These interactions are also influenced by motives such as excitement, escapism and socialisation (Trail and James, 2001). Indeed there is evidence of the existence of 'communitas' at events, including sport events. Burke and Woolcock (2009) find that increased use of public transport services to sport venues represents an 'intense moment of travel and co-presence'. Indeed, Fairley (2009) suggest that travel time on the bus pre and post event was particularly conducive to both social interaction and camaraderie, which allowed individuals to consolidate and strengthen affiliation to the sport and the group identity. Rather than leisure time wasted, Burke and Woolcock (2009) argue that these travel opportunities provide an experience-based sociality, where accidental encounter and spontaneity are likely. Similarly Mokhtarian, Salomon and Redmond, (2001) refer to the positive utility of travel. And that travel can be perceived as having positive outcomes but that these outcomes depend on personality, life-style and nature of the specific trip. This is broadened by Regan et al. (2012). They suggest that travel for a leisure purpose provides an opportunity for social interaction, companionship,

being guided by experts, meeting counterparts and exploring one's own identity often with like-minded people. Furthering this, Fairley and Gammon (2005) and Fairley (2009) find that the mode of transport is central in creating and maintaining the identity of groups that travel and follow a sports team. Fairley (2009) illustrates that the mode of travel itself may be a key factor that is used to construct and interpret the group identity and subsequent experience.

But what psychological benefit does the sport fan get out of attending sport events? According to Wann, Royalty and Rochelle (2002) and Smith and Stewart (2007) the sport consumer experiences a satisfaction of psychological, social and cultural needs. These range from escapism, stimulation and entertainment, national pride; cultural celebration and to a sense of collective and personal identity. These help categorise sport fans and through categorisation enable a deeper understanding of sport fan traits and behaviours to be obtained (Smith and Stewart, 2007). Snelgrove et al. (2008) reaffirm the view that sport can socialise the individual into the attitudes, beliefs, and values distinctively associated with that sport. In turn, this socialisation develops 'self-identification' and 'description of self by others' within the group of sport fans. The reinforcing fashion of one's self, cultivated by the attendance at a sport event, further strengthens loyalty to the subculture associated within the sport (Valek, Shaw and Bednarik, 2014). Furthermore, sport fan volition is influenced by objects of identification. For example, Shamir (1992) and Fairley and Gammon (2005) suggest that self-identification and categorisation leads to an ethnocentric conformity which includes adherence to goals, norms and possible behaviours. Indeed, incorporation of group idiosyncrasies, such as rules and goals, into one's self concept increases a sense of belonging.

It should be noted that these types of behaviours are not isolated to sport fans, and arguments of ethnocentric conformity can be applied to other leisure groups in society such as music and movie fans (Bennett, 2012; Morey, 2012; Larson, Llundberg and Lexhagen, 2013) and also in business whereby business and leisure consumers take on homogenous characteristics in travel settings (Marcucci and Gatta, 2011; Murtagh et al. 2012a). Nonetheless, the review of literature suggests limited attention given to

the act of travel to a sports venue and the decision making process related to travel by sport fans.

Existing studies in leisure and tourism travel such as Wann et al. (1999); Yu (2010); Funk et al. (2007) and Uysal and Jurowski (1994) focus on the underlying motivation of fans to travel to a destination (intent) to see their sport rather than travel behaviour itself. For example, Yu (2010) found pride in sport fans (0.7 factor loading) and an affinity with sport (0.8 factor loading) to be the underlying motivational factors on intent to travel to watch their sport. Findings from Funk et al. (2007) report a continuum of cultural education and social-psychological motives to travel to and participate in a sport event. For example, Involvement ($R^2 = 0.59$) and strength of motivation ($R^2 = 0.59$) were predictive indicators. These findings are symptomatic of existing work where the act of travelling and choices related to travel options within sport fans are not discussed and where studies focus more on the broad area of motivation to travel to watch sport. Whilst Fairley's study into supporter groups' travel behaviour does not directly fit with the individual sport fan, the study does report on the influence of sport fandom upon a group travel setting. Her study suggests that the interaction of group members, group cohesion and group reinforcement are at the forefront of travel choices and raise the question of whether or not 'group identity' can influence the travel choice of sport fans travelling to a sport venue. Her findings are in contrast to Barff, MacKay and Olshavsky (1982) and more recently Innocenti, Lattarulo and Paziienza (2013) where price, comfort, convenience and scenery are seen as dominating factors of travel choice. Nevertheless, in application to this study, it is these characteristics within the targeted population that should be understood in depth if one is to produce and implement appropriate change behaviour interventions (refer to chapter three). Jones and Sloman (2003) are in agreement and maintain that knowing context, environment and audience enables change behaviour interventions that are entertaining and engaging to the targeted population. This is reinforced by Clark, Rakowski, Ehrich, Rimer, Velicer, Dube, Pearlman, Peterson and Goldstein (2002) whose research indicates that targeted materials have outperformed non-targeted materials in promoting change behaviour.

2.5 Summary

Sport events and spectator sport is categorised as a sub sector of tourism and recognised as the fastest growing sector of tourism globally. A range of NGO white papers, association reports and academic research determine the economic importance of mega sport events. As a minimum just over \$50b US dollars is generated in each major world region as a direct result of spectator tourism for these events. Nonetheless, smaller more regional based sport events also add to this figure. Combined, these events contribute to an increase in traffic related atmospheric emissions. As more and more sport fans travel to these events, so too does the number of journeys made. Indeed transport in tourism accounts for over 90% of the direct global CO₂ emissions. Yet literature suggests that the travel decisions of sport fans may be altered. By focusing on what sport fans get out of being a spectator, one may be able to feed into the concept of positive travel utility. In other words, there is an opportunity to articulate to sport fans that travelling in groups and using alternatives to the car can contribute to the positive experience of being a sports fan.

Section II
LITERATURE REVIEW AND METHODOLOGY

Chapter Three

Literature Review

3.1 Introduction

This chapter provides a well-reasoned justification of the TTM supported by existing research into psychology and behaviour change in transport. Without a general knowledge of the application of psychotherapy models to transport it is impossible to adequately critique the theory underlining the TTM or the evidence conveyed in its application and practice. The first section of this literature review explores the psychological models associated with change behaviour by first looking specifically at travel behaviour change research. This provides a justification for discussion into the most applicable psychological models used in transport behaviour change. The second section of the literature review critically discusses the use of social marketing and its influence on intervention design – primarily focusing on marketing campaigns.

3.2 Common factors to behaviour change models

Without a doubt there is a political, social and environmental will to apply change behaviour techniques to travel. Research also point towards the use of psychological models to assist in the understanding of particular segments of the population. Indeed chapter two specifically refers to the benefit of travel with others within a leisure setting as opposed to functional and independent travel in a commuter setting. However, the complexity of the processes of change within individuals and the debate surrounding the factors involved in facilitating behaviour change has created an evolution in psychotherapy theory over the past thirty years (Castonguay, Reid, Halperin and Goldfried, 2003). This debate also asks which approaches are appropriate to change individuals towards pro-environmental behaviours.

In 1994 Garfield and Bergin claimed that there were over 400 varieties of psychotherapy practices and theories related to behaviour change. However, Albeniz and Holmes (1996) noted that 'own brand' approaches to theoretical practice ballooned such statistics. Indeed Safran and Messer (1997) suggested that the

profuse manifestation of psychotherapy practices were couched in political and cultural Zeitgeist rather than 400 distinct schools of theory and practice. Despite these trends, Thoresen and Coates (1978); Safran and Messer (1997) and Prochaska and Norcross (2007) bemoaned the complacency of existing behavioural therapies and looked towards a post-modern approach which focused on adjoining therapies or in other words integrative therapies. Evans and Gilbert (2005) indicate that integrative psychotherapy encompasses the four main domains of psychology – (1) Psychoanalysis considers the ‘why’ and searches for understanding, (2) Behaviourism considers ‘what’ dysfunctional aspects are in need of change, (3) Humanism focuses upon ‘how’ an individual perceives the world of experience and (4) systems-theory considers ‘where’ the problem originated and located it in time and place.

This concomitant development of epistemological bases (psychoanalysis from physical science, cognitive behaviourism from phenomenology, humanism from philosophy) found within integrative psychotherapy reinforced the common factors associated with behaviour change. For example Beitman, Goldfried and Norcross (1988) and Norcross and Newman (1992) suggested that inadequacy of single theories, the correlated lack of success of any theory to adequately predict behavioural change and the identification of common factors across theories paved a fertile path for integration. Stricker (2001); Prochaska and Norcross (2007) and Beitman et al. (1998) and Goldfried (1995) in Evans and Gilbert (2007) explores this assumption and state that all ‘effective methods of psychotherapy’ share aspects, such as a (1) The possibility of obtaining an external perspective on oneself and the world, (2) The encouragement of corrective emotional experiences and (3) The opportunity to repeatedly test perspectives and reality.

There are various models of psychology that have been applied to travel behaviour change. These are Normative Decision Making (NDM); the Theory of Planned Behaviour (TPB); Norm Activation Model (NAM); Theory of Interpersonal Behaviour (TIB); the Transtheoretical Model of change (TTM); Value Belief Norm theory (VBN); and Health Action Process Approach (HAPA). A critical summary these models can be found in table 2.

Table 2 Summary of Critique - Psychology Models in Transport

Model	Merits	Limitations	Application to modal change in transport
Normative Decision Making (Schwartz and Howard 1981)	Application to range of contexts. Behaviour that is influenced by SN and PN. Staged based progression to behaviour change. Takes into account the balance between moral motivations against other SN moderators and considers the altruism in pro-environmental behaviours.	Assumptions made that people use their general knowledge basis for judging whether the performance of the pro-environmental behavioural option is right, favourable and easy (PBC). Questions over applicability to transport and whether altruism can be realised.	Klockner, C.A., Matthies, E. (2004); Verplanken, B., Walker, I., Davis, I., Jurasek, M. (2008); Matthies, Klockner, C.A., E., Preißner, C.L. (2006);
Norm Activation Model (Schwartz, 1997),	Application to range of contexts, considers SN, PN, Awareness of Consequences (AC)-relevant to pre-environmental approaches. Ascription of Responsibility (AR)	Confusion in interpretation of model and usage of AC and AR beliefs – difficult to put into contexts and across populations. Weak effects shown in work by Bamberg et al. (2007)	Kaufmann, V (nd); Klockner, C.A., (2004); Verplanken, B., Aarts H., & Van Knippenberg, A. (1997); Anable, J. (2004) (12); Bamberg, S. and Schmidt, P. (2003); Kenyon and Lyon (2002); Bamberg, S., Fujii, S., Friman, M., and Garling, T. (2011)
Theory of Interpersonal Behaviour (Triandis, 1977, 1980)	Reflects characteristics of transport choice - social and norm referencing; self-efficacy and habit (rather than beliefs of the TPB). Does appear to have additional explanatory value over the TPB model.	Not been used extensively – difficult to draw comparative results.	Kaufmann, V (nd); Verplanken, B., Aarts H., & Van Knippenberg, A. (1997); Gardner, B (2008); Bamberg, S. and Schmidt, P. (2003)
Value Belief Norm Theory (Stern, 2000)	altruistic considerations are the key to understanding pro-environmental behaviour – PNs relate to obligations and moral convictions.	Uncertainty whether car users evaluate perceived fairness and moral obligation for the sake of the environment. The concept of fairness in relation to transport policy measures is unexplored to a large extent and weakens the value of the VBN.	Bamberg, S. (2007); Anable, J., Lane, B., Kelay, T. (2006); Bamberg S., Hunecke, M., Blobaum, A. (2007)
Health Action Process Approach (Heckhausen and Gollwitzer, 1987),	Motivational phase – social cognitive theory and Volitional phase taken on a stage based approach. Used in health related studies.	It does not clarify how the different beliefs influence one another, or how the explanatory factors are combined to generate influence. Thus, many studies used different ways of analysing. Little methodological guidance from authors, thus different items and variables used, thus difficult to draw comparative results.	Bamberg, S. (2007); Successful Travel Awareness Campaigns and Mobility Management Strategies (2007); Jones and Lucas (2000).

As might be expected there is no consensus as to the salience of these models and application to transport, nonetheless, they do reflect the 'common factors' as noted by Prochaska and Norcross (2007). Indeed these and other models are referred to by Prochaska and Norcross (2007) in their discussion of integrative psychology and the TTM and set out in figure 4.

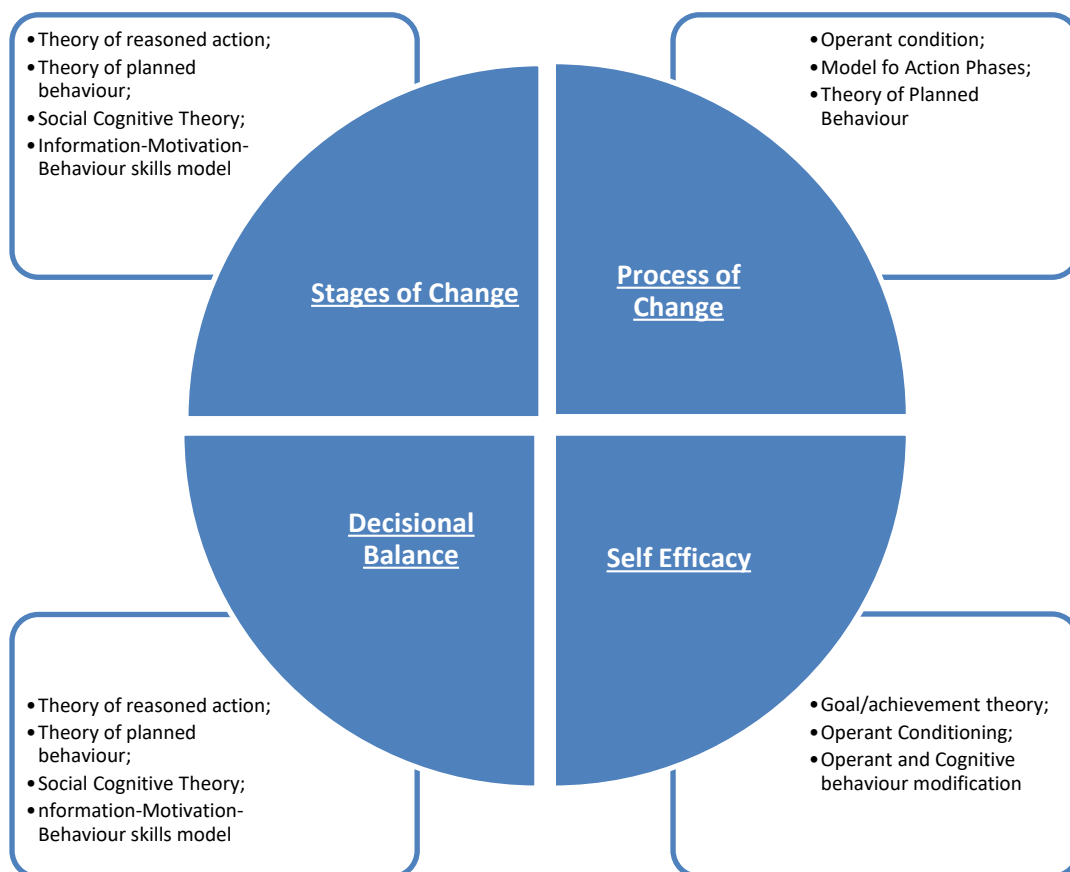


Figure 4 Integration of psychotherapy models and applied to TTM

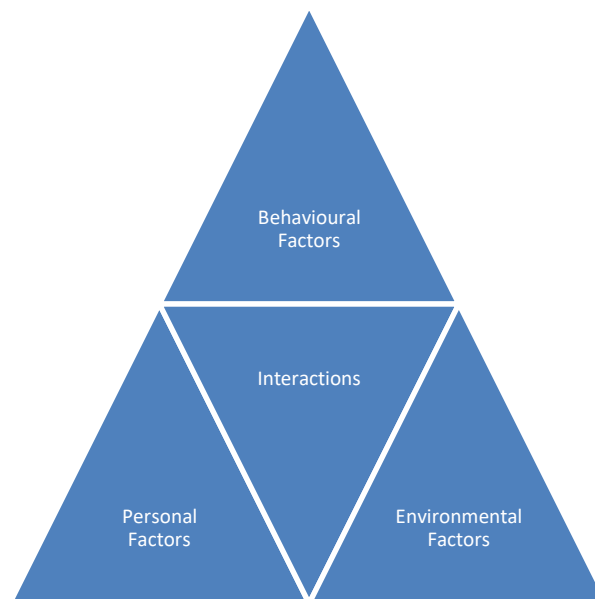
3.3 Psychological models in transport

As seen in figure 4, the integration of models applied to the TTM frequently refer to aspects of the TPB and SCT. Consequently further exploration of these theories is warranted. This allows for a well-reasoned rationale of the adoption of the TTM within the context of this thesis and allows for further discussion, exploration and application to research approaches and methodological practices.

3.3.1 Social Cognitive Theory

According to Marsden and Docherty (2013) the foundations of behaviour change in transport originates from social psychology. They posit that personal travel decisions are made within broad social settings. Taking this further Murtagh et al. (2012) suggests that travel behaviour and modal choice research consistently discovers that environmental and situational factors are mediating elements. These environmental and situational factors can be applied to the core constructs of cognitive social theory. SCT evolved from Social Learning Theory (SLT) and proposes that learning and behaviour takes place within a social setting. And according to Stone (2008) behaviour is influenced by a series of triadic reciprocal interactions between personal factors, behaviour and the environment (Lin, 2010; Bandura, 2002) see figure 4. Environmental factors refer to social and physical indicators. For example social indicators can be reference groups such as family, friends and colleagues. Physical indicators refers to physiological needs such as the surrounding ecology, the actual physical space a behaviour is performed in, weather conditions and even the availability of food and drink. Personal factors are commonly referred to as personal cognition. These personal cognitions are denoted as expectations, beliefs, self-perceptions, goals and behavioural intent. And these are shaped and learned through experiences in a social setting. Finally, Behaviour is seen as the most iterative construct of the triadic factors. For instance individuals perform certain cues from their learned behaviour, prefer certain physical environments and align themselves to certain groups. As a consequence of these learned behaviours individuals generate actions and mould their surrounding environments. For example an aggressive

individual may create an antagonistic environment whilst an amiable individual may create a more neutral environment.



Adapted from Bandura (1989)

Figure 5 Social Cognitive Theory

According to Gossling et al. (2012) these reciprocal interactions are complex as they can be asynchronous, iterative and multi-directional. This is supported by Bandura (2002) who suggests that these triadic interactions can alter in strength and occur concurrently or not. For example the environment factors should serve as the overriding cause when environmental factors act as a powerful determinant, such as during extreme weather. On the other hand, personal factors should serve as the underlying influence on behaviour when environmental factors are acceptable. Gossling et al. (2012) provides evidence of how these triadic interactions alter in strength and where personal factors dominate. They suggest that travel often occurs as a result of strong social reasons (family, friends) and that personal situations and context is a mediating force. This complex web of factors is also supported by Chisolm-Burns and Spivey (2010). They suggest that biological, physical, affective and emotional factors help modify behavioural and cognitive processes. Building upon the idea that travel behaviour is complex Guell, Panter, Jones and Ogilvie (2012) see modal choice as a web of physical, psychological, environmental and social factors.

Murtagh et al. (2012b) supports this view and suggests that travel decisions are made in social contexts. Whilst they report on social identity, they also explore how context can influence such considerations and this can assist in furthering an understanding of travel decisions. Indeed Karl Marx describes social and contextual factors as having the ability to facilitate and impede cognition within individuals (Inglehart and Welzel, 2005) and thus it can be argued that individuals and their travel decisions are the partial products and producers of their own environment. This consideration of social cognition is also supported by Abraham and Michie's (2008) taxonomy of behaviour change techniques, Biddle and Fuch's (2009) intervention theory, Klockner's (2013) meta-analysis of psychology models in pro-environmental behaviours, De Geuss, De Bourdeaudhuij, Jannes and Meeusen (2008) exploration into psychosocial factors associated with cycling and Kim and Cardinal's (2009) characterisation of SCT.

Whilst the reciprocal determinisms of behavioural, personal and environmental factors are seen as the central concept of SCT (McAlister, Perry and Parcel, 2008) there are additional components of the theory. These components explain how individuals regulate their behaviour and maintain their behaviour change goals. These components are referred to as self-efficacy; collective efficacy; self-regulation; behavioural capability; observational learning, incentive motivation and moral disengagement. Table 3 outlines each component.

Table 3 - Social Cognitive Theory Components

Social Cognitive Item	Description
Self-efficacy	This refers to the level of a person's confidence in his or her ability to successfully perform a behaviour and anticipatory consequences.
Collective efficacy	Similar to self-efficacy this refers to the group's ability to perform an act and the desirability of that action and outcome.
Self-regulation	Controlling oneself through self-monitoring, goal-setting, feedback, self-reward, self-instruction, and enlistment of social support.
Behavioural capability	This refers to a person's skills and competences (know how) to actually perform the intended behaviour actual ability to perform a behaviour through essential knowledge and skills.
Observational learning	A demonstration of actions witnessed and observed and then reproduced. Both positive and negative observations can take place.
Incentive motivation	This refers to the tools that can be used and misused to reward and punish intended/modified behaviours.
Moral disengagement	The way in which individuals justify and accept harmful behaviours and the acceptance of suffering inflicted upon others.
Outcome Expectation	Beliefs about the likelihood and value of the consequences of behavioural choices.

Adapted from Bandura (1990) and McAlister et al. (2008)

A number of these components can also be evidenced and applied to pro-environmental and transport research. For example observational learning depicts learning by watching others within near and extended social groups. Gifford (2011) suggests that social observation and the realisation of inequality in social comparisons can create barriers to pro-environmental behaviour. For instance when individuals perform activities outside the social norm of that group and realise this, they may feel susceptible to negative judgments by individuals within that group. This barrier also translates to another component of SCT - self-regulation. In studies that explore environmental policies De Groot and Schuitema (2012) suggest that self-regulation within a social group influences the level of acceptance and trust towards policies. Indeed self-regulation provides a central focus to behavioural antecedents (Amaya and Petosa, 2011). According to this component of SCT people's behaviour are motivated by self-monitoring; self-identity; goal-setting; feedback; self-reward; self-instruction; and social support. McKiernan, Cloud, Patterson, Wolf, Golder and Besel

(2011) propose that aspects of self-regulation such as goal setting can influence anticipatory feelings Bandura (2002) and, coupled with a sense of self control, are strong mediating factors. Equally important is self-identify which is commonly found in groups attached to sport. For example Getz and McConnell (2011) note that sport events provides a social world that forms personal and social identity that is attracted via group events which repeatedly enforce behaviours. Murtagh et al. (2012b) explores self-identify in transport and within social networks and suggests that identities such as a “football” fan may be important at the time of being part of that group – but salient only for that time. Whilst other social roles, such as being a parent, are salient across social settings or groups.

Self-efficacy is synonymous with more recent iterations of the SCT and more broadly referred to as ‘fundamental’ to the psychological determinants of behaviour (Amaya and Petosa, 2011). Indeed this concept has been found in common factors applied to the TTM (see figure 3). Self-efficacy refers to the conviction of an individual in the pursuit of a desired change/goal/outcome (McAlister et al. 2008). It differs from ‘Outcome Expectation’ as outcomes refer to the value of the outcome rather than the conviction and personal belief of attainment. In their meta-analysis Baumann, Reis, Sallis, Wells Loos and Martin (2012) identify self-efficacy as a consistent correlate and mediating item in transport and leisure interventions. Yet Murtagh et al. (2012b) note that campaigns to alter travel behaviour may reduce confidence in an individual’s ability and threaten the freedom of choices. Whilst this study is not conclusive it does highlight the difficulty in applying marketing campaigns to travel behaviour change. The idea of marketing campaigns as catalysts to increase a deeper level of commitment to travel behaviour change (self-efficacy) is furthered by Moloney, Horne and Fien (2010). They suggest that campaigns should focus upon intrinsic social values and align more closely with ‘outcome expectations’ rather than self-efficacy. Yet Sallis Owen and Fisher (2008) suggest a more moderate stance and move beyond individual factors, suggesting that because there is such variance in the number of factors examined as correlated and determinants of behaviour change, a range of multi-level models should be introduced.

Finally, moral disengagement is also found in travel and environmental research. Moral disengagement refers to the moral standards within an individual and scopes

the behaviour between moral engagement and disengagement (Bandura, 2002). According to Fiske (2004) moral disengagement is the process of convincing the self that ethical standards do not apply to particular context by separating moral reactions from inhumane conduct. Indeed SCT is widely used in media and communication and profiles the desensitizing process of viewers through frequently showing 'inhumane' acts on news items (Bandura, 2002). Certainly it could be argued that the knowledge of environmental impacts from modal choice and the continuation of habit can be Gossling et al. (2012) suggest that tourists have an overwhelming social will to travel and visit friends and family despite knowing the impacts of their action on climate change. This is furthered by Higham et al. (2013). They comment on the proliferation of consumption and societal structures that reward such behaviour despite a political, economic and social understanding of climate change. For instance they refer to Gossling and Nilsson's (2010) work and the use of frequent flyer loyalty programmes to illustrate the enculturation of consumption despite the externalities associated with travel.

Interestingly Bandura's (1990) development of the SCT was influenced by the omission of environmental influence on behaviour. So there is focus on the iterative interaction between the environment and the personal construct (refer to figure 5). The SCT's strong emphasis on one's cognitions suggests that the mind constructs one's reality, is selective in encoding information, and imposes learned structure on its own actions (Jones, 1989). This supports Green's (2009) viewpoint that active modal choice is a bodily, social and political practice which is linked to space, ethnicity and class. This is supported by Higham et al. (2013) where consumption of transport is also seen as a relationship between symbolic, emotional and social factors. Indeed travel mode is rarely considered one dimensional. For example in studies by Handy (2005) and Krizek, Handy and Forsyth (2009) walking can be a practice of economic necessity for the poor and a middle-class practice which is centred on concerns for health, aesthetics and the environment.

Building on the view that decisions are constructed upon a number of social, physical and political dimensions, Guell et al. (2012) highlight that SCT embodies a set of cognitive and physical dispositions. Bourdieu (1980) in Guell et al. (2012) calls these

dispositions habitus – which is determined by four constructs: economic capital; social capital (resources based on group membership, relationships, networks of influence and support); cultural capital (e.g. competencies, skills and qualifications) and symbolic capital (e.g. prestige and honour). The concept of Habitus can also be transposed to sport fandom where the influence of physical structures, social expectations and observed learning is exemplified by Snelgrove et al. (2008). Snelgrove et al. reaffirms the view that sport can socialize the individual into the attitudes, beliefs and values distinctively associated with that sport. In turn, this socialisation develops ‘self-identification’ and ‘description of self by others’ within the group of sport fans. In support Regan et al. (2012) suggest that sharing the travel experience to events can create social identity. This identity reinforces common interest, friendship and camaraderie. It also provides opportunities to reinforce identify with reference groups by sharing family time and meeting friends. More specifically Chalip and McGuirly (2004) purport that participation in the subculture of sport is assisted by a shared belief system, shared values and shared aspirations.

These social influences can also activate emotional reactions (Bandura, 1990). Nevertheless, critics such as Boundless (2016) suggest that the SCT does not explore personal emotion and that the theory uses observational and learned behaviour as the default mechanism to explain such considerations. However Bandura (2002) posits that most behaviour is learned vicariously – including emotional response. Nonetheless, Boundless (2016) continues to criticise the theory suggesting that the SCT fails to articulate the extent of influence each construct has in altering behaviour and sees the theory as explanatory and confusing. Similar comments are made by Hung-Ben, Lent, Brown, Miller, Hennessy and Duffy (2009). They suggest that the complexity of the theory make it difficult to operationalise. For example, given the asynchronous, iterative and inconspicuous nature of the reciprocal factors discussed within the SCT it is difficult to determine which factors to focus on to produce and maintain behaviour change. Thus, this model of causation or as Bandura puts it ‘triadic reciprocity’ shows limited positive results and in few complete studies (Amaya and Petosa, 2012). As a consequence the evaluations of the SCT are incomplete and based on a singular component or partly explored iterative relationships. Nonetheless, according to Lin (2010) SCT is superior to other social cognitive models in examining

group behaviour owing to its emphasis on individual behaviour formation from personal and environmental perspectives. Indeed Bandura (2002) suggests the SCT has wide ranging uses from communication and media through to organisational management. Furthermore, Hardeman, Johnston, Johnston, Wareham and Kinmouth (2002) show that SCT has been widely applied to people seeking help and O'conner, Jago, and Baranowski (2009) evidences SCT as the most frequent when assessing physically active behaviour. Despite these accolades SCT does not provide the guidance to change behaviour. As Higham et al. (2012) purports – knowing such perspectives does not allow insights into strategies to disrupt current negative behaviours. Equally Santrock (2008) suggests that the SCT does not allow an assessment of readiness to change, and there is little systematic testing of the components of the theory (apart from self-efficacy) to offer such tactics in confronting current and negative behaviour.

3.3.2 Theory of Planned Behaviour

According to Dill, Mohr and Ma (2014) there is a growing body of research that applies the TPB to travel behaviour change. Gardner and Abraham (2008) underpin this, suggesting that the TPB is one of the most commonly applied behaviour-prediction models. Planned behaviour originates from social cognitive psychology (Stricter, 2001) and extends the Theory of Reasoned Action by incorporating measures of perceived behavioural control (Coogan et al. 2006). Within this model behavioural intent is influenced by three factors (see fig 6). The Attitude toward the behaviour reflects the subject's inclination to want or not want to undertake the behaviour, based on assessments of whether the new behaviour might be desirable, pleasurable or interesting. The Subjective Norm reflects the influence of the subject's immediate personal network of family, friends, and other sources of peer influence. The Perceived Behavioural Control (PBC) reflects the judgment of the subject about how difficult, or easy, it will be to undertake new behaviour. According to Gardner and Abraham (2008) this is frequently represented by self-efficacy. For example, this assumes that when one is confronted with the choice between two behavioural alternatives, the alternative associated with the most positive behavioural consequences is chosen.

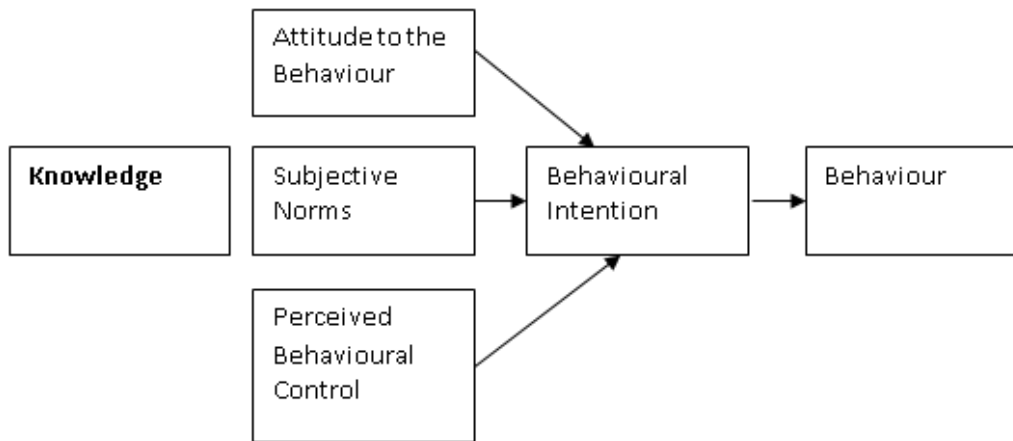


Figure 6 Theory of Planned Behaviour

Several reviews found within Armitage (2000) support the TPB in the prediction of a range of behaviours. This is furthered by Darker, French and Sniehotta (2010). They identify numerous studies that have provided empirical support of the TPB's capacity to predict behaviour; it's frequent use in a variety of health behaviours; and its capacity to be transferred to other problem areas such as active modes of transport. This provides a wealth of comparative opportunities. More recently Chan and Bishop (2013) have reported meta-analytic results that support the models overall predictive utility, with 39% and 27% of the variance accounted for in intention and behaviour respectively. Indeed in a review of 23 studies using the TPB Gardner and Abraham (2008) find that PBC and Attitude as the most significant mediating factors in predicting driver behaviours.

However, there is some critique. Verplanken, Aarts and Van Knippenberg (1997) and Verplanken and Wood (2006) suggests that behaviour-prediction models such as the TPB employ intention as the dependent variable, assuming near-perfect correspondence between intention and behaviour. However, when transposed towards travel behaviour, the decision making process is less guided by the factors that make up intention. Building on this critique Boswel, Castonguay and Wasserman (2010) argue that more focus should be applied to habit. Depending on the context of the studies Verplanken et al. (1997) found difficulty in placing habit within the constructs of the TPB, implying that habit has the potential to distort all three constructs and reduce the predictive validity of the TPB. Interestingly tradition and routine are

the mainstay of sport fans and their pre-match rituals (Karg and McDonald, 2011). And building on the premise of Verplanken et al. one could suggest that the prescribed factors that make up intention may show less utility in this setting. It has also been demonstrated within sport management literature that measures of past behaviour or habit predict future behaviour over and above measures of attitude and PBC (Fairley, 2010). This is also commented on in studies by Meijkamp (1998); Rose and Marfurt (2007); Cairns and Okamura (2003) and Matthies et al. (2006) where recurring performances and circumstances can trigger habitual responses without input from people's intentions or decisions to act. Moreover, Fairley (2010) notes that consumers with strong habits develop expectations of a certain environmental or behavioural event such as sport. In transposing this to travel Bamberg (2007) suggests that people develop activity patterns and a lifestyle that is tuned toward the use of a car. Once adopted, these lifestyles and habits are the main barriers for taking into account alternative means of transport.

Criticism can also be applied to the limitations of PBC as described by Darker et al. (2010) and Armitage and Arden (2002). Within the context of travel behaviour change if one is wedded to past behaviours, routines and rituals then visualising alternative behaviours and developing confidence in those alternative behaviours (modal choice) becomes less likely. Simultaneously these behaviours are less likely as there is a lack of access and availability to resources or experience in how to utilise resources/information. In laymen terms people don't think that their current travel behaviour is a problem so don't look out for suitable alternatives. Nevertheless, the growth in use of the TPB over the last decade (Dill, et al. 2014; Klockner, 2013 and Schwanen et al. 2012) and subsequent analysis reaffirms the empirical validity of the model; its three core constructs of intention – attitude, subjective norm, and PBC; and its utility in a variety of pro-environmental contexts. As noted by Schwanen et al. (2012) behaviour change in passenger research is still dominated by attitude theories derived from socially orientated psychology.

Yet these argument also highlight the continuing debate surrounding behaviour-prediction models noted by Chan and Bishop (2013). They suggest these models have a certain rationale that is clear and can be explained by three of four variables.

Nonetheless, according to Chan and Bishop these models ignore the intrinsic sources of motivation – such as values, morality and emotion. Indeed, applying behaviour-prediction models to pro-environmental behaviour change may be incompatible as individuals see perceptions of climate change as a moral problem. A moral problem where moral disengagement is common place (Seabright, 2010; Fiske, 2004) and where individuals may choose not to act despite accepting and understanding the externalities of their current behaviour.

Furthermore the deontological dimension associated with travel can be skewed due to the subjective advantages and the social status associated with car use and pro-environmental choice. Armitage and Conner (2000) concludes that subjective norms may not have an influence on people's travel mode choice – a key element when considering individual behaviour and whether voluntary intent influences choice. Consequently, this may influence the type of model used to predict change and/or assess the process of change and type of interventions required. Kaiser et al. (2005) note that while the TPB has empirical worth it is has also been criticised for neglecting moral norms. In studies that extend the TPB, Kurland (1995) in Conner and Armitage (1998) found that moral obligation may be more predictive than PBC. Yet these studies question where this moral assessment fits, either within PBC, attitude or subjective norm.

Arvola et al. (2008) builds on this argument suggesting the measure of SN is not suitable to the individual context of the TPB as SN represents shared views by a group. The TPB is primarily concerned with the individual (Ajzen, 1991) grounded mainly in self-interest and limited in its transposition to a group environment (Armitage and Conner, 2000). According to Ajzen (1991) attitude to behaviour is constructed by individual and salient beliefs. In stark contrast Green (2001) and Gibson et al. (2003) find sports fans are motivated by a shared group or sub-cultural identity and, according to Fairley (2010), this may influence the motives and activities of the sport fan. Indeed, because of the sense of ownership and solidarity explored within sport fandom the originating constructs of the TPB may remain awry within the characteristics of the sport fan and the target group – which is to win together and lose together.

Armitage and Arden (2002) suggest it is the change process itself that limits the TPB. For example, the implication is that the TTM provides a useful framework for which to plan interventions whereas the TPB considers behavioural intention as the motivation required to engage in particular behaviour. Nevertheless, Armitage and Arden (2002) indicate that targeting TPB variables rather than an examination of individuals across stages of change, may better serve empirical studies. In support, Faulkner and Biddle (2001) state that the TPB has a stronger predictive utility through the attitude, PBC and norm classification above and beyond stages of change construct. In alleviating these concerns Prochaska and Norcross (2007) propose that theories such as the TPB include conceptually similar variables and each theory places great importance on decision-making. For example, 'pros' and 'cons' approach/information from the TTM mirrors the behavioural beliefs from the theory of planned behaviour. And Bandura's self-efficacy is conceptually and empirically (not without its critics) synonymous with PBC (Armitage and Conner, 2000). Indeed Park, Lee and Hong (2009) found that if TPB and certain TTM constructs are combined it will help to predict behaviour and a further understanding of participant characteristics from the very beginning. However, existing studies that combine the TPB and TTM only focus on mapping constructs of both theories against each other in order to further an understanding of the characteristics of behaviours (Park et al. 2009) rather than predicting behaviour and noting changes. There are no studies that use the TPB to assess behavioural intention against 'staged based' theory led interventions and then continue to map these behaviours against both the TPB and TTM constructs.

3.3.3 The Transtheoretical Model of Change

Following on from section 3.3.2 Verplanken and Wood (2006) argue that models, such as the SCT and TPB do not address the underlying process of change in behavioural choice. Bamberg et al. (2003) and Hunecke et al. (2001) go further by asking whether or not these models provide adequate guidance and empirical evidence to formulate an understanding of the process by which people may change their travel behaviour. To alleviate these concerns researchers have used integrative stage-based models as alternatives. Albeniz and Holmes (1996) suggest that stage-based behaviour models, grounded in theoretical integration, differ as they conceptualise change behaviour as several discrete stages and levels, rather than simply answering 'why'.

A variety of integrative theoretical stage-based models have been developed which try to describe the process of behaviour change. According to Taylor, Bury, Campling, Carter, Garfield, Newbould and Rennie (2006) the most prominent are Health Action Process Approach, Heckhausen's Rubicon model, Kuhl's Action Control Theory, the TTM and the Caution Adoption Process. Explicit in 'stage theory' is the idea that the variables important in producing movement toward action vary from one stage to the next. These models assume behaviour change is a multistage process with differing influences at each stage. They also describe the factors that might influence behaviour change at each stage. Prochaska and Norcross (2007) theorise that individuals will present differing cognitive processes depending on the stage of change and that interventions and psychotherapy strategies must be aligned to the characteristics prescribed by the Stages of change to enable action or adoption of a new behaviour. These stages are also supported by Glanz and Bishop (2010) and Redding et al. (2015) who report on the complexities in change behaviour. According to Glanz and Bishop various research outputs in behaviour change over the past 30 years indicates multiple stages and adaption over time. They also focus on the correlation between knowledge, awareness of the need to change, intention to change and actual change.

The purpose of the TTM is to provide an overarching theoretical basis (24 major approaches to cognitive and behavioural change) of predicting and responding to the behaviour change process. Since its original inception in the 1970s the TTM has been successfully applied to a variety of contexts such as substance abuse, smoking cessation, diet and exercise, transport and pro-environmental behaviour (Migneault, et al., 2005, DiNoia and Prochaska, 2010, Doppelt, 2008, DeVet, Nooijer, Vries and Brug, 2008).

There are four components to the TTM, the Stage of Change (SoC), the PoC (PoC), Self-Efficacy (SE) and Decisional Balance (DB) (see table 4, figure 7 and 8), (Prochaska et al. 1994, Prochaska et al., 2001, Prochaska and DiClemente 1992; Prochaska and Norcross 2007; Sutton, 2001). The SoC are the central construct of

the model and establish when particular shifts in attitudes, intentions and behaviours are most likely to occur. The PoC identifies how the change occurs and integrates cognitive, affective, and behavioural processes from leading theories of psychotherapy and health psychology, (refer to figure 8). DB relates to the evaluation of outcome and mirrors the TPB in respect of pros/cons of outcomes and can facilitate progression through the SoC (Sutton, 2001). Nonetheless Foster and Neighbours (2013) emphasise caution in the utility of decisional balance items and the relationship with SoC. They suggest that applying context to the items put forward to measure decisional balance will enhance their utility. Finally, SE constructs are taken from social cognitive theory and reflects individual perception towards competency and control. Presenting tools to support control and progression of behaviour change is crucial to SE.

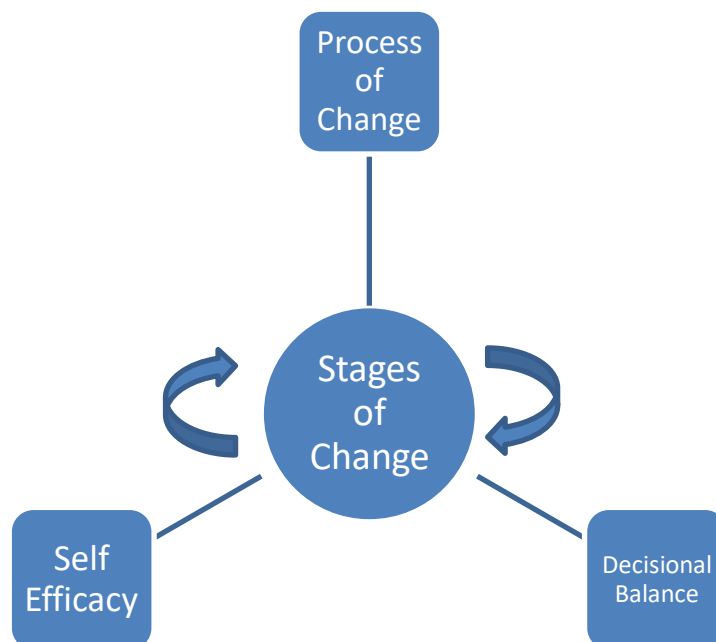


Figure 7 TTM Summary

Since its inception, the TTM has been modified several times (Littell, 2002). The version of the model used most widely in recent years specifies five stages: precontemplation, contemplation, preparation, action and maintenance. These stages are represented as a spiral - people start at the bottom the spiral in precontemplation

then move through the stages in order but will typically relapse over back across numerous stages. Yet there is continuing debate as to the number of stages required and the order. For example within health related studies (DiClemente et al., 2004) and transport related studies (Bamberg, 2007) results do not categorically reflect the existence of the five SoC model. Moreover, Migneault et al. (2005) report a range of studies that report 3, 4, and 5 through to 12 SoC. This debate is broadened by Lenio (2006); Rhodes et al. (2004) and Sutton (2008) who suggest that discrete SoC are difficult to establish given the arbitrary nature of cut off scores and simplified item based algorithms that ascertain self-reporting behavioural intentions. Nevertheless, Redding et al. (2014) note that the SoC remains a dominant behavioural change model.

TTM incorporates 10 change processes which are consciousness raising; self-liberation; social liberation; counter conditioning; stimulus control; self-revaluation; environmental re-evaluation; contingency management; dramatic relief and helping relationships (Prochaska and Norcross, 2007). Research provides strong support for the assumption that there is a common set of change processes that individuals use in an attempt to overcome such problems as distress and addictive behaviours (Field et al., 2009; Littell, 2002; Carey et al., 1999; Sutton and Gilbert, 2007; Sutton, 2001). Not only were a common set of change processes identified across problem areas, but there were also important similarities in how frequently the change processes were used across the varied problems. Helping relationship, consciousness-raising, and self-liberation, for example, were the top three ranking processes across problems, whereas reinforcement management and stimulus control the lowest ranked processes.

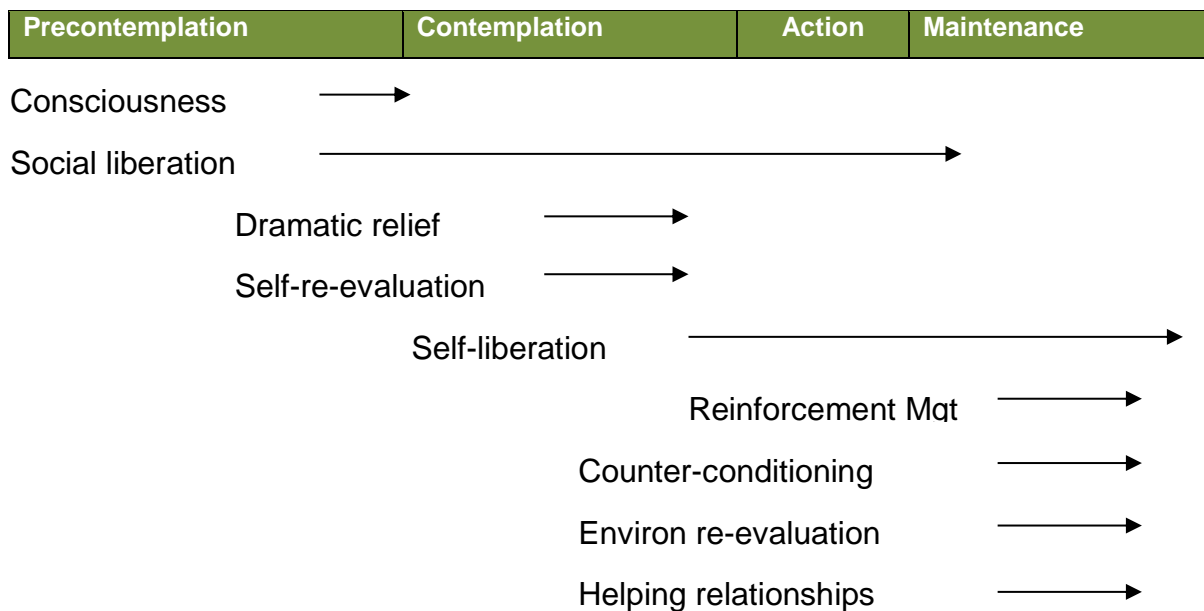
Boswell et al. (2010) propose that the integration of stages and processes of change creates an important guide for change. In theory once it is clear what stage of change a person is in, one should know which process to apply in order to help the individual progress to the next stage of change. For example, Bamberg and Schmidt (2003) notes that during the precontemplation stage individuals use the change processes significantly less than people in any other stage. Pre-contemplators process less

information about their problems; they spend less time and energy re-evaluating themselves; they experience fewer emotional reactions to the negative aspects of their problems; they are less open with significant others about their problems; and they do little to shift their attention to overcome their problems. Individuals found within the contemplation stage are most open to consciousness raising interventions, such as observations, confrontations, interpretations and more receptive to educational interventions. Prochaska and Norcross (2007) concede as individuals become increasingly aware of the nature of their problems, self-re-evaluation occurs. Self-re-evaluation includes an assessment of which values participants will try to act upon.

Table 4 - Process of Change Definitions

PoC	Definition
Consciousness raising	Efforts by the individual to seek new information and to gain understanding and feedback about problem behaviour
Dramatic Relief	Affective aspects of change, often involving intense emotional experiences related to the problem behaviour
Environmental re-evaluation	Consideration and assessment by the individual of how inactivity affects the physical and social environments
Self-re-evaluation	Emotional and cognitive re-appraisal of values by the individual with respect to problem behaviour
Social liberation	Awareness, availability, and acceptance by the individual of alternative lifestyles in society
Behavioural self-liberation	The individual's choice and commitment to change the problem behaviour, including the belief that one can change
Reinforcement management	Changing the contingencies that control or maintain problem behaviour/lifestyle
Counter-conditioning	Substitution of alternative behaviours for the problem behaviour
Stimulus control	Control of situations and other causes that support problem behaviour
Helping relationships	Trusting, accepting, and utilising the support of others during attempts to promote behaviour change

The action stage encompasses self-liberation which touches upon aspects of SE (Bandura, 2002). Within this stage Prochaska and Norcross (2007) propose considerable opportunities for experiencing coercion, guilt, failure, and the limits of personal freedom. Consequently those found within this stage require support and understanding from helping relationships or relapse may occur.



Adapted from "systems of Psychotherapy: A Transtheoretical Analysis", Prochaska and Norcross, 1999, California: Books/Cole Publishing, p.487-528.

Figure 8 Emphasis of PoC in relation to SoC

In summary the transtheoretical approach focuses primarily on facilitating intentional change but describes the process that will facilitate change; illustrate characteristics of individuals at each stage; allow for measurement of movement between stages; identify the mechanisms that will facilitate or limit change and also recognise other types of change. Indeed stage change occurs due to either developmental changes or environmental changes that occur in people's lives (Norcross, 2002). Developmental and environmental changes can be described as key life events (Bamberg, 2007) that can cause people to alter their lives. This acceptance within the theory mirrors the environmental aspects of the SCT or PBC aspects of the TPB. The important theoretical issue here is that intentional change is only one type of change that can move people (Prochaska and DiClemente, 1992 and Castonguay, et al., 2003) from one stage to the next. Indeed the TTM can be considered more applicable to modal choice given the complexities of change in transport behaviour (Murtagh et al., 2012a; Spears et al., 2013 and Wen et al., 2005) described in chapter one and two.

3.3.4 TTM and transport

The application of the TTM constructs has proven to be effective in examining the promotion of alternatives to the car. For example, in the first SoC campaigners can identify target markets that might be responsive to change, establish and utilise appropriate channels to initiate the flow of information and align these methods to target market characteristics. This is evidenced within studies by Gatersleben and Appleton (2007); Rose and Marfurt (2006); Heath and Gifford (2002); Kenyon and Lyons (2003) and Redding et al. (2014). Nonetheless, whilst there is frequent application of the TTM the level of analysis has been varied. Aveyard et al. (2009) indicate that studies using the TTM have often been incomplete and methods are found wanting. Hutchison, Breckon and Johnston (2009) agree and found TTM studies are often based on a single construct of the model such as the SoC. For example, Gatersleben and Appleton (2007) used untested statements to categorise participants into SoC and in their paper didn't investigate those participants categorised as precontemplators. Moreover, their 2 week cycle event focused upon just one intervention targeted towards contemplators and those in action. Thus they ignored the possibility of changing the largest group of respondents (precontemplators). Although Rose and Marfurt's study (2006) used a 6 month post event survey to explore behaviour change, the study did not explore PoC constructs. This is quite surprising as it is these mechanisms that help change and maintain behaviour. Consequently this partial study did not utilise the founding mechanisms and constructs of the TTM to help support behaviour change. Moreover, Rose and Marfurt only used 4 items to ascertain participant's SoC and showed little appreciation of the underlying items already tested and recommended in numerous TTM studies. As a result, the efficacy of TTM based approaches cannot be determined with frequent ease. It is only when they are combined with all four constructs of the TTM that any explanatory power can be assumed. This premise is furthered by Kim and Bradley (2009). In a meta-analysis of the TTM they purport that TTM studies fall short of testing the stage of change construct and the relationship with self-efficacy, decisional balance and process of change over time.

In studies that used interventions and applied these techniques to the SoC construct, the results are varied and inconclusive. Rose and Marfurt (2006) state that a 'Ride to

Work Event' influenced first time riders. 80% indicated readiness to ride to work and the event influenced 60% on their decision to ride to work. 85% had progressed/maintained through the SoC characteristics. However, the self reported 'Impact Survey' did not discuss aspects of maintaining action/behaviour change. Moreover, there was a limited tailoring of interventions (one mechanism) towards different groups as defined essential by Prochaska and DiClemente (1992). The more cognitive aspects of change behaviour were not part of the methodology and reduced the worth of the study. For example DB and SE were not discussed either. Some of these issues are overcome in Gatersleben and Appleton (2007) where they conduct a longitudinal approach in their second stage of their study and where longitudinal travel diaries are implemented. Nonetheless, Prochaska and DiClemente's recommendation of a 3-6 month study period is necessary to reflect possible changes outside every day habit. Despite this, Gatersleben and Appleton (2007) found similar progression against the SoC construct in their study. 68% stated their travel mode behaviour change would continue and they would continue to use active modes of transport. However, no behaviour change was indicated with certain groups, especially non pre-contemplators. Variables may have also caused a skew in the data. For example, the sample was non-randomised and thus existing travel plans by Surrey University may have influenced participant perception and/or personal interest.

There are other studies that use the TTM and evidence short term commitment and short term changes in behaviour. For example, Bowles et al. (2006) underline that one month after an annual cycling event 51% of respondents who were self-rated as low level users pre-event improved to a high self-rated level after the event. These results indicate a significant increase in the number of bike rides in the month after the event by novice/first time participants. These types of interventions also support the work of Heath and Gifford (2002) and Kenyon and Lyons (2003) where participants increased their awareness of the need to change. Mutrie et al. (2001) concurs and add that their intervention group were twice as likely to increase walking to work as the control group at six months. A 12 month follow up declared 25% of the intervention group were regularly walking to work. Changes in cognition was also found in Dudleston et al. (2005). They included questions pertaining to each stage of change in a Scotland-wide study of travel awareness. They concluded that although travel behaviour had not changed between the three survey periods (2001-2005) there was an increase in

awareness of the need to change travel behaviours. For example rising familiarity with climate change and congestion charges, bus lanes, park & ride schemes and car sharing schemes helped car users move from precontemplation ('I'm not even thinking about changing') to contemplation ('It's something I'm going to have to consider'). These findings mirror considerations by Brug et al. (2005) whereby a failure to produce actual change does not indicate a failure on the part of the TTM. Indeed, these studies represent a change in cognition and offer support towards the TTM model.

Whilst Schneider (2013) cites the need for a varied set of strategies to influence travel behaviour change, underlying any success is the need to understand the participant's characteristics and the context within which the study is placed. Brug et al. (2003) furthers this debate by suggesting that TTM based activities must be related to personal, social and environmental considerations. In other words, these activities should represent a holistic understanding of the context within which the activities are being performed alongside the theoretical constructs. Indeed Michie and Abraham (2004) report that it is imperative to grasp underlying cognitions such as changes in attitude or perceived control and how these account for observed changes in intentions and actual behaviour. According to the theory, it should be possible to influence intentions and behaviour by designing an intervention that has significant effects on one or more of the antecedent factors. In other words on attitudes towards the behaviour, subjective norms, and perceptions of behavioural control. This is supported by Redding et al. (2014) who suggest that TTM interventions have been applied to all SoC and utilise an understanding of participant characteristics. There is also evidence that these type of events stimulate new behaviour change in participants. Mellifont (2002) found 8% of respondents indicated that they had ridden to work for the first time as part of the ride to work event. This is supported by Adams and White (2004) who indicate that stage-based interventions that promote physical activity were more effective than control conditions in 73% of tests. However, this effectiveness dropped to 29% in studies examining behaviour change for periods of greater than 6 months.

In support of the stage of change construct Adams and White (2005) present evidence where stage matched interventions may induce stage progression - although this is not always followed by actual behaviour change. Indeed Heath and Gifford (2002)

report that the behavioural beliefs of their participants did not change. Nevertheless, according to Brug et al. (2003); Kreuter and Skinner (1999) and Anable et al. (2006) stage-targeted interventions are more likely to induce changes in motivation in short-term behaviour context. This debate is compounded by the consideration of relapse conditions that surround the participant and at what stage this takes place. According to Prochaska and Norcross (2007) coping mechanisms need to be presented to reduce the self-defeating and historical patterns of behaviour. To overcome this, self-visualisation and a reaffirmation of the kind of person one wants to be is crucial. Adams and White (2004); Brug et al. (2005) and Ogilvie et al. (2007) suggest that maintaining change helps achieve a sense of value and achievement in participants and it is seen as integral to any intervention strategy. This is furthered by De Gues et al. (2008) who suggests that marketing campaigns used for pro-environmental purposes help create social support, increase awareness, decrease barriers to change and provide information for viable alternatives. Rose and Marfurt (2006) extend this argument further and suggest that using the TTM helps stimulate people to change their behaviours for the first time but also helps to maintain their behaviours after action. With this in mind, stage-matched interventions are thought to be more effective than traditional action-oriented treatment for addictions and other problem behaviors (Redding et al. 2015).

In furthering their discussion of the TTM Adams and White (2005) and Littell and Girvin (2002) argue that the stage of change model encourages a focus on stage progression rather than changing psychological behaviour. Moreover, both argue that true stage-based interventions are highly complex requiring more than one level of development and evaluation—a challenge that according to Bamberg (2007) has not yet been met. Indeed Prochaska and DiClemente (1992) suggest that the TTM was “*intended to be a general model of behavior change rather than being specific to a single behavior problem like smoking*”. Thus, can interventions based on TTM constructs achieve change across such a wide range of behaviours and context? Despite more recent work by Michie et al. (2011) well-articulated intervention methodologies that comment on the mechanisms behind the design of interventions is a long way off. Given this, there are missed opportunities in transport research to provide transparency in the design of marketing intervention and thus, provide the basis for comparable

intervention testing. In addition, a more detailed consideration of what the intervention is (an ontological analysis) that deals not only in surface descriptions, but also pursues an examination of the cultural and social forces that have led to the construction of the elements of the model may be required to further TTM based interventions in travel research.

Evidently there is a precedent of using TTM constructs in the design and implementation of travel behaviour change programs. Nonetheless, questions remain over the efficacy of TTM based approaches, the analysis and the application of the entire model against participant responses cannot be determined with frequent ease. It is only when they are combined with all four constructs of the TTM that any explanatory power can be assumed and commentary made as the utility of the model within the context of travel behaviour change in sport fans.

3.4 Social marketing and intervention design

This section will critically explore the use of social marketing in behaviour change and its application to pro-environmental behaviour – from the basic premise to an understanding of how context can be an influencing factor. Moreover this section will also explore the debate surrounding the theoretical foundations of intervention design and assess the empirical evidence surrounding contemporary approaches and how these can be applied to research studies used within this thesis.

3.4.1 Social marketing as a tool for change

Barr et al. (2011) and Gossling and Cohen (2014) propose that there is a growing trend in social policy that is focused towards the individual to alter their behaviour in relation to environmental concerns. Commentators suggest that this has propelled social marketing as a tool to nudge and alter perspectives. Yet Higham et al. (2013) argue that placing an emphasis on the individual to change also presents traditional marketing problems – such as identifying the target market and deciding on the right type of messages. Problems also apply to the differing approaches and underlying

concepts of social marketing. For example, whilst Truong and Hall (2013) attribute little theoretical underpinning to social marketing, Cornor and Randall (2011) take Darnton's (2008) view that social marketing is 'explicitly transtheoretical'. In other words, social marketing captures common and best practices across a range of social contexts and studies to outline the best approach to voluntarily change behaviours and consumption patterns.

Changing behaviour; being sustainable and changing consumption patterns is an increasingly significant theme within tourism literature (Truong and Hall, 2013). Truong and Hall go on to suggest that social marketing has a part to play in the behaviours of tourists and their consumption. This is furthered by Frame and Newton (2007). According to their study current consumption patterns is the result of choices and activities influenced by a wide variety of social factors including business, government and individual households. They go on to suggest that social marketing is a conduit to influencing these choices through stimulating and facilitating new economic opportunities; better products and services; altering the current infrastructure and regulating a framework (political or non-political) that unlocks consumers into sustainable behaviour.

Haq, Whitelegg, Cinderby and Owen (2008) note that the use of social marketing in the promotion of sustainable consumption is already well-established. Indeed social marketing has addressed environmental issues and is used widely in promoting eco-literacy (McKenzie- Mohr and Smith, 1999). Davies (2012) reports the use of social marketing in transport and other broad social welfare projects. Yet Truong and Hall (2013) suggest that there is relatively small research output focused on social marketing in tourism despite a discourse of sustainable tourism and change behaviour requirements from tourists and tourism business. They underline the potential of social marketing in tourism by suggesting that the balance between sustainable development and maintaining customer expectations can be fully realised. But what is social marketing?

Peattie and Peattie (2009) refer to social marketing as utilising tools, persuasive techniques and concepts derived from commercial marketing in pursuit of social goals

for social good. With this in mind social marketing superseded social communication as a marketing technique to influence a target audience to voluntarily accept, reject, modify, or abandon their behaviour for the benefits of individuals, groups or society as a whole (Kotler et al 2002:394). Kurani & Turrentine (2002) put forward that social marketing further refines the application of social science through its explicit treatment of research as an integral part to the marketing process and intervention design. Davies (2012) adds that social marketing has been adapted slightly and used to reduce the barriers to change and to promote the positive outcomes of behaviour change. According to the British National Social Marketing Centre in Corner and Randall (2011) there are 7 key principles. These range from selecting the audience, affirming the context within which the behaviour is performed and a focus on actual behaviours rather than broader attitudes or underlying beliefs. They go on to suggest that any social marketing programme should be piloted and have the opportunity to be evaluated.

Nonetheless, some commentators believe that without consideration of the larger political economy, these initiatives may be little more than public relation gimmicks that make consumers feel good about themselves (Peattie and Crane, 2005; Rex and Baumann, 2007 in Frame and Newton, 2007). Higham et al. (2013) and Hall (2013) adds to this discussion and claim that social marketing lends itself to short termism and does not contribute to the broader societal structures where behaviour and decisions about consumption is placed. Indeed these gimmicks often allow individuals to revert back to their old behaviours without achieving any cognitive dissonance. Criticism is furthered by Ketola (2007) and Corner and Randall (2011) who suggest that placing an economic value to a moral argument reduces the deontological worth by focusing on the individual economic gain – rather than attempting to change the underlying behaviour. Corner and Randall (2011) build on these debates suggesting that there are limits to the success of social marketing if the audience's values and beliefs are opposed to the ultimate goal of the campaign (such as travel behaviour change). Moreover, whilst authors such as Thogerson and Crompton (2009) suggest that indirect behaviours may be attributable to social marketing campaigns, Corner and Randall (2011) suggest that this evidence is limited. In fact they report on the negative indirect behaviours that social marketing campaigns can produce – whereby

individuals may think that a positive pro-environmental behaviour (such as recycling) gives individuals an excuse to maintain current behaviours in other aspects of their lives. However, despite these criticisms Haq et al. (2008) and Gossling and Cohen (2014) state that these types of soft approaches are key to achieving the EU carbon emissions targets by 2050.

While there may be a social willingness to participate in pro-environmental behaviour, the centralised and top-down approach to past social marketing campaigns has been diluted due to people's perception of sustainable goods and services as being more expensive; a lack of awareness about how to become more sustainable; and mistrust of government bodies and businesses that promote lifestyle changes (Haq, et al., 2008).

Contemporary social marketing tends to be more inclusive, allowing an iterative two-way flow of information through diverse forms of media (Peattie and Peattie, 2009). Moreover, Thøgersen (2007) argue in order to maximise the chances of success, social marketing interventions should be designed towards targeted behaviour. Three characteristics or dimensions are particularly important when assessing behaviour in this context: the involvement of the actor; whether it is a one time or continuing behaviour; and whether it is performed by individuals or groups. Indeed group solidarity can be a key factor in enabling pro-environmental behaviour change and despite the achievements in personalised travel planning, individual behavioural change is seen as being more effective as a member of a social group than alone (Fairley, 2010, Garling and Steg, 2007). Indeed Corner and Randall (2011) propose that social networks can be more stimulating if pro-environmental behaviour is incorporated within the group. Their evidence stems from work by Capstick and Lewis (2008) and Nye and Burgess (2008) where peer pressure facilitated pro-environmental behaviour change. Nonetheless, there are limitations to this, - both studies observed environmental activist groups as their case study.

3.4.2 The criticality of context

Although recent papers such as Michie et al. (2011) presents a framework for characterising and designing behaviour change interventions the conceptual model

proposed is extremely broad and refers to 'an overarching model of behaviour'. Now whilst it is useful to recognise such need and refer to context as paramount to success, the paper does not suggest how one is to map such contexts and broadly suggests 'behaviour model mapping' as a tool to intervention design. Equally within the article the reference to Bartholomew et al. (2011:23) study into intervention mapping presents further superficial approaches to intervention methodology. For example Bartholomew et al. suggest that "intervention developers will not usually have firm empirical support for causal assumption" and go to suggest that intervention designers "must do the best they can to build a case for the validity of their hypothesis". Regan et al. (2012) infers that the concept of context is central to several leading theoretical frameworks, social marketing standards and also important when applying it to behaviour change. De Groot and Steg (2009) agree that no matter how important environmental and socially responsible interventions are, they are secondary to attracting, persuading and retaining the interest and enthusiasm of the audience. Indeed the variations between population both within and between countries, such as attitude towards public transport or the private car and the specific nature of successful intervention experiments, exemplifies contextual differences and diminishes the potential of comparative studies (Davies, 2012). Killoran et al. (2006) furthers this by suggesting that the lack of comparative results places further importance upon the significance of intervention constructs and empirical best practice. Indeed Michie et al. (2011) suggest that there no one single technique or theory that dominates the design and implementation of change behaviour interventions.

Killoran et al. (2006) found that behaviour change programs targeted to particular contexts can be effective but the evidence suggests that interventions can be inconsistent; of low validity; and based on single highly contextual studies. Oglivie et al. (2007) state the value of targeting specific populations is not clear but underline that there is no substitute for knowing the audience. According to Oglivie et al. (2007) tailored communication is any combination of strategies and information intended to reach one specific person, based on characteristics that are unique to that person, and derived from an individual assessment. In application to transport Henderson and Thornicroft (2013) and Jones and Sloman (2003) suggest the aim is to achieve a general reduction in levels of car use where suitable alternatives exist. Once

awareness has reached critical mass significant changes in travel behaviour can be assisted by targeting individuals and their households. Noar, Benac and Harris (2007) also refer to this as personalised communication but take a more superficial and broad view of tailoring. They see personalised communication as virtually the same as generic communication, except that it uses a characteristic, such as one's name, to personalise the message.

Jones and Sloman (2003) argue that knowing context/environment/audience enables change behaviour interventions that are entertaining and engaging to the targeted population. This is reinforced by Clark et al. (2002) whose research indicates that tailored materials are rated more highly and are more likely to be read compared to non-tailored materials. According to Clark, tailored interventions have outperformed non-tailored interventions in promoting change behaviour. And Davies (2012) suggests that generating an understanding of the context and participants before a campaign offers increased effectiveness and the necessary information for applying more appropriate strategies. Yet Thøgersen's (2007) evidence suggests the achievement in individual behavioural change is seen as being more effective as a member of a social group than in isolation. Take for instance the context of this study. Deeper insights into the behaviour of sport fans reveals that sport can socialize the individual into the attitudes, beliefs, and values distinctively associated with that sport. In turn, Snelgrove et al. (2008) suggests this socialisation develops 'self-identification' and 'description of self by others' within the group of sport fans. Whilst these types of behaviours are not isolated to sport fans (Bennett, 2012; Morey, 2012; Larson, Lundberg and Lexhagen, 2013), the reinforcing fashion of one's self, cultivated by the attendance at a sport event, further strengthens loyalty to the subculture associated within the sport (Valek, et al., 2014). But how influential are these characteristics in sport fans and their behaviour towards transport choices? Further research into the relationship between sport fan characteristics and travel choice will strengthen this understanding.

Targeted messages are developed towards a particular segment of the population. For example, in their 3 phases approach to interventions Jones and Sloman (2003)

reveal that interventions targeted to particular groups should be carefully selected in order to provide messages of more direct relevance to individuals. Adopting a social focus, i.e. within a sports venue, enables information of direct relevance to be supplied to the target group. In fact Noar, et al. (2007) declare most interventions are best described as targeted communication; a practice adapted from social marketing in which populations are divided into market segments and communications is targeted to the characteristics of a particular segment. The practice of message targeting is one that has been widely applied in literature (Peattie and Crane, 2005; Frame and Newton, 2007; Haq et al., 2008). However, there continues to be a lack of comparative analysis. For example, Ogilvie et al. (2007) found two similar group-based intervention programmes for patients with particular health related problems, yielded inconclusive findings. The lack of transparent methodologies in many studies led to similar inconclusive results.

Unfortunately Davies (2012) reports a continuing lack of evidence surrounding the effectiveness of combining tailored and targeted interventions in an integrated urban transport policy. In addition, Avineri and Goodwin (2010) suggest that there is a presumption that individuals, who are provided with travel information and road safety information, will make rational and informed choices to the advantage of transport system. Nevertheless, the literature supports the view that transportation interventions have often ignored psychological and cognitive processes of retrieving and using information to influence modal choice (Nisbet and Gick, 2008; McKenzie-Mohr, 2000; Truong and Hall, 2013).

The success of social marketing also depends on the level of persuasion and scrutiny given to the message (Peattie and Peattie, 2009). According to Choi and Salmon (2003), Kaptein; Markopoulos; de Ruyter and Aarts (2010) this scrutiny can be mapped to theories such as the Elaboration Likelihood model whereby persuasion is mapped against a continuum. The axis uses close scrutiny (central processing) to peripheral processing whereby short cuts are used to understand the message. Level of scrutiny depends on motivation. Indeed well-motivated central processing approaches are more likely to lead to sustained changes in behaviour. Equally

engaging people in a participatory process and addressing factors of personal relevance are likely to be more effective than those aiming simply to raise awareness or impose changes in the physical and economic environments (Philp and Taylor, 2010). Similarly Hiselius and Rosqvist (2015) believe that travel campaigns can be more effective if aligned to participant's emotions. This emphasises the work of Thøgersen (2007); Campbell et al. (2007); Michie and Abraham (2004); Abraham and Michie (2008), and Jones and Sloman (2003), in that without due consideration to the design and implementation of complex change behaviour interventions, problems may arise in the evaluation of such interventions. De Groot and Steg (2009) suggest participatory/iterative intervention design, evaluation, and research may improve the odds of success. Davies (2012) applies this level of persuasion to the factors that are deemed successful in travel change campaigns. He outlines 7 key points that travel campaigns must do Adopted from Davies (2012):

- Raise Awareness – the message must be simple and easily understood with supportive and eye catching images.
- Encourage Attitude Change – Emphasise positive scenarios of the desired behaviour change and/or the negative effects of the problem behaviour. This must derive from credible sources.
- Maintain Behaviour Change – generate brand identity and a reinforcement of a familiar message. Positive imagery will enhance self-efficacy of individuals.
- Perceptual Barriers – reduce the negative connotations towards car use and generate a positive alternative.
- Campaign design was considered stronger when based on a travel awareness campaign can support modal shift on several levels: by raising awareness of reducing car use, highlighting benefits of alternative behaviours and removing barriers to changing travel behaviour in the short-term
- Generate Trust and Credibility – Messages should have a sense of credibility, yet possess an affinity with the target population.
- Establishing personal connection at the outset – Personal communication via face to face or individuals follow ups will promote and increase the chance of success.

3.4.3 Intervention design approaches

Whilst the importance of context has been established, understanding approaches to the actual message still needs to be explored. Robertson (2008) highlights two groups of theory that cross broad areas of social psychology and relate specifically to the role of interventions. These are (1) psychological theory that deals with the cause and effects of action and generates an explanation of the root cause of behaviour.(2) Persuasion theory focuses on the methods and techniques that are needed to influence the action of individual (Minton, Lee, Orth, Kim and Kahl, 2012).

The 'Psychological Model' attempts to establish how and why people change their behaviours. Indeed attempting to explain the cause and effects of behaviour, cuts across health, addiction and pro-environmental intervention studies (Higham et al. 2013). Glanz and Bishop (2010) concur, adding that using psychological theory presents a systematic way of understanding events, behaviours and/or situations. By highlighting the underlying psychological factors and mechanisms that ignite the onset and the maintenance of behaviour change one may be able to offer guidance in the design of interventions. In support Woods, Mutrie and Scott (2002) suggest that the interventions should focus on cognitive aspects of behaviour change. Moreover this can help understand why people do or do not practice certain positive behaviours; help identify what information is needed to design an effective intervention strategy; and provide insight into how to design a program so that it is successful and influence change behaviour. Authors such as Verplanken et al. (1997) and Boswell et al. (2010) suggest the complexity of promoting travel behaviour change is a constant battle between long term and short term traits facilitated by frequency of habit and social norms. Not only are these differences influenced by cognitive beliefs, they are also influenced by perceived self-efficacy, personal norms, social values and attitudes towards environmental concerns and viable transport alternatives. This melting pot of psychological variables dominates the growing recognition that interventions which are used to change behaviour must be drawn on theories of behaviour and behaviour change in their development and design. Campbell et al. (2007) and Abraham and Michie (2008) agree that theory based interventions promote a definite pathway between design and theory and increase the validity in intervention design. This also

avoids interventions becoming assumptive and superficial in the analysis and evaluation.

The second model originates from social marketing and considers 'Persuasion and Communication' theory to explain how a message is transmitted to a receiver and how that message can be tailored to best effect (Peattie and Peattie, 2009; Thøgersen, 2007; Barr et al. 2011). Biddle and Fuchs (2009) suggest that these theories focus upon the methods and techniques that need to be implemented to influence the action. In this approach interventions must provide evidence based information on the mechanisms required (therapeutic, educational, political and structural) in order to influence the underlying psychological factors. In terms of the mechanisms Jones and Sloman's (2003) findings suggest there is a need to employ wide ranging communication tools to build up levels of awareness across the appropriate communities. These include targeted posters, local cinema and radio advertising, media events and targeted awareness initiatives. Markowitz and Doppelt (2009) conclude that the most helpful interventions for motivating people beyond disinterest tend to be experiential change mechanisms. Similarly Williams and French (2011) outlines five approaches. (1) Using an event (positive/negative) to encourage an individual to think about whether their current behaviour makes sense; (2) distributing pros/con information that builds awareness of existing behaviours and benefits of alternatives; (3) attempting to connect emotional inspiration to the benefits of pro-environmental behaviour; (4) increasing choice and offer structured alternatives, thus help them see that the change need not be overwhelming; and (5) having a symbol of credibility/trustworthiness to endorse pro-environmental behaviour. Yet Spotswood, French, Tapp and Stead (2011) criticises this level of credibility and trustworthiness suggesting that persuasion gets uncomfortably close to manipulation – a label put upon social marketing within third sector and environmental sectors. Yet Minton et al. (2012) suggest that consumers are so used to persuasive marketing techniques that they have progressed past the need for or acceptance of reward as part of change. Indeed, Minton et al.'s findings suggest that social marketing campaigns that feed into being part of something bigger brings about greater success in pro-environmental behaviour change. Hiselius and Rosqvist (2015) build on this by suggesting that travel

awareness campaigns contribute to an overarching awareness of sustainable lifestyles.

In terms of travel mechanisms Firman et al. (2012) suggest that the most frequently used travel measures include marketing campaigns focused on alternative travel modes and information about how to change travel behaviour. Whilst Anable et al. (2006) note the limitations in just using awareness-raising campaigns, and Ratchford and Parker (2011) support a combination of smarter choice interventions, both publications note that targeted information is necessary to support pro-environmental behaviour. Building on this Davies (2012) reviewed various travel change campaigns. His study noted the apparent lack of academic evidence to ascertain the most salient approaches to travel behaviour change programmes. Notwithstanding the most prevalent successes centred around message recall, stakeholder acceptance and change and infrastructure development. In support, De Gues et al. (2008) suggests that marketing campaigns directed towards travel change can help create social support, increase awareness, decrease barriers to change and provide information for viable alternatives. As Michie, et al. (2011) purport, such information reinforces the links between specific behaviours and climate change and helps establish cognitive dissonance in current behaviour. The realisation of cognitive dissonance is also remarked on by Markowitz and Doppelt (2009). They suggest that the overall goal of smarter choice interventions is three-fold: to generate cognitive dissonance; to increase efficacy; and to build awareness of benefits within a target group.

These approaches - psychology and persuasion - may have different emphasis but according to Glanz and Bishop (2010) are quite complimentary. This also supports the work of Michie et al. (2008) whom advocate a broad mix of psychology theories in the design and implementation of interventions to increase the validity and reliability of such interventions. For example understanding why people behave the way they do will not be enough by themselves to fully influence behaviour change. A combination of persuasion and psychology is needed to guide the population through the relationships among knowledge, awareness of the need to change, intention to change, and an actual change in behaviour. Nonetheless, Michie et al. (2011) believes the challenge lies in connecting the design of interventions with the individual and

ensuring that the message is received. Drawing similar conclusions to Campbell et al. (2007), Michie and Abraham (2004), Abraham and Michie (2008), and Jones and Sloman (2003) conclude that without due consideration of psychology theories in the design and implementation of interventions, problems may arise connecting with individuals and in the evaluation of such interventions.

3.4.4 Does theory driven intervention design work?

Several reviews conclude that interventions based on theory or explicitly described theoretical constructs are more effective than those not using theory (Avineri and Goodwin, 2010; Glanz and Bishop, 2010; Biddle and Fuchs, 2009; Markowitz and Doppelt, 2009). For example Avineri and Goodwin (2010) suggest that depending on context, a prolonged application of 'smarter choice' applications over whole cities may reduce traffic congestion between 11%-20%. However, Glanz and Bishop (2010) and Michie et al. (2011) have found that a number of intervention studies have not rationalised the mechanisms that communicate the interventions. Thus the apparent intervention successes could be dependent on other factors and weaken the results. With this in mind, Biddle and Fuchs (2009) recommend that the mechanisms that facilitate pro-environmental interventions must a). Communicate the risks of certain behaviours; b). Identify the impact of environmental problems; and c). Identify the control/influence that individuals have on the environment. Markowitz and Doppelt (2009) offer a similar construct and suggest the overall goal of these interventions is three-fold: to generate dissonance; to increase efficacy; and to build awareness of benefits within a target group. For example, bicycling and walking to work becomes more enjoyable if doubled as an exercise activity and money saving scheme. At the same time, increases in perceived behavioural control through health and safety information and maps, bus routes, bicycle routes and walking routes is paramount to continued success. These constructs highlight the difficulties in promoting behaviour change when individuals cannot see how their actions impact on the environment and can reduce barriers to pro-environmental behaviour, such as the feeling of being overwhelmed and conflicting information.

Indeed, Anable (2005) proposes stronger short term intentions offer a more favourable attitude towards the promotion of travel behaviour change due to the greater perceived control and the convenience of change in the near future. This suggests that one could increase the probable efficacy of the TTM in promoting behaviour changes if short term dynamics are taken into account within the design of the smarter choice intervention programme – particularly within this study. However, consideration of efficacy must be assessed in light of fan behaviour and the motives and activities before attending the sports venue. In the case of sport, this includes game attendance, media 'viewership', purchasing licensed products, and travel to follow the team (Green, 2001; Gibson et al. 2003; Fairley, 2009). This may influence normative choices and the strength of habitual decision making.

These thoughts are further by findings from Glanz and Bishop (2010) who purport that interventions based upon social and behavioural science theories are more effective than those lacking theoretical base. In discussion Abraham and Michie (2008) proposes three reasons for advocating the use of theory in intervention design:

- Interventions are likely to be more effective if they target causal determinants of behaviour and behaviour change
- Theory can be tested and developed by evaluations of interventions only if those interventions and evaluations are theoretically informed
- Theory-based interventions facilitate an understanding of what works and thus a basis for developing better theory across different contexts, populations and behaviours.

Evidently developing theory linked behaviour change techniques is integral to reducing the variability and subjectivity of current intervention design and description evidenced in published articles. By preparing explicit direction and linkage to theory, the possibility of comparative studies across interventions, behavioural domains, and research can be achieved and increase validity and reliability of approaches. The use of intervention mapping provides a framework that fits with De Groot and Steg (2009) and suggests taking a broader view of the social variables that can help design a more

comprehensive explanation of the problem at hand (Kok, Schallma, Ruiter, Van Empelen and Brug 2004). A well-reasoned intervention technique will explicitly comment on the mechanisms behind the design and implementation of interventions and will reduce uncertainty regarding when, and in what respects, differences in content impact upon effectiveness. This will reduce the risk that ineffective or unproven interventions may be adopted.

More specifically Glanz and Bishop (2010) propose that applying a rigorous testing of theory based interventions (including measurement and analysis of mediator and moderators) should be seen as the building blocks of the evidence base in valid behaviour change experiment. These approaches help clarify the link between inclusion of theory that encourages change processes and the characteristics of the targeted population - links that are not always clear in existing published intervention descriptions. Building on this and in application to the TTM, Aveyard et al. (2009) suggest that TTM-based interventions that are mapped against the PoC are hypothesised to be more effective than traditional approaches because they target stage based characteristics. Stage-based interventions are greater for participants as they are stage matched and respond to psychological constructs identified in the PoC. According to Kim and Bradley (2009) these studies have generally supported the stage construct of the model and the relationship of the model with self-efficacy, decisional balance and change processes.

3.5 Summary

The complexity of behavioural change has fuelled a debate regarding which psychology models to use to influence travel behaviour. The literature review reveals common factors that are associated with mainstream models used in transport psychology. These models are the Theory of Planned Behaviour, Social Cognitive Theory and the Transtheoretical Model of Change. Each model has merits and limitations – which are explored within the chapter. Yet on balance this thesis rests on the constructs of the Transtheoretical Model. This model is recognised as more integrative and draws on various models in its design. The framework appreciates change in individuals and group and provides guidance on how to change behaviours. More importantly to this study, the model also provides guidance on how to change

those that don't recognise that they have a problem behaviour. Unfortunately studies that use TTM in changing the travel behaviour of participants only explore certain aspects of the TTM construct. As a result, studies are found wanting.

Social marketing has propelled behaviour change as a dominant tool in communicating persuasive and pro-environmental messages to the general public. This chapter outlines best practices used in social marketing, including intervention design. These discussions focused on psychological and persuasive techniques and thus, provided a link to previous sections in the chapter. Finally, the literature revealed evidence of how theory based interventions superseded others. Once again best practice revealed a common approach to theory based interventions that focus on pro-environmental behaviours – (1) communicate the risk of existing behaviours, (2) identify the impact of environmental problems and (3) identify the control individuals have on the environment. These discussions were also applied to the TTM and underlined the efficacy of stage based interventions. Nevertheless, a common approach only outlines the framework and falls short of providing guidance on how to design interventions and how these interventions can be applied to theory.

Section III
Methodological Approach

Chapter Four

Research Approach

4.1 Introduction

This chapter provides an underlying rationale for the approaches taken in the methods and outlines an application to the thesis. Findings from the literature such as sport fan decision making, sport fan travel behaviours, change behaviour models and social marketing approaches underpin the justification of methods throughout this section. This theoretical connection provides an overarching commentary for a framework that supports the methodological procedures discussed in each study and clearly establishes the how and why.

4.2 Research approach

This study is explanatory in nature, where according to Malhotra and Grover (1998) rational, logic and common sense reasoning help determine and explain the reasons behind a particular problem – in this case changing the travel behaviour of sport fans. Indeed establishing these determining factors reflects a continuing need within transport behaviour research (Adams and White, 2005; Bamberg, 2007; Borgstede, et al., 2013; Higham et al. 2012 and De Groot and Schuitema, 2012) and reflects the objectives of this thesis (refer to chapter one). Certainly it is the underlying psychological variables of the sport fan that are of more interest to the researcher. The literature review revealed that these underlying psychological variables and their application to travel behaviour have been under researched in the field of leisure and tourism studies. Thus, understanding the psychological characteristics of the sport fan and applying these elements to theory led interventions is quite unique and as Farag and Lyons (2012) notes, essential if alternatives to the car are to be used in leisure trips.

Whilst objective criteria may allow one to make links or associations between variables and inference about causality, explanatory studies such as this also look for explanations of the nature of certain relationships. As Zikmund, Banin, Carr and Griffin (2012) suggests explanatory research looks at how things come together and interact

– how did it get there? Where is it going next? Moving beyond objectivism, such a research approach as this allows the researcher to gain a deeper understanding of the antecedents that exist between variables. This deeper understanding is also exemplified well by Prochaska and Norcross (2007) and Castonguay et al. (2003) who suggest that using constructs of the TTM provide further insights into change behaviour by (1) describing the process that will facilitate change; (2) illustrate characteristics of individuals at each stage; (3) allow for measurement of movement between stages; (4) identify the mechanisms that will facilitate or limit change and also recognise other types of change. However, the literature review notes limited success in establishing the relationships with all four constructs of the TTM (Aveyard et al. 2009 Kim and Bradley, 2009) so adopting an explanatory approach to this study and applying this to all four constructs of the TTM enabled a deeper and fuller exploration of the how and why.

In recognition of these deeper insights a social realism philosophical stance has been used. This places the research between positivism and interpretivism and reflects the literature which suggests transport decisions are made within social and political dimensions (Higham et al. 2013; Guell et al., 2012). Taking a social realism stance also reflects the true nature of travel decisions made in a leisure setting and the competing social, environmental and political messages received (Farber and Paez, 2009) by the sport fans. To ignore such perspectives, to ignore the acceptance of layers of realism and to ignore this influence would weaken this study and disregard key literature. In fact, accepting a sense of social realism further supports the stages of research explored in chapter three, whereby various methods of data collection provides and bring together differing viewpoints and supports the achievement of the aforementioned objectives.

As a consequence this thesis and indeed explanatory research, offered the researcher the opportunity of triangulation. According to Patton (2002) and Babbie (2012) by combining methods, triangulation can be used to strengthen a study. Various forms of triangulation exist, (1) data triangulation where different sources of data are used; (2) investigator triangulation involving the use of different researchers;

and (3) theory triangulation using multiple perspectives (Ghauri and Grønhaug, 2002 and Patton, 2002) . This study predominantly used methodological triangulation. For example the study used questionnaires to survey sport fans pre and post intervention, used preference ratings for assessing marketing campaigns and assigned interviews for post intervention discussion. Further details are found in section three – research studies.

Despite the fact that there are those that see triangulation as a convergence of perspectives to achieve the ultimate truth, Howe (2012) argues that triangulation (couched in layers of realism) moves towards completeness rather than convergence of viewpoints. Similar to Coolican (2014), Howe (2012) sees that different perspectives provide a fuller picture of the context the research is performing in, rather than an establishment of *THE* ultimate truth. The literature also points towards the need for different perspectives that consider convergence of viewpoints and context. For example Richter et al. (2010) identified several gaps in knowledge and the need for multi method longitudinal studies that examine the course of behaviour changes over time. For example cross sectional casual conversation and observations formed the basis of methods for Fairley's (2003) analysis of supporter group travel behaviour and Bamberg distributed a cross sectional questionnaire exploring intention in his 2003 study. Whilst intention and consumer behaviour are important factors, the use of cross sectional surveys reduced the ability to successfully match SoC and the PoC. Thus, applying methodological guidance advocated by Prochaka and DiClemente (1992) such as a longitudinal approach utilising a mixed method enhanced the reliability of the thesis and allowed for a consideration of all four aspects of the TTM.

Assessing the effects and effectiveness of interventions within a social realism setting has a number of merits. For example this thesis accepted that subcultures exist and have a profound effect on the characteristics of individuals whereby consumers take on homogenous characteristics in travel settings (Marcucci and Gatta, 2011; Murtagh et al. 2012a) and behaviours are modified during encounters within these subcultures. This also highlighted the importance of intentions (Robson, 2008) and as Draper

(2001) purports, evaluation highlights issues to do with change. The application of the TTM as a tool to modify change behaviour may well seek to produce or encourage change within the participants but this is not the entirety of the project. As Robson (2008) suggests, the purpose of evaluation research can lay within the assessment of the efficiency of a programme or cognisance of success. Contemporaneously, to understand why the application of the TTM worked or did not work within the context of this thesis will enable further development and refinement of the model (such as intervention design, methods of communication and reporting mechanisms) and will further contribute to knowledge in this field.

Equally, consideration of context is paramount. For example, more than one factor may be involved in a particular situation, and whether or not these factors operate will depend on the context. In applying the TTM constructs to an evaluative approach, the depth of abstraction by Prochaska and DiClemente (1992) between the theoretical assumptions of a system of therapy and the techniques proposed by the theory (ten changes processes, SoC, self-efficacy and decisional balance) mirror the realism approach suggested by Robson (2008) where the epistemological basis is stratified into different layers, and incorporates varied mechanisms at individual, group, institutional, and societal levels (Lampropoulos, 2000). Whilst context is important to theory, context also supports the philosophical stance argued earlier – where scientific studies into social psychology embody Marx whom describes context as having the ability to facilitate or impede the development of cognisance and action (Inglehart and Welzel, 2005) thus individuals become the partial products and producers of their own environment.

Thus a social realism view allows for situational and voluntary factors to be taken account of the cognitions and behaviours of humans – supporting the concept of triangulation and the stages of research outlined earlier. As Gordon (1991) in Holden and Lynch (2004) and Descombe (2008) posits this research simply need to qualify that the findings as contextually explanatory and probably generalisable and not absolute certain.

4.3 Quantitative and qualitative methods

Evidently there was a need to triangulate research within this thesis to enable an account for human behaviour, group characteristics and measure variables of behaviour and possibly behaviour change. In order to recreate the aforementioned realistic situations Guiver (2006) proposes that existing transport research relies on the application of quantitative measures. Quantitative methods and measures provide a nomothetic level discussion across context and scale. Most notably these measures are mathematical based and discuss the variance between the independent variables against the dependent variables. Moreover, according to Marconi's et al. (2011) recent study that looks at international comparison of travel behaviour methods, modal choice research predominately compares two or more situations in differing conditions and again, these measures attempt to exclude certain factors and are predominantly quasi-experimental. Building on this, they suggest that by controlling the situation and changing the independent variables one can evaluate the influence of these on the dependent variable. These influences range from change in fare, variation in travel time and frequency, different journey times and substitute journey options/information. These studies recognise changes in travel behaviour due to the physical or monetary changes in the supply of transport which is often on an aggregate level. These studies also tend to use assumptions of 'Utility' theory which in economic terms is the satisfaction gained from the consumption of a good/service. And in terms of transportation models then seek to identify the attributes and deduce consistent relationships and help establish predicated future behaviour (Grotenhuis et al. 2007).

Patently the use of statistical analysis have been used across variables and between groups. Justification of each statistical analysis is found in section three of this thesis. However, in applying psychological models to different context, such as transport, Francis et al. (2004) suggests that the development of the measures and the operationalisation of psychological constructs can be more challenging. Indeed, for comparative discussion based on statistical analysis, the measures of the model need to be fully justified before any research findings can be produced. Richardson (2003) found that a number of transportation studies have used ineffective or poorly designed measures; implies that the algorithms and questionnaires that researchers have used to assign people to SoC have not been standardised, compared empirically,

or validated. Equally, this has connotations towards the approach taken in this research project. Within this thesis, the development of each questionnaire has been fully justified and this discussion is found in section three of the thesis.

Notwithstanding the difficulties in creating the measures, Hankins et al. (2000) puts forward that the statistical analysis of standardised measures assist in explaining variances and result in furthering the application of theoretical models through data comparison. For example, DiStefano et al. (2009) suggests that statistics may be used for a variety of purposes such as reducing a large number of items from a questionnaire to a smaller number of components, or ranking factors within particular models/items and use the information with hypothesis tests to determine how factors differ between groups. Indeed, establishing causality and relationships can be used in more exploratory transport research and can also be related to this study (Guiver, 2006). For example, Fava, Velicer and Prochaska (1985) Fahrenwald and Walker (2003), Di Noia and Prochaska (2006) and Callaghan et al (2010) used repeated ANOVA to investigate factors of time and groups on TTM scores. Indeed the use of practical significance and meaningfulness of between-group comparisons allows the proliferation of psychological models in different context. Nonetheless, Kellow (1998) notes caution by criticising the common practice of conclusions based solely on statistically significant results.

Whilst the use of quantitative studies can provide a nomothetic level discussion across context and scale, the findings are still constrained by the scope of the question and the survey instrument. In support Kenyon and Lyons argue that a quantitative approach would not enable a realisation of the reasoning behind such personal travel choices. Indeed according to Bamberg (2007) a fundamental flaw of transportation research is not establishing the qualitative approach that would probe the reasoning behind attitudes and behaviours towards modal choice prior to discussion. Qualitative research seeks to establish understanding of the participant's view of the world and adopts a framework that moves away from a model predetermined by the researcher (Creswell, 2009). Qualitative approaches have been used in transport research projects. For example Fuller et al. (2007) investigated car use through in-depth, semi-structured interviews targeting specific market segments. And whilst language is at the

forefront of qualitative data collection, it can present limitations to the validity of the data. Nevertheless Creswell (2009) argues that language shapes our understanding and actions and forms of discourse analysis have been used in a myriad of industries. For example Hagman (2003) cited in Guiver (2006) used discourse analysis to establish the perception of car users and the advantages and disadvantages of car use. Kenyon and Lyons (2003) exemplify this approach and established a series of workshops on a national scale to assess the potential barriers of integrated multimodal traveller information as a potential contributor to modal change.

Evidently there is a need for qualitative and quantitative approaches in transport studies and this has been applied to this thesis and found in chapter nine. Indeed a more rounded approach that considers the effect level of results further supports the approach of social realism used in this thesis. Further discussion and application can be found in section three.

4.4 Case study context

Evaluation research makes use of fixed and flexible research strategies (Birckmayer and Weiss, 2000) such as case studies. Although there are practical concerns in establishing the case study participants (explored further in this section) the flexibility in design and execution of the case study, coupled with the fact that most evaluations are concerned with the effectiveness and appropriateness of an intervention programme in a specific setting, make the case study strategy appropriate for many evaluations. According to Brotherton (2008) case studies can be multi-faceted thus show different perspective; can show how processes work over time and give insights into cause and effect; serve both exploratory, descriptive and explanatory purposes; and supplement statistics or survey results. At the same time there are a number of limiting factors that can affect the results. For example, they can limit generalisability; are time consuming and expensive to facilitate; and can lead to bias results. To limit these negative impacts table five outlines the case study management techniques that were used in this study.

A professional rugby league team agreed to participate in the study and allowed access on match days but requested anonymity. The rugby league team have a multi-use venue, are located in the West Yorkshire area, which is supported well by local public transport infrastructure. Home matches are organised at regular intervals and advertised throughout a program of matches across a particular season. Supporters are spread across the North West of England and have a varied demographic range. More importantly it has been identified from personal communication with stadium management that previous infrastructure changes such as reduced car parking spaces, production of cycle lanes and erection of cycle spaces has had limited effect on congestion during home matches. Stadium management have confirmed that this is reflected in local opinion whilst home matches are being played.

Gaining access to sport fans was central to the method and identifying a sport stadium with a 'home team' where home supporters made regular journeys to the stadium was even more important. Using a sport venue with a 'home team' increased the probability of participants returning and allowed for marketing interventions to be implemented and evaluated whilst participants attended home matches. As this study seeks to assess the effectiveness of the extended TTM on modal choice over a three month period within a specific sample, it required the same sample to repeatedly return and report their modal choices. It was envisaged that the home supporters attended the majority of home matches within a defined period and the marketing intervention schedule reflected this (see appendix 1 for schedules).

An experimental group and a control group were selected from the sample population. The experimental group were exposed to marketing intervention campaign whilst the control group were not. A comparison of two similar groups within the same population helped verify the effects of the TTM intervention programme on the sample. As suggested by Oakley and Fullerton (1996) the comparative approach provided the strongest type of evaluation but this strength had to be maintained by a systematic and planned execution of the stages of research (see figure 9 for stages of research). Other events were considered, such as community events and music events. However, the probability of a sample returning in high frequency over a fixed period was deemed to be small and impinge on the reliability of the study. Moreover, the

introduction of incentives for a sample to return to these types of events was considered too invasive and would increase the risk of bias and as Ahrens and Pigeot (2005) propose, could reduce the validity and true value of the results. For more discussion please refer to sample management and contingency planning. Table 5 outlines the approaches taken to reduce the case study limitations.

Table 5 Case Study Management

Limitations	Methods to reduce limitations
Limited generalisability; not representative of entire populations	Highlight the parameters and limitations of the study throughout the text.
Time-consuming and expensive to administer	Recruit volunteers, identify local sport venues from existing industry contacts, use additional employer resources where appropriate.
Can be bias of both the recipient (researcher) and supplier of information	Case study protocols provided to all research volunteers. This will cover item such as aim of research, standard operating procedures, statement of ethics, confidentiality and anonymity.
Data can be too rich, broad and complex to be analysed	Update training required in statistical software such as SPSS. Review published work and possible quantitative methods.
Data analysis depends strongly on the analytical skills of the researcher	Update required in statistical software such as SPSS. Review of published work and possible quantitative methods.
Particularly difficult when dealing (2002)g with rich and complex data	Review of published work and possible quantitative methods.

4.5 Data collection

A wave of self-reporting questionnaires was a prominent feature in this methodology. Consequently, discussion regarding the appropriateness of this method is required. Marconi et al. (2004), Thornton et al. (2011) and Sullman and Taylor (2010) state self-reporting questionnaires are frequently used to investigate transport behaviour, in particular attitude, emotion and personality characteristics. According to Bonnel et al. (2009) the act of 'self-reporting' in transport behaviour change surveys has advantages and disadvantages that need to be taken into account to improve validity and reliability in methodological design.

There is an inference that respondents might provide information to support the project rather than provide honest responses. Nevertheless, according to Golob and Golob

(1989) fears over attitude conditioning within respondents during panel surveys are unfounded and questions can be asked that relate to preferences, perceptions, feelings and behavioural intent. In addition, Lajunen and Summala (2003) suggest self-reporting surveys provide a means for studying driving behaviours and in-depth information about antecedents of certain driving behaviours; aspects of personal behaviour which could be difficult or even impossible to study by using other methods like observations, interviews and analyses of national accident statistics (Richardson et al. 1996). Although the use of observations is common place for traffic surveys it does not provide an opportunity to test attitudinal responses to marketing interventions. Moreover, observation requires a large sample size and frequently finds difficulty in differentiating traffic generated by the target population. The use of GPS systems can assist but does provide additional complexities which are above and beyond the resources for this study. Indeed Stopher, Swann and Fitzgerald (2007) in Bonnel et al. (2009) argue the more complex the requirements are of participants the higher the attrition in longitudinal surveys. Lajunen and Summala go on to conclude in their study that self-reports of driver behaviour are relatively reliable and free from aspects of bias. However, it is recommended by Richardson et al. (1996), Golob and Golob (1989) and Lajunen and Summala (2003) to keep attitudinal questions directed to aspects of lives where well-formed perceptions and behaviour is formed, e.g. travel choice. In addition, special attention should be paid to the instructions and procedure of how self-reports of driving are collected. According to Lajunen and Summala (2003) anonymous responses and settings in which individuals cannot be singled out, and instructions stressing importance of honest answers are all effective techniques for improving the reliability of self-reports. Table 6 outlines the methods used to reduce the limitations on self-reporting questionnaires.

Table 6 - Advantages and Disadvantages of Self-Reporting Questionnaires

Advantages	Disadvantages	Methods to reduce limitation
Self-completion questionnaires are generally much less expensive than a comparable personal interview survey.	High level of non-response.	Please refer to contingency planning
A wide geographic coverage is possible in the sample.	The layout and wording of the questionnaire MUST be extremely clear and simple because there is no interviewer on hand to clarify the intent of the questions	Pilot test the questionnaire
The respondent has ample time to consider the questions before providing an answer, and hence it is possible to obtain considered responses to questions in a self-completion questionnaire.	It is difficult to ensure that the correct person fills out the questionnaire form. It is therefore vital to incorporate validation measures which give some information on proxy reporting in the self-completion questionnaire design.	Ascertain key baseline questions related to personal information.
The respondent can choose the time and place in which to complete the questionnaire (except for questionnaires which must be completed quickly, such as on-board a vehicle).	Responses from self-completion surveys tend to be skewed towards the more literate sectors of the population which tends to travel in a different way than the remainder of people.	Develop rigorous follow-up procedures for non-respondents to ensure robust data
By adding a few new questions to each round of a panel study survey, it is possible to accumulate more information about each respondent than would be possible in either a cross-sectional or a successive sample questionnaire.	In self-completion questionnaire the answers on the questionnaire form must be accepted as final; there is often no chance to probe further to clarify ambiguous or unclear answers.	Pilot test the questionnaire
It is also possible for a respondent to consult documents, if necessary, in order to provide factual information as an answer to a question (e.g. consult a log book to provide information about vehicle operating costs).	Opinions given may not in fact be the respondent's own opinion at that time, but may be the result of discussion with others at a later time.	Interviews used to triangulate the attitudinal data.
Ability to provide personal information that may not necessarily communicate in a face to face encounter.	Answers to questions cannot be treated as independent since the respondent has the opportunity to scan the entire list of questions before answering any of them.	Ensure there is no repetition in questions and pilot test.

Adapted from Richardson et al (1996)

Interviews were also prevalent within this methodology and provided a more ideographic proposition, explored facets of social constructs and offered opportunities for triangulation. Consequently, discussion regarding the appropriateness of this

method is also required. As noted by Robson (2008) interviews lend themselves to a mixed method approach, such as post-intervention interviews that explore participants' perspectives. Richardson et al. (1996) proposes that in-depth interviews (that penetrate beyond the superficial question-and-answer format of structured interviews) facilitate the expression of sincere beliefs and attitudes. In support Hardon et al. (2004) exalt the virtues of semi structured interviews suggesting they build a path between opposing structured and unstructured approaches and allow conversation to take place whilst delivering meaning. Once again this methodology harks back to social realism and investigates where the individual, social and contextual dimensions of transport are explored (Kane and Mistro, 2003). Indeed Kane and Mistro (2003) suggest that adopting several methodologies will develop skills beyond technical aspects of transport research. Particular benefits of the individual interview have been adapted from Richardson et al. (1996):

- Dominating individuals, intra-group rivalry and peer pressure are absent, enabling both majority and minority opinions to be expressed;
- Personal material can be discussed without recrimination
- Values which may be considered socially unacceptable, such as a pro-environmental behaviour, can be expressed.

Table 7 outlines the methods used to reduce the limitations of interviews.

Table 7 - Methodological issues of interviews

Methodological Issues	Methods to reduce limitations
Skills and attributes of the interviewer and data collection will influence quality of data collection	Lead researcher to undertake interviews, develop interview protocols, record all interviews and code/analyse using structured analysis .
Interviews may only get isolated responses rather than representation of the population	Reiterate in methodology and findings that this is a homogenous group with similar attributes relating to specific scenario /collection of data.
Interviews are time consuming	Provide realistic expectations to participants and locate interviews in easy access, e.g. the Stadium or by telephone
Lack of standardisation raises concerns about reliability	Adhere to Interview Protocols
Analysis of interviews has potential of bias	Record all interviews and code/analyse using a structured analysis.

Adapted from Robson (2008) and Boyce and Neal (2006).

4.6 Sampling techniques

According to O'Connell (2002) intervention studies must provide a model that reflects the target population because no matter how well designed the interventions are, if the sample is not reflective of the targeted population, the information resulting from the sample will be bias. Unfortunately access to the case study was limited and agreement was not given to access ticket holder information such as name and addresses. Thus the opportunity to use probability sampling was restricted. Probability sampling requires a list or frame of the intended population available to the researcher. This was unachievable and significantly influenced the sample size and choices available to the researcher. Whilst Kellow (1998) argued that a large sample size does not necessarily guarantee integrity or statistical significance, it does exert pressure on the chosen non-probability sampling techniques and relevance of model to the targeted population.

Consequently purposeful sampling was used. Purposeful sampling is necessary to achieve replication amongst individual cases; it ensures that participants are willing and open to interact and to share information in relatively long and in-depth studies (Patton, 2002 and Coolican 2014). Given the aforementioned case context, the purposive case study methodology maximises the richness, validity and depth of the information obtained and allows the researcher to consider averages within participants but equally reflect on the extremities of the sample and their behaviours. Thus purposeful sampling is a step above simple convenience sampling (O'Connell, 2002). This sampling approach also supports a quasi-experiment study and flexibility in the execution of the experiment aspects of the study (Brickmayer and Weiss, 2000). This approach also supports the concept of returning participants – which is crucial in establishing stability within the sample over a long period of time. Lawler, Ness, Cope, Davis, Insall and Riddoch (2003) adds that principles of controlled studies within the realm of sport will add to the validity of psychological application and enhance the ability to provide a comparative analysis.

Nonetheless, there were limitations to the sample. There was the possibility of pro-environmental bias within the sample. Nonetheless, the characteristics of the proposed sample reflects Robson's (2008) consideration where the epistemological basis is stratified into different layers, and incorporates varied mechanisms at

individual, group, and societal levels. Indeed, sport and sport fan attendance is often seen as a microcosm of society (Volkov et al. 2008) with cross cultural representation which assists in reducing concern of sample bias. Although the sample does not set out to be culturally bias, research by Thrane (2001) and White and Wilson (1999) suggest that income as an influencing factor on sport spectatorship attendance. Yet claims of bias in the sample does not cover all demographics measures. Thrane (2001) states there are no systemic relationship with sport spectatorship attendance and levels of education. Even though Kollmuss and Agyeman (2002) point out that education is seen as a driver to pro-environmental attitude it is proposed that the levels of education are not a defining influence upon spectatorship attendance, thus reduced concern of sample bias. Baseline questions were used to ascertain education levels in the sample to allow for correlation between education and engagement and highlight any limitation in the study. To reduce this limitation further incentives were implemented to encourage participation across the sample – irrespective of demographic - although participants were 18 or over. It is imperceptive to consider a pre-driving age that are dependent on adults, characterised by boundaries of rationality (Jones, 2001) and possess finite opportunities of transport choices. Previous transportation research has also used a minimum age in the sample (Bamberg, 2007 and Verplanken and Wood, 2006).

Adopting a longitudinal approach to a study such as this can, according to Cotter et al. (2002), develop attrition which can erode demonstrable intervention effects. With such small changes in behaviour change demonstrated in existing studies (Armitage and Arden, 2002) it is imperative that attrition strategies help maintain statistically significant numbers of participants (Stopher and Greaves, 2007; Bonnel, Lee-Gosseling, Madre and Smud, 2009). Consequently, adjusting the sample size to take attrition into account meant an attempt to over sample. Ruiz, Timmermans and Polak (2008) found in their literature review attrition rates varied between 30% and 40% in transport panel surveys (phase one to phase two). Brotherton (2008) also recognised that maintaining the sample size is crucial to any longitudinal study. Prinz et al. (2001) provides a raft of practical methods to retain participants. The recommendations in table 8 were implemented into the case study protocols, to research volunteers and communicated to participants.

Table 8 - Sample Management

Suggested strategies	Application to study
Effective recruitment of participants to generate appropriate sample size	Recruit research assistants at various points of entry within and outside the stadium. Expected to get 30 personally known volunteers and plan to get 20-30 respondents per volunteer. Volunteers will also distribute flyers with online survey information and Stadium management will insert advertisement in Match day programme. Funded incentives will be advertised to increase participation.
Staying in touch - longitudinal retention can be enhanced by maintaining continuity of information, personnel, and procedures	Frequent communication with both groups above and beyond intervention information. This will include 'thank you' notes, 'staying in touch sheets' and 'reminders of incentives' yet conditioning, rotation bias and panel fatigue imperatives apply.
One potential way to increase retention in intervention studies is to maintain flexibility in scheduling	Offer varied ways in which to respond to information and make it simple – prepaid envelopes, online anytime with little time commitment.
Emphasis on developing good rapport, making the participant feel comfortable with the researcher/assistant	Briefing of research volunteers to ensure quality in communication that makes all participants feel at ease.
Research assistants need to be friendly, courteous at all times	Briefing of research volunteers to ensure quality in communication and ability to answer questions fully.
Acquiring detailed and correct contact information first time is essential for efficient maintenance of research database	Briefing of research volunteers to ensure quality of information. Practice sessions to highlight any operational issues.
Retaining research assistant over the research time frame	Pick research volunteers that are personally known and have a psychological contract with the lead researcher.
Provide incentives	Free prize draw entry – pre and post.
Withdraw only definitive refusals - Many cases who fail to participate in one wave of data collection will participate in later waves if given the chance	Provide flexible and numerous points to respond to questionnaire.

Adapted from Cotter et al. (2002) and Prinz et al. (2001)

4.7 Summary

This chapter clarified the research approach – social realism – and reflected the multi-faceted contexts that apply to individuals when making travel decisions within a leisure context. Consideration of context was also applied to the case study and an examination of the practical justification of the case study was undertaken. The inclusion of mixed methods and need for triangulation was articulated and how it supports the research approach taken and context of the thesis – a quasi experimental approach. Indeed triangulation fed into the debate surrounding psychological measures and the need for nomothetic and ideographic analysis that attempts to establish relationships and causality within the thesis. Finally data collection was considered and these were integrated with the research approach; reflected on the context of the study and social constructs where travel decisions are made.

Chapter Five

Research Objectives and Hypotheses

There are four fundamental reasons that support the rationale of this study (1) a lack of research focussing on travel of sport fans at events, (2) a reliance on part-tested TTM constructs, (3) a lack of transparency in intervention design and (4) an extension of the TTM to sport events and events management. These will be considered in turn below, linking them to the research objectives and hypotheses of this study.

Firstly there is lack of research on travel behaviour of attendees at sport events. More broadly, existing travel behaviour studies show very little application to sport or leisure based contexts. For example Rose and Marfurt (2006); Wen et al. (2005); Shannon et al. (2006); Bowles et al. (2006) and Mutrie et al. (2001) placed their sample in the workplace, Bamberg and Schmidt (2003) and Redding et al. (2014) use academia with numerous others using segments of specific communities. Only Anable (2005) applies her studies to attendance in the leisure sector albeit the National Trust and not sport fan travel behaviour. Nonetheless, the dominance of such context narrows the sample frame and can add bias to the results where employees may have a vested interest in travel behaviour change or where students/academics have a greater access to, or understanding of, the underlying reasons for travel behaviour change. Thus, the consideration of a leisure based context as opposed to a work based context will provide a unique aspect to the study and move knowledge forward in leisure based transport management and policy.

Second there is a reliance on part tested TTM measures and cross sectional data. As a result, the efficacy of TTM based approaches to travel behaviour change cannot be determined with frequent ease. It is only when they are combined with all four constructs of the TTM that any explanatory power can be assumed. Thus, the purpose of this thesis is to use all four constructs of the TTM in a longitudinal experiment that clearly abides by the methodologies recommended by the founders of the TTM. Presenting a suite of marketing interventions that cuts across all SoC is not seen as the normal method. In support authors such as Adams and White (2004) suggest a

broad range of interventions that recognise that individuals within the targeted group (Sport fans) will be at different stages in the SoC and that this approach may actually increase the response in the target group.

Thirdly there is an over reliance on marketing intervention testing that lacks theoretical mapping and intention testing. Developing theory linked behaviour change interventions is integral to reducing the variability and subjectivity of current intervention design evidenced in existing published articles (Michie et. 2011). Clearly the basis of intervention mapping should allow one to review the mechanisms and reasoning behind such use of marketing interventions rather than a casual judgement of strength of evidence based on assumptions and suggested here.

Finally and more broadly there is a need to further apply TTM to transport behaviour. Testing the TTM in a sport events context will appeal across the subject areas of psychology, transportation and venue management and offer regional policy makers opportunity to develop corresponding strategies. It will provide advancement in venue management and the progression towards achievement of sustainable events management certification, such as ISO 20121. This thought process is evident with the publication of Emerit Event Management International Standards (2011) and Meeting and Business Event Competency Standards (2011) where sustainable event management is at the forefront of industry standards. As Henderson (2010) professes in his article, event managers need to make decisions about how to prioritise elements of the triple bottomline. If a smarter choice intervention programme can be applied to the event planning process in a myriad of event sectors, (music venues, community festivals, music festivals, mega events) then the achievement of sustainable event practices might be more probable.

In order to respond to the key points made within this discussion it is timely to reiterate briefly the objectives of the study found in chapter one. (1) The first objective is to apply TTM constructs to social marketing interventions targeted at sport fans; (2) the purpose of the second objective is to establish the level of individual intent against theoretically designed marketing interventions; (3) the third objective is to ascertain

the extent of travel behaviour change in individuals using the TTM and (4) finally the fourth objective is to explore the cognitive and behavioural effects of the theoretically developed marketing intervention.

5.1 Hypothesis

Given the aforementioned objectives (refer to chapter one for further details) the following set of hypotheses have been constructed.

Hypothesis One

“There is a positive relationship between subjective norm, attitude and perceived behavioural control and intentions to change the travel behaviour of sports fans attending home matches in response to a range of information interventions”.

The first step in this research (figure 9) was to generate a more thorough understanding of the psychological makeup of the sport fan and their cognition towards travel and changing travel behaviour. However, in order for this process to be more transparent (as argued earlier) it was necessary to present participants with a suite of theory led marketing interventions. These were mapped to the TTM in order to initiate individual consideration of their travel behaviour. Thus, the researcher not only set out to explore the intent of travel behaviour change but to also test this intent (dependent variable) against transparent and theory led interventions. Through statistical analysis that explores the independent variables of attitude, subjective norm and perceived behavioural control (constructs of the TPB) a deeper discussion of behavioural intent against the mechanisms that underpin the intervention design assisted in narrowing down the suite of interventions to 10 preferred options. The achievement of this hypothesis supported the testing of following hypotheses. Section 5.2 outlines which studies assist in the achievement of each hypothesis.

Hypothesis Two

“Sport Fans in different stages of change vary in their processes of change, self-efficacy and decisional balance ratings in line with the TTM theory”

The aim of this hypothesis was to examine the applicability of the TTM Model constructs to the context of sport fan travel behaviour. In order to achieve this hypothesis there were two separate stages to the research. The first stage was confirmatory in nature and related directly to current travel behaviour of sport fans prior to interventions being implemented. The marketing interventions were taken from the previous results in Hypothesis one. As noted in the literature there is limited research focused on the underlying psychological conditions of sport fan travel behaviour and it was envisaged that this set of data would contribute to knowledge in the field of travel and tourism. Moreover it allowed the author to categorise current stages of behaviour change towards travelling to a home match. Varied statistical analysis were applied to analyse the association between aspects of process of change, self-efficacy and decisional balance and the different stages of change in line with the TTM theory. Detailed discussion of these statistical methods can be found in section three of this thesis. Section 5.2 outlines which studies assist in the achievement of each hypothesis.

The second stage utilised a longitudinal approach whereby an experimental group received the interventions whilst the control group do not. This data allowed for a deeper analysis of the constructs of the TTM within a control and experimental group and furthered examined the applicability of the TTM model to the context of sport fan travel behaviour.

Hypothesis Three

“Respondents in the intervention group were more likely to show movement in stages of change, processes of change, self-efficacy and decisional balance scores than respondents in the control group”.

Data from the aforementioned longitudinal study allowed the researcher to ascertain the effect theory led interventions have on the experimental group, against results of the control group. Varied statistical analysis confirmed the differences between stages of change at pre and post intervention levels within both sets of participants (control and experimental). Discussion of these methods can be found in section three of this thesis. Key trends were established to help refine a method of travel behaviour change that can be applied to a sport event context. Moreover, varied statistical analysis were applied to analyse the association between aspects of process of change, self-efficacy and decisional balance and the different stages of change across both groups. Detailed discussion of these statistical methods can be found in section three of this thesis. Section 5.2 outlines which studies assist in the achievement of each hypothesis.

Hypothesis Four

“The existence of travel behaviour cognition will not motivate the sport fan to achieve travel change”

Previous hypotheses have used psychological items to measure, compare and contrast participant travel behaviour change (progression or regression) and then to comment on the utility of theory led interventions and psychological constructs in that behaviour change process. This hypothesis moves away from the quantitative to the more qualitative and introduces interviews aimed at the experimental group. A structured qualitative analysis was used to analyse the interviews. Discussion of these methods can be found in section three of this thesis. Section 5.2 outlines which studies assist in the achievement of each hypothesis.

Ascertaining the level of cognition the participant had with regards to the intervention was fundamental to the achievement of this hypothesis. Equally important within the participant was the level of awareness he/she had about the problems/issues the interventions were trying to change. In doing so, the researcher was able to explore how or why interventions were instrumental in influencing travel change. Questions reflected behavioural pathways implied by the TTM and TPB models and also

recognised the social and demographic characteristics of the sport fan identified by the literature.

5.2 Stages of research

To successfully meet the aims and objectives of the research and achieve the aforementioned hypotheses, the research is split into three distinct stages (figure 9). The methods of each stage will be discussed in detail in section three of this thesis. For the time being an overview will help bring together the flow of the research methods and describe the interdependent nature of the data collection.

Stage One - Within stage one the development of transparent theory led interventions mapped to constructs of the TTM and targeted to a specific group (sport fans and pro-environmental messages) was of paramount importance. It is proposed that a well-articulated intervention methodology will explicitly comment on the mechanisms behind the design of interventions and provide an opportunity for transparent and, in future research, comparable intervention testing. Whilst the method of designing the interventions is seen by the author as an aid to increase the probability of success, the purpose of the present study was also to trial the suite of interventions. Using the TPB the author explored intention to change travel behaviour within sport fans and formed a smaller set of interventions from the original suite. By adopting these two techniques the methodology helped answer hypothesis 1.

Stage Two - Establishing the travel behaviours of sport fans was integral to the study and helped achieve hypothesis 2. Thus, the intention was to design a questionnaire that captured current travel patterns and also captured current attitudes to travelling towards the case study venue. Using demographic questions and constructs of the TTM, the author intended to categorise participants into SoC and also explore the other remaining constructs of the TTM (PoC, decisional balance and self-efficacy) against base line results.

At this stage of research respondents were asked to volunteer and participate in a longitudinal experiment. The longitudinal study split participants into a control and experimental group with the latter receiving the suite of interventions trialled in stage one. These interventions were distributed at key points over a 3 month period. Further justification and details of this method can be found in section three of this thesis.

A post-intervention questionnaire was distributed to both the control and experimental group on completion of the interventions. Completion of the questionnaire provided a comparative set of information between the two groups and helped indicate any movement between SoC, positive or negative, within the participants. Findings also helped establish the relationship and significance of antecedents that facilitate change in travel behaviour goals related to the constructs of the TTM and helped achieve hypothesis 3. Moreover the data helped develop a theory based methodology that can be applied to travel behaviour change interventions within a sport events context and extend the application of the TTM.

Stage Three - The final stage helped explore the reasoning behind the quantitative data. Interviews were conducted on participants from the experimental group shortly after completion of the post-intervention questionnaire. Semi-structured questions explored behavioural pathways implied by the TTM and TPB. Moreover they explored the social and demographic context of the participants and their response to the marketing interventions. The interviews added further rigour to the results and strengthened the validity and reliability of a theory based methodology that can be applied to travel behaviour change interventions within a sport events context.

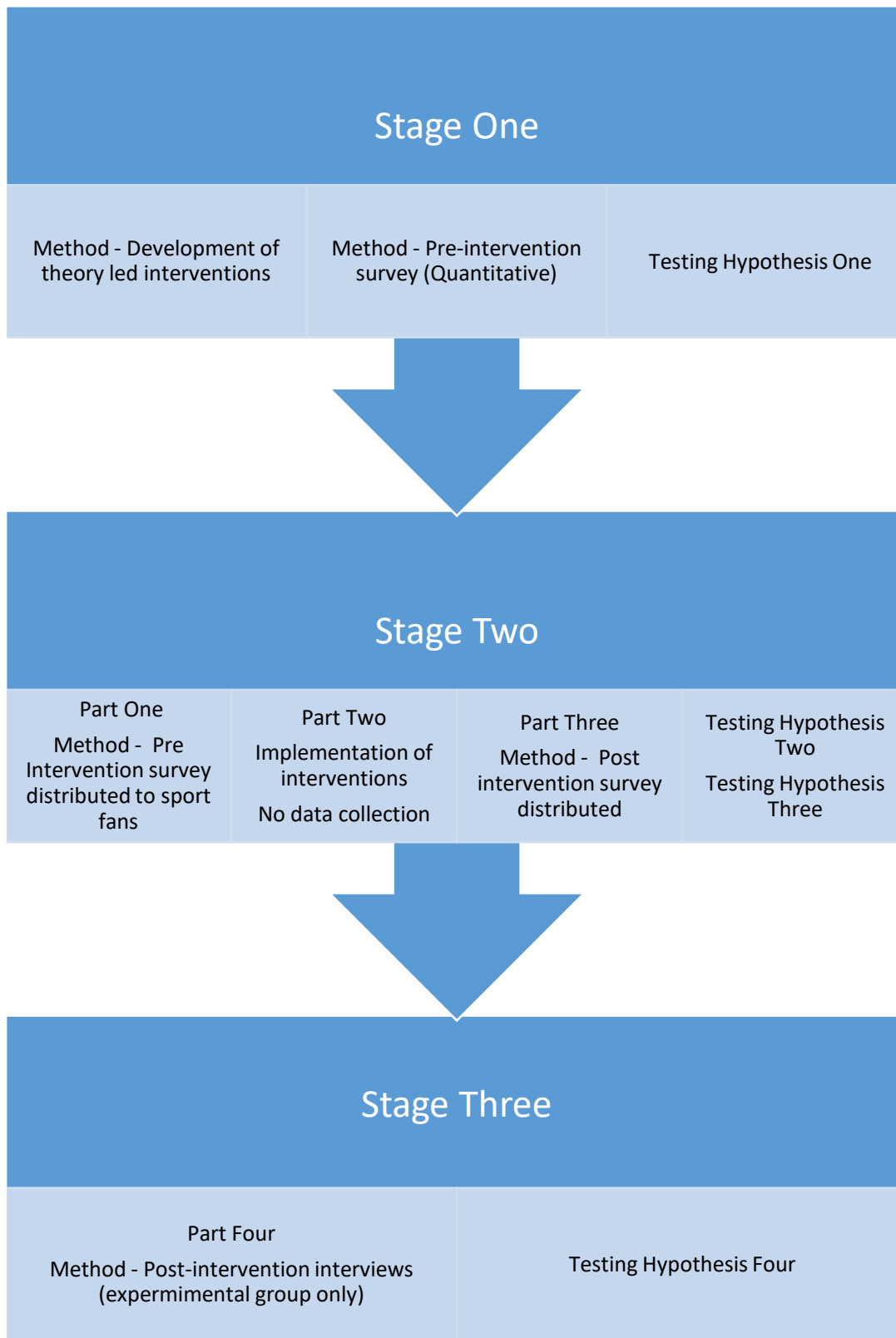


Figure 9 Stages of Research

5.3 Summary

This section has demonstrated the linkage between the key findings in the literature, the research objectives and the subsequent articulation of the research hypotheses. There are four hypotheses. These hypotheses help explore the intention to change travel behaviour; establish the impact theory led marketing interventions have on transport choices; extend the application of psychology models to sport fan contexts; and help explore if awareness of travel problems may achieve induce travel change. The following section – research studies – presents the findings and articulates the outcome of the testing of the hypotheses.

Section III
RESEARCH STUDIES

Chapter Six

Study One: Intervention Analysis

6.1 Introduction

This study assists in the testing of hypothesis one (H1) “There is a positive relationship between subjective norm, attitude and perceived behavioural control and intentions to change the travel behaviour of sports fans attending home matches in response to a range of information interventions”. In testing this hypothesis there are two outcomes to this chapter.

First, to explore Azjen’s theory of planned behaviour and to understand what might best predict a desired behaviour change, a number of theory led marketing interventions intended to influence a reduction in car use were designed. Whilst the design of these theory led interventions do not directly achieve H1 – they provide the basis for the other 2 studies in this thesis and are central to testing multiple hypothesis. The design of the marketing interventions were mapped to the underlying theoretical constructs of the TTM. As noted in chapter 3, this goes beyond existing work in transport research and provides transparency in the design of marketing interventions and thus, provides the basis for comparable intervention testing.

Second, to explore sport fan related travel behaviour using TPB and to test the constructs of this model, a self-reporting TPB questionnaire was distributed. The analysis of the TPB questionnaire will establish if Attitude, Subjective Norm and Perceived Behavioural Control towards sport fan’s existing travel behaviour underpins their intention to alter their travel behaviour to the stadium. More broadly, it is hoped that a deeper understanding of the dominating factors on intention to change travel behaviour within sport fans will help reduce uncertainty regarding when, and in what respects, differences in content (marketing interventions) and context (sport fans) impact on travel behaviour. Discussions will then reflect upon the suitability of the intervention designs in this study. Limitations and implication for further research will also be discussed.

6.2 Part A – Intervention overview

According to Yin (2003) reliable and credible social marketing campaigns need to be piloted. This provides an opportunity to explore, discuss and ultimately confirm the possible range of marketing materials used – as in this study. This approach has also been used by Gaker et al. (2011) who used hypothetical interventions in order to assess the power of pro-environmental marketing campaign information on transport purchase choice, mode choice and route choice. More recently, Standford (2014) used the TPB to test hypothetical social marketing campaigns and rated their influence on reducing car use to areas of outstanding natural beauty.

In this study, the hypothetical interventions adhered to Doppelt (2009) and Spotswood et al. (2011) and their guidance for social marketing campaigns. For example each intervention had references to support their claims. This symbolised credibility and trustworthiness within each social marketing intervention (flyers). Emotional inspiration and connection was achieved through linkage to sport, rugby and the surrounding family. Transport alternatives were offered through the social marketing campaign and finally the marketing interventions built on awareness of existing behaviours and benefits of alternatives. The theoretical construct behind the interventions were taken from the TTM (refer to intervention matrix - table 9). The intervention designs are detailed in section 6.2.1.

Finally, it is important to note that whilst the literature review recognises that social marketing campaigns are not a panacea for change behaviour interventions, they are seen as a common denominator across many contexts – such as health, public policy, and military strategy. Indeed, Kotler et al. (2002) argues that social marketing does have the ability to inform, persuade, and influence individuals by developing social acceptance for certain behaviours in particular segments of society. And so, the researcher is aware of the limitations of the level of influence one marketing intervention can have. However, similarly to Adams and White (2004), the study aims to use an entire suite of marketing interventions that cuts across all stages and all processes of change in order to attract those participants in different SOC. So the discussion is not just about one marketing intervention and its design – but how all the interventions, using all the PoC are interpreted and if and /or how they are influential.

6.2.1 Intervention design methodology

The aim of the interventions is to target those individuals at different SoC in the TTM model and use the constructs of the TTM in the design of the intervention to move individuals from one stage of change to the next.

One of the major challenges within this study was the creation of the interventions and the mapping to TTM constructs. Indeed, the interventions designed in this study do not reflect the typical techniques used for each process of change. For instance, according to Prochaska et al. (2013) and Velicer et al. (1998) Stimulus Control predominately refers to the removal of physical environmental cues – changing the surrounding environment. However, this was beyond the resources of this study and as such, alternatives to this such as fading techniques and the addition of positive prompts were used in the design. Moreover, Reinforcement Management primarily uses rewards given by others or by oneself. In this study, the interventions refer to positive self-statements as the reward and positive group recognition. Clearly these techniques are on the periphery of normal practices outlined by Prochaska and Velicer. Moreover, these challenges in application and operationalisation reflect findings by Luca and Suggs (2013). Their meta-analysis of the use of psychology in social marketing campaigns suggest it is a challenge to use theory to guide the message and design. This is furthered by Macnee & McCabe (2004) who question the modification of stage based interventions for such specific populations. Given these arguments, the following section provides an in-depth rationale of how the interventions operationalised the TTM constructs.

Table 9 shows how each group of interventions is placed within each SoC and the following paragraphs articulate how PoC are used to guide and design the interventions. Linkages to self-efficacy and decisional balance are also communicated within each message, mapped in table 9 and described in more detail in the next section. In addition to the TTM application, all interventions focus on travelling to the rugby stadium and reiterate the characteristics of the sports fan. For example, every intervention uses the slogan ‘win together –travel together’ to strengthen affiliation and

sport/group identify as described by Wann et al. (2002) and Fairley (2009). All interventions can be seen in appendix 2, however, an example is presented in figure 10.

Table 9 - Intervention Matrix based on the Transtheoretical Model of Change and Sport Fan Psychology

Intervention Group	Intervention	Stage of Change/Process of Change	Decisional Balance/Self efficacy	Commentary
Intervention Group one	1. Introduction to Active Travel information sheet 2. Public transport route planner	Precontemplation to Action/ Social Liberation and Consciousness Raising	Pro or Con perception of behaviour changed can be assessed	The interventions focused upon general information about behavioural risk, for example, susceptibility to poor health if you don't exercise or the environmental risk of excessive car use and the ease of alternative choices
Intervention Group two	3. Feeding the scrum 4. Hospital Pass	Contemplation through to Action/ Dramatic Relief	Pro or Con perception of behaviour changed can be assessed	Both posters 'feeding the scrum' and 'hospital pass' provided information about the benefits and costs of action or inaction when it comes to healthy lifestyles. The use of rugby terminology (the sport stadium case study) throughout these posters was designed to connect to the participants and reinforce the ethnocentric conformity of sport rules and regulations
Intervention Group three	5. Postcard Intervention – Information flyer 6. Offensive/ Defensive	Precontemplation through to Action/ Environmental Re-evaluation	Pro or Con perception of behaviour changed can be assessed	Both were designed to reinforce an understanding of how private car use can impact upon the psychological and social environments – consideration of the immediate social and physical environment.
Intervention Group four	7. Air Pollution 8. Sin Bin	Precontemplation through to Action/ Self-Re-evaluation	Pro or Con perception of behaviour changed can be assessed/ Establish personal, environmental and/or behavioural factors	The focus here was on self-re-evaluation and the emotional and cognitive re-appraisal of values by the individual that feed into recognition of the problem and maintaining behaviour once recognition of the problem (car use) has been achieved.
Intervention Group five	9. Share the Experience 10. 60 Minutes of Rugby	Contemplation through to Maintenance/ Self-Liberation	Pro or Con perception of behaviour changed can be assessed	Recognising alternative lifestyles in society (social liberation) helped the design of these two interventions

Intervention Group six	11. Postcard Intervention – Information flyer 12. Four Good Reasons to Car Share	Contemplation to Action/ Social Liberation and Consciousness Raising	Pro or Con perception of behaviour changed can be assessed	Both interventions focused upon travel alternatives and described the benefits of increased social interaction and how to strengthen camaraderie.
Intervention Group seven	13. Think outside the car - rugby ball' Poster 14. Think outside the car - family snapshot'	Action to Maintenance/ Reinforcement Management	Pro or Con perception of behaviour changed can be assessed/ Establish personal, environmental and/or behavioural factors	Individual rewards – commitment to new lifestyle via a vision of freedom and escapism as the flyer connected images of green grass and perfect days combined with spending time with the family or the sport. Also links to positive utility of travel. .
Intervention Group eight	15. It all adds up 16. Parking Notice	Action to Maintenance/ Counter-conditioning	Establish personal, environmental and/or behavioural factors	A focus on environmental cues. The reminder of thinking about alternatives, the milestones in getting to the stadium such as queuing traffic and finding a car parking space reiterated the negative personal and environmental factors whilst using the car to get to the stadium
Intervention Group nine	17. Share the experience 18. Playing in extra time?	Action to Maintenance/ Stimulus Control	Pro or Con perception of behaviour changed can be assessed/ Establish personal, environmental and/or behavioural factors	Remove or counter environmental cues that trigger the problem behaviour. Both interventions provided instruction and demonstrated positive behaviour whilst reinforcing ethnocentric conformity of the sport group and sport terminology
Intervention Group Ten	19. Postcard Intervention – Information flyer 20. 1 in 3 Children Worry Poster	Action to Maintenance/ Helping Relationships	Establish personal, environmental and/or behavioural factors	Reiterating the underlying reason for change. The key message within these last two interventions is the support of social change. Prompting consideration of others and how changing behaviour can be helpful and supportive to others such as family members was an important consideration here

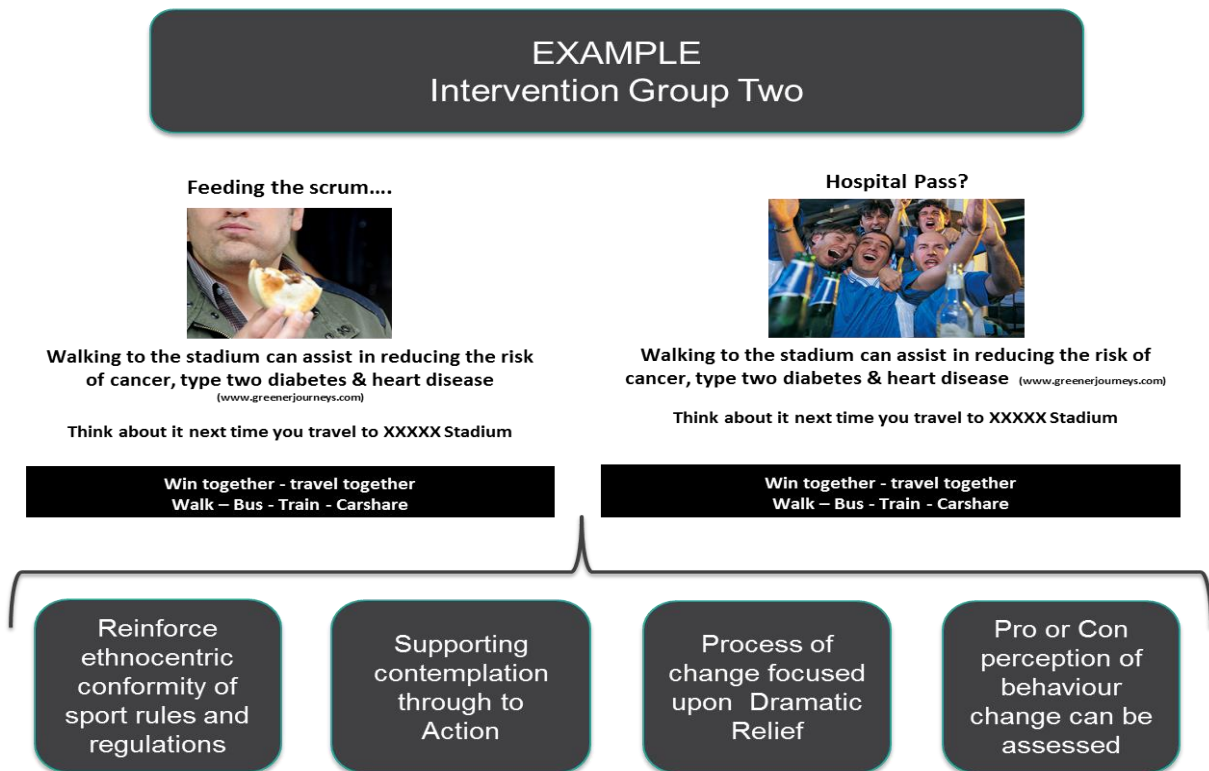


Figure 10 Intervention Example

Group One

Two interventions were developed within this group. (1) A two page information sheet that introduced the general benefits of 'Active travel' and (2) A public transport 'Route Planner' to the stadium. Both interventions focus on the Precontemplation SoC. To recap - it is accepted that individuals in this stage do not recognise there is a problem with their current behaviour and do not look at alternatives (Bamberg and Schmit, 2007) such as using public transport to get to the stadium. Thus, the purpose of these flyers is to raise awareness of alternative travel modes to the stadium – including active travel and public transport – and the associated benefits. By providing examples that are specific to getting to the stadium, it is proposed that participants may experience aspects of Social Liberation. According to Prochaska and Norcross (2007) Social Liberation is exemplified by an awareness of alternatives by the individual and by contextualising the problem to the individual. Furthermore, the act of personalising the problem is articulated by the contextualisation of the messages 'win together –travel together' to strengthen affiliation and sport/group identify as described by Wann et al.

(2002) and Fairley (2009). This message reinforces the social acceptance of alternatives – key to Social liberation and encouragement of movement from pre-contemplation to contemplation (Prochaska and Norcross, 2007). The concept of social acceptance also relates to the Decisional Balance constructs (Prochaska and Velicer, 1997) and positive perception of approval for self and others. The intention of the flyers is to articulate the advantages for the participants, in changing their behaviour and link this to oneself and to others within their immediate social group.

The flyers were also designed to reflect Conscious Raising techniques and, as Kim et al. (2004) puts it, general information about behavioural risk. For example, susceptibility to poor health if you don't exercise or the environmental risk of excessive car use. And this is supported by Prochaska and Norcross (2007) who suggest that those categorised in precontemplation and contemplation are susceptible to Conscious Raising techniques – such as increasing information about their current behaviour and risk, educational techniques and a personalised message. Once again, the messages are intended to increase positive association to changing travel behaviour and reduce the perceived cons to change exemplified by those within precontemplation (Prochaska and Norcross, 2007 and Plotnikoff et al. 2001).

Group Two

These flyers are designed to reinforce aspects of Social Liberation and information about active lifestyles (Conscious Raising) developed in Group One, but further this by evoking emotion and expression of feelings about the problem behaviour and potential solutions. The interventions focus upon the characteristics of contemplators whereby individuals are becoming aware of the problem, but have not made a commitment to change as they struggle with the effort needed to change (Prochaska, Norcross and DiClemente, 2013). Indeed, by reducing the negative connotations attached to alternative behaviour (cons), and an increase in evaluative processes through an emotional connection, the intention here is to help progress movement between the lower stages (Prochaska et al. 2013).

Specifically, these flyers are designed to incite three things. (1) Highlight the consequences of inactivity or non-exercise and be hard hitting, (2) create a visual connection between everyday activities, such as eating at a sport event, and the consequences of inaction and (3) outline options for improvement. Both flyers, 'feeding the scrum' and 'hospital pass', provide information about the benefits and costs of action or inaction when it comes to healthy lifestyles and links directly to the two constructs of decisional balance. For example, 'Feeding the Scrum' has an image of a man eating a pie at a sport event with a caption "Walking to the stadium can assist in reducing the risk of cancer, type two diabetes and heart disease". This is proceeded by another caption "Think about it next time you travel to XXX stadium".

These intended emotional connections are aligned to Dramatic Relief (emotional arousal). Prochaska and Norcross (2007) refers to Dramatic Relief as involving intense emotional experiences related to the problem behaviour – in this case the consequences of inactivity or non-exercise. Whilst social marketing interventions may not deliver a direct and 'intense' emotional activity, social marketing campaigns are often used to engender an emotional connection to a problem – often seen in lifestyle campaigns (Mintel et al. 2012, Hiseluis and Rosqvist, 2015). Indeed, the image and use of rugby terminology is an attempt to reinforce the ethnocentric conformity of sport, the social acceptance (articulated in intervention group 1) of alternatives and a focus once more on the social motives of sport fandom and sense of belonging as described by Wann et al. (2002).

Group Three

Environmental re-evaluation or social appraisal, influenced the design of these intervention and supports the progressive movement from precontemplation through to action.

The first flyer has statistics about mortality rates and how walking can improve this rate. The slogan 'think about it next time you travel to the XXX stadium' contextualises the message further. The use of mortality rates in this flyer directly links to the cognitive and affective assessment seen within Environmental Re-evaluation, where, according

to Prochaska and Norcross (2007) personal habit can affect one's social environment – in this case the concern over mortality rates. The consideration of the immediate social and physical environment is also reflected in the second flyer. This flyer used the rugby terms 'offensive/defensive' and provides details about carbon emissions from private car use. The first image reflects a negative physical and social situation – a child in a push chair next to a car exhaust (offensive). The second image presents a positive social image of walking down a street (defensive) on a clear and bright day. The intent here was twofold. First, to reveal positive and negative role models in the context of travelling to the stadium, and second, to attach empathy towards pro-environmental behaviour within participants through the use of family related imagery –and the impacts it can cause. Indeed, Prochaska and Norcross (2007) highlight the use of role models and empathy as a central method in Environmental Re-evaluation. Finally, the slogan 'win together-travel together' is a constant reminder of the strong affiliation with sport, the sport fans and the rugby team. This also reinforces the group responsibility and articulation of positive role models in the immediate social group (family, friends and sport fans). Finally, perceived pros and cons of behaviour change can also be assessed by the opposing imagery detailed in these flyers and further the perception of positive impacts for those progressing to Action.

Group Four

Once again rugby terminology was used in these two interventions. 'Live and Breathe Rugby' uses a picture of children looking at exhaust fumes and details statistics about children's health and the impact of car fumes, the 'sin-bin' poster uses a picture of a referee's yellow card with similar information related to children's health. Underlying each statement are references that reiterate the credibility and trustworthiness for each statement. This technique also reflects best practice in social marketing campaigns (Doppelt, 2009, Spotswood et al. 2011).

The specific use of imagery, coupled with the text, aims to combine the cognitive and affective evaluation of one's self and a reflection of participants current travel behaviour. For instance, 'Live and Breathe Rugby' uses a picture of children looking worryingly at exhaust fumes – creating a connection with car use and the family and it

was designed to generate an emotional response. The statements that relate to air quality are there to reaffirm a cognitive response and provide opportunities for further information through further reading (references). These designs are intended to reflect Self-Re-evaluation and move participants from precontemplation through to action. Prochaska et al. (2013) consider Self-Re-evaluation as an assessment on how one may feel and/or think about oneself with respect to a particular problem, in this case, travelling to the stadium. The use of imagery and clarification of personal values are techniques that are common place for this process of change. Indeed, the images and text reinforces the family values of rugby (use of rugby terminology throughout) and the role that responsible adults have in creating a positive and healthy family environment. Imagery, family values and personal responsibility is also used to increase Self-efficacy. McAlister et al. (2008) suggest that Self-efficacy refers to the level of a person's confidence to perform a behaviour in the pursuit of a desired change, goal or outcome. Indeed, by creating images and statements in the flyer that represent a vision of family, responsibility and consideration of others, it feeds into the characteristics that are inherent within the target group (Regan et al., 2012, Trail and James, 2001 and Kaplanidou et al., 2001). Thus, it is hoped that this flyer will enhance a commitment to change in pursuit of the vision created by the text and image.

Group Five

Self-liberation is at the core of the design for these interventions and the intention is to promote movement between contemplation and action. In both flyers, statements articulate a commitment to action. For example 'Share the Experience' and 'Kids need at least 60 minutes of physical activity every day'.

Velicer et al. (1998) and Prochaska et al. (2013) suggest Self-liberation is both the underlying belief and commitment to change and that multiple reasons are better than just one. These multiple reasons are articulated in these flyers – health, sport, family and time. They were designed to increase the reasons to commit to change and also reflect upon the cultural context of this study such as self-identify within the shared group (Snelgrove et al., 2008). For example, 'Share the experience' flyer focuses on the family experience at rugby and provides information on how to extend the rugby

experience – providing statements of commitment such as ‘relive your favourite moment’ and ‘extensive pre-match build up’. These statements use common terminology and explore the positive utility of shared time as mentioned earlier by Mokhtarian et al. (2002). The second flyer, ‘60 minutes of rugby’, focuses on the family getting to the stadium and uses walking as a way to getting more exercise into a new lifestyle. Once again, the intent here is for participants to see the statements as a commitment to act – ‘Kids need at least 60 minutes of physical activity every day’, coupled with ‘we can get 10 of our 60 minutes playing rugby’, and ‘win together – travel together’ is a call to action. These statements reflect the earlier, multiple rationale of health, sport and family and contribute to pro and con items of decisional balance.

Group Six

Once again Conscious Raising and Social Liberation PoC were used in the design of these interventions and support progression from Contemplation. The focus of these flyers is information and to contribute to the decisional balance made by participants within Contemplation. Velicer et al. (1998) suggests that information targeted to Contemplators raises awareness of the causes and consequences and solutions to a particular problem – in this case travelling to the stadium. Prochaska and Norcross (2007) and Prochaska et al. (2013) go on to suggest that those in Contemplation are more susceptible to conscious raising techniques such as education, media campaigns and bibliotherapy. In other words, the use of educational material to help solve a problem. For example, the ‘information flyer’ focuses on carbon emissions produced by cars in travelling to the stadium (cause and consequence) and promotes alternatives as a shared experience (solution) whilst the ‘four good reasons to car share’ flyer identifies the personal and group benefits of pre and post-match interaction as an alternative solution.

Moreover, the ‘four good reasons to car share’ describe the benefits of increased social interaction and how to strengthen camaraderie. This underlines the social acceptance of alternatives. As mentioned earlier in the Group One intervention set, key to Social Liberation is the social acceptance of alternatives and personalising the problem. By exploring the social benefits, by suggesting an increase in time spent with

friends and family and by suggesting it saves money, the intention is that these statements will increase the positive attachment to alternatives.

Group Seven

Aspects of Reinforcement Management were used in the design of these two interventions and to support the movement of individuals from Action to Maintenance. According to Prochaska et al. (2013), Reinforcement Management techniques are often related to personal rewards which can be provided after a certain behaviour is performed – such as “I reward myself when I use alternatives to the car to get to the stadium”. Yet it was noted in section 3.4 that persuasive marketing techniques have progressed past the need for reward (Minton et al., 2012). Hiselius and Rosqvist (2015) supports Minton by suggesting that travel awareness campaigns can be part of something bigger and the reward itself is in a sustainable lifestyle change. Thus, it could be argued that a commitment to a new lifestyle is the reward in this context and thus, a reward remains. Nevertheless, individual rewards are not the only technique used in Reinforcement Management. According to Velicer et al. (1998) an emphasis on positive self-statements and group recognition are also procedures used for increasing reinforcement (Velicer et al., 1998). So with this in mind, these flyers articulate a reward similar to outcome settings. For example, both sets of flyers – ‘think outside the car with rugby’ and ‘think outside the car with family’ articulate a vision of freedom and escapism if one completes the desired action – “Walking + Time Together + Homematch = Freedom”. And this outcome is reinforced by using images of green grass and perception of perfect days; spending time with the family and time with the sport. The positive utility of travel and concept of freedom also reflects earlier arguments by Mokhtarian et al. (2002) and Regan et al. (2012) which underline escapism as a motive for sport fans and where travelling together provides an opportunity to share social interaction. Moreover, these opportunities of social interaction can reinforce one’s own identity often with like-minded people. Therefore, it can be argued that these flyers have a clear mandate for Reinforcement Management and set out to articulate rewards for behaviour change. Furthermore, the outcomes described in these flyers reflect earlier comments by McAlister et al. (2008) whereby an individual’s self-efficacy is influenced by the pursuit of a desired change, goal or outcome. Thus, the images, the positive utility associated with shared

travel and the underlying concept of freedom should enhance a commitment to change within this particular group.

Group Eight

Supporting the movement from Action to Maintenance is the focus of these two interventions and the use of environmental cues is the mechanism. According to Velicer et al. (1998) and Prochaska et al. (2013), the process of Counter Conditioning is to provide a substitute for the problem behaviour by proposing alternatives at a certain point. This is further supported by highlighting the environmental cues that trigger the behaviour and then the use of conditioning interventions at that point to reinforce the alternative. Given this, the flyers intend to build upon earlier interventions by using conditioning statements alongside the environmental cues – pictures of congestion and pictures of parking notices. For example, 'it all adds up' flyer uses pictures of traffic congestion and asks fans to stop and think before they get into the car. Similarly the 'parking notice' poster reminds fans of the time it takes to finding a car parking space. So this design uses three aspects in an attempt to create a conditioned response (1) reiteration of the key milestones in getting to the stadium, (2) the negative connotation's to queuing traffic and finding a car parking space and (3) reminding participants about the alternatives. Whilst Hall (2014) criticises the use of social marketing in tourism related practices and suggests that conditional stimuli cannot be modified by marketing campaigns, Kotler et al. (2002) argues that the use of conditioning in social marketing campaigns has been at the very core of campaigning for many years. Thus, there is a precedent in the use of conditional stimuli in marketing campaigns and is set out clearly in these interventions.

Group Nine

By using aspects of Stimulus Control the intention of these interventions is to reduce relapse in the participants. So the focus is on Action and Maintenance stages of change. According to Prochaska et al. (2013) Stimulus Control techniques use prompts to promote alternatives to the problem and maintain the highly valued goals of improving a problem behaviour. Generally speaking these techniques remove or counter the environmental cues that trigger the problem behaviour – in this case, travelling to the stadium by car. However, the challenge is the removal of the environmental cue (the car) or restructuring the physical environment (such as the installation of displays about pollution near the stadium). This is beyond the resources of this study. So, as an alternative, the flyers focus on planning and support statements in ‘Share the Experience’ and ‘Playing in Extra Time’ flyers and uses these as a fading technique – in other words as a prompt to generate action and maintain behaviour (Prochaska et al. 2013). These planning statements are designed to support alternative decision making and show that extra planning can make the alternatives a tool to achieve highly valued goals – either sharing time with friends and family or playing a small part in reducing global and local pollution. In other words, the flyers are trying to re-structure the individual’s environment by introducing statements that support personal concerns –rather than a physical re-structuring of environments. This is reminiscent of Velicer et al. (1998) who suggest that Stimulus Control is the removal of items that remind individuals of the problem behaviour and add prompts for positive alternatives – for example travel together and share “Extensive pre-match build up and uninterrupted full match analysis with the opinions that matter”.

Group Ten

The intention of these interventions is to use Helping Relationships to guide and support participants who are in the action stage and to maintain their behaviour. Prochaska and Norcross (2007) refer to those in action as modifying their behaviour and those in maintenance as working hard not to relapse. Typically, the techniques used for Helping Relationships is rapport building through counsellors, buddy systems or other social support (Velicer et al. 1998). Within a marketing campaign strategy, these techniques are not possible. However, Cismaru et al. (2008) suggest that when applying behaviour change psychology to marketing campaigns, those in maintenance

should focus upon reiterating the underlying reasons for change, and link practices to social support, acceptance of others, trust and care of one's self and others. This reflects the commentary from Velicer et al. (1998) and Prochaska and Norcross (2007) whereby helping relationships combine openness, a care for personal networks and trust in one's self. Thus, the key message within these last two interventions is the link to social support, acceptance of others, trust and care of one's self and others. For example, both 'postcard information flyer' and the '1 in 3 children worry' flyer focus on the exact same message that children worry about the environment and that altering car use can have a positive impact. It is hoped that this prompts a consideration of others and how changing behaviour can be helpful and supportive to others, such as family members. The 'information flyer' has more technical information such as levels of exhaust fuel and nitrogen emissions. The '1 in 3 children worry' flyer has an image of a young boy looking worried and peering out of the window of a car followed by statements about the state of the planet. This links to aspects of Helping Relationships in three ways. (1) Statements that describes the worries of individuals, links to a care for personal networks – family and friends, (2) Statements such as 'show them you care and images of worried children link to openness and (3) Statements that remind individuals about alternatives to the stadium link to aspects of trust in one's self and once again, care for personal networks. Finally, the linkage to social and cultural needs and a reflection of oneself and the needs of loved ones reiterates a sense of loyalty and group loyalty identified in sport fan literature (see chapter 2).

Summary

Outcome 1 of this chapter has been achieved by the design and production of the marketing interventions. In describing the mechanisms that underpin the intervention design, this section moves intervention design on one step and has created a transparent discussion of intervention design targeted at travel behaviour change within a sports fan context. More specifically, the thoughts behind each intervention have been laid out to enable a further discussion of the theoretical constructs that underpin each intervention and to debate the process that led to the creation of such interventions. Whilst only helping to support the achievement of the first objective, part 2 furthers the study by trialling the suite of interventions outlined above.

6.3 Part B – Testing the suite of interventions

6.3.1 Procedure

The researcher was invited to a fan meeting at the case study club which is held every month at the stadium. The group is called the 'fan forum' and the group consists of season and non-season ticket holders. At first the participants were briefed and informed consent given. Twenty marketing interventions were then distributed (see appendix 2). After the fans reviewed each intervention individually, they were asked to answer a self-reporting questionnaire based on the TPB (appendix 3).

Prior to distribution, the questionnaire was piloted and feedback focused upon items that were ambiguous and difficult to answer. New terms were used to make the questions accessible to all. For example, academic terminology was taken out of all questions. Feedback suggested that some items were repetitious and this caused frustration in the pilot sample. For example, the researcher followed Azjen's recommendation that the TPB constructs and items should be mixed up throughout the questionnaire. However, participants in the pilot felt that a number of questions had already been asked and this raised frustration. Thus, items were reduced to 4 items per TPB component of Attitude, Subjective Norm and Perceived Behavioural Control and separated into distinct sections. This approach is supported by Francis et al. (2004) and Francis, Johnston, Eccles, Grimshaw, and Kaner (2004b).

The questionnaire was split into three sections. The first section gathered information on participant demographics. The second section tested the influence of the marketing interventions which were informed by the TTM. Respondents were then shown the 20 marketing interventions and were asked which of these interventions were most likely to influence change in their travel behaviour to the stadium. The final section was based on the TPB framework and respondents were asked to consider their next trip to the stadium and were asked to what extent they agreed or disagreed with statements that related to car use.

Whilst the TPB has mainly been used to predict intention and behaviour, it is less used to develop or help evaluate interventions (Hardeman et al., 2002; Elliott and Armitage, 2008). However, the core constructs of the TPB (attitudes, subjective norms and PBC) are reflected across the TTM (noted in chapter three) and theoretically feed into the design of interventions, making the TPB an appropriate theory to evaluate the influence of each intervention and assess the travel behaviour within sport fans using the TPB construct.

6.3.2 Measures

As a framework, the TPB was used to measure future intent by reviewing antecedent behaviours such as Attitude, Subjective Norm and Perceived Behavioural Control. But it should be noted that the original construct has been adapted to suit various contexts of study (Armitage et al., 2015). For example, Tonglet (2004) used likelihood statements as a measure of intention to perform future recycling. Ong and Musa (2011) merged Personal Norm items from the Norm Activity Theory in their development of a TPB questionnaire and Reigner and Lawson (2009) hypothesised that behavioural intention was the sole predictor of behaviour. Similarly, given the specific nature of this study and comments from Elliot and Armitage (2008) who suggest the TPB is used less to evaluate social marketing interventions, the TPB measures used in this study are discussed below. Where the measures move away from the TPB's purest form, a rationale and discussion is provided.

Guidance was taken from Francis et al. (2004a), Francis, et al. (2004b) and Azjen (2002) to develop items for Attitude, Subjective Norm and PBC within a modal choice context to ensure internally consistent measures. Principles of TACT (Oluka, Nie and Sun, 2014) were used where there is consistency in the description of behaviour in terms of its target, the action itself, the context in which it is performed, and when it is performed. For example, in this study it relates to travelling to the stadium, using a car as the main driver or passenger for home matches and over the next season. Many anecdotal conversations were had with the operations officer at the stadium. She suggested that travel to the stadium was dominated by car use. And that alternative modes were not prevalent. Indeed, this can be here, where 13 out of 14 participants

used the car to get the stadium. Given the principles of TACT, the dominance of car use in this context and the interventions that focused on the pros and cons of car use, the questions were all related to the car, with the underlying assumption that participants drove to the car. More specifically, direct measures were used to design the TPB items. According to Francis et al. (2004a) direct measures ask respondents about their overall attitude to particular behaviour, whereas an indirect measure asks about their underlying beliefs about a particular behaviour. Whilst Francis recommends a mixture of indirect and direct items in a questionnaire, evidence suggest (Bamberg et al. 2003, Stead, Tagg, Mackintosh and Eadie, 2004 and Elliot, Armitage and Baughan, 2003) that either can be used. Moreover, direct items can simplify questions, reduce the abstract nature of some phrasing and reduce the number of items needed. TPB questionnaires using direct measures should use at least 3 items per construct to provide a basis to calculate a mean score for each component. This can be seen in transport related studies where Bamberg et al. (2003) used direct measures for his study into the TPB and modal choice.

Attitude

4 semantic differential scales were used to test a stem statement related to travel attitude in a sport fan context (Francis et al. 2004). As Ajzen (2002) note, semantic differential scale is the most common measure for Attitude. Indeed, similar approaches have been used by Ajzen in Bamberg et al. (2003). The direct measure of attitude used four pairs of adjectives. These were equally split between instrumental adjectives and experiential adjectives. Instrumental adjectives refer to value utility and whether or not the intended behaviour is useful. Experiential adjectives reveals aspects of feeling and measures pleasant feelings on a continuum. For example, "Driving to the Rugby League Stadium over the next season would be..." with a differential semantic scales (+1 to +7): Bad-good; harmful-beneficial; unpleasant – pleasant; not enjoyable-joyable. Cronbach's α indicated experiential items as internally reliable at $\alpha = .93$ and instrumental items at $\alpha = .64$. The mean score for attitude items will reveal an attitude score. The higher the score, the stronger the positive attitude towards driving to the stadium.

Subjective Norm

The direct measurement of Subjective Norm involved four statements that measured normative beliefs, indicating the strength of motivation to comply with reference groups and individuals (an intense characteristic of sport fans). The statements were equally split and related to injunctive and descriptive items. Injunctive denotes the importance of others and their viewpoints whilst descriptive items denotes the importance of others and their actual actions. A Likert scale was employed to test each statement (1 = strongly disagree to 5 = strongly agree). “My friends and family think I should drive to the Rugby League Stadium”(Injunctive); “It is more socially acceptable to use the car to get to the Rugby League Stadium” (Injunctive); “My friends and family drive to the Rugby League Stadium” (Descriptive) and “Most people I know would not use an alternative to the car to get to XXX Stadium” (Descriptive). Cronbach’s α indicated injunctive items as internally reliable at $\alpha = .73$ and descriptive items at $\alpha = .71$. Calculating the mean of the item scores will give an overall subjective norm score. The higher the score the more respondents agree with the statements. More specifically, that the social group are happy with the current travel arrangements and consideration of alternatives are not taking places within the group.

Perceived Behavioural Control

Direct items within this section reflected people’s confidence and focused on two groups – controllability and autonomy. Four statements, equally split between controllability and autonomy, were tested using a Likert scale (1 = strongly disagree to 5 = strongly agree). Controllability reflects a person’s control over their ability whilst autonomy refers to their perceived capability. “Whether or not I get to the Rugby League Stadium by other means than the car is entirely up to me” (Controllability); “If it was up to me, I would find alternative ways to get to the Rugby League Stadium” (Controllability); “I am confident that I could use alternative ways to get to the Rugby League Stadium” (Autonomy); “I am more than capable of finding alternative ways to get to the Rugby League Stadium” (Autonomy). Cronbach’s α indicated controllability items as internally reliable at $\alpha = .69$ and autonomy items at $\alpha = .67$. Calculating the mean of the item scores will give an overall perceived behavioural control score. The

higher the score the more respondents agree with the statements. This may indicate the level of confidence in future travel decision and the possibility of exploring new alternatives to get to the stadium.

Intention

Similar to Stanford (2014), respondents were asked which of the marketing interventions were most likely to influence change in their travel behaviour to the stadium. Thus, intention to change was measured using a single item “Do you believe this intervention may influence the way you travel to XXXX stadium?” Participants were asked to answer this question after they had read and considered each intervention separately. For each intervention a 5 point Likert scale was used (1= Not at all influential to 5 – Extremely Influential). The application of the TPB deviates from traditional intention measures as prescribed by Francis et al (2004a) and Azjen, (2002). Yet similar to Parker et al. (1996) it is argued that the phrasing of this item relates better to the context of the study and what is being asked rather than adhering to conventions of a TPB questionnaire. For example, asking respondents to assess the level of influence the interventions may have to future travel behaviour relates directly to what the participants are being asked to do – read the marketing interventions and assess their level of influence. In addition, it fits with the broader definition of behavioural expectation as defined by Warshaw and Davis (1985:215):

“We define behavioural expectation as the individual’s estimation of the likelihood that he or she actually will perform some specified future behaviour.”

Thus, the instructions given to the participants relates to the term expectations and estimation of behaviour – “Do you believe this intervention may influence the way you travel to XXXX stadium?” Indeed, in support of this, there has been debate as to what measures are used to assess levels of intent in TPB studies. Armitage and Conner (2001) and Armitage, Norman, Alganem and Conner (2015) note the interchangeable use of behavioural expectation and behavioural intent in their analysis. Intention relates to conscious plans to perform a particular behaviour, whilst expectation relates to estimation or likelihood. Both have been used in studies that claim to measure a

single 'intention' scale (Armitage et al., 2015). Nonetheless, whilst behavioural expectation relate to estimation of behaviour, the item used here refers to assessment of the intervention rather than assessment of behaviour. Thus, caution is noted and an exploration of the impact this will have on the findings will be discussed within the limitations of this study (see section 6.4)

6.3.3 Data analysis rationale

The second outcome of this chapter is the piloting of the 20 marketing interventions and the subsequent analysis of a self-reporting TPB questionnaire. First, descriptive measures identified the level of influence each intervention had across the participants. This descriptive measure was used to filter the twenty interventions into the ten most influential interventions. The top ten interventions were then used in the field research – study two. By identifying the most salient interventions, it provided a stronger justification as to why they were used within field research. Second, Attitude, PBC and Subjective Norm (independent variables) were correlated with the level of influence of each intervention (dependent variable). In other words, the correlation looks at the association between the independent variables of the TPB and the level of influence for each intervention and if there is a statistically significant relationship between the two. This helped test H1 - "There is a positive relationship between subjective norm, attitude and perceived behavioural control and intentions to change the travel behaviour of sports fans attending home matches in response to a range of information interventions".

An analysis of the scatter plots (appendix 4) revealed many outliers and a nonlinear association between level of influence for each intervention and the TPB components. Therefore, assumptions of the Pearson correlation were not met. Kendall's coefficient was used instead to determine if there is a monotonic relationship between the two variables (levels of Influence and TPB scores). As Chen and Popovich (2002) suggests, whilst it may be considered desirable to ascertain a monotonic relationship at the outset, it is not a strict assumption. Moreover, it is argued that this is what Kendall's Tau tests for. The data set met the other assumption of Kendall's tau where variables were measured on an ordinal scale. Kendall's coefficient (Kendall's tau) and

Spearman's rho are, according to Wang et al. (2015), the most widely used non-linear correlation measures. According to Chen and Popovich (2002) Kendall's Tau is resistant to the effect of a small number of unusual values (in this case the outliers in a small sample) whereas the Spearman Rho is more sensitive. Furthermore, Kendall's Tau is well suited to variables that display skewness around the general relationship - in this case, the association between the TPB scores and influence of each intervention. Despite these arguments, Morgan et al. (2013) points out that Kendall's and Spearman's correlation coefficients are similar and invariably lead to similar inferences and thus, it is well suited to this study. Similar approaches to test the correlation between TPB components and intention have been used by Ioannou, Zampetakis and Lasaridi (2011) in pro-environmental behaviour context. In assessing travel mode decisions Klockner and Matthies (2004) used Kendall's tau in exploring correlation between habit and Personal Norm.

A regression analysis was also considered to understand whether levels of influence can be predicted based on TPB scores. Nonetheless, a number of assumptions were not met (Morgan et al. 2013). For instance, there was no linear relationship as evidenced by the scatter plots.

6.3.4 Findings and Discussion

To recap this section explores sport fan related travel behaviour using Azjen's TPB. The analysis of the TPB questionnaire establishes if Attitude, Subjective Norm and Perceived Behavioural Control towards sport fan's existing travel behaviour underpins their intention to alter their travel behaviour to the stadium. By providing a deeper understanding of the dominating factors on intention to change travel behaviour within sport fans, it will help reduce uncertainty regarding when, and in what respects, differences in content (marketing interventions) and context (sport fans) impact on travel behaviour.

14 out of a possible 16 participants returned completed and usable questionnaires. The sample size was small and consequently it can be assumed that only very large effects will show statistical significance. Thus, making it difficult to present consistent

statistical significance across all 20 interventions. Given the fragility of the results, it is difficult with certainty to predict the influence of such interventions and transpose these across the population i.e. attendees at the professional rugby league club.

Table 10 - Sample Descriptors

Variables	Sample (%)	Variables	Sample (%)
Age		Dependents	
18-24	0	Yes	35.7
25-34	14.3	No	64.3
35-44	28.6	Employment	
45-54	35.7	Full time	57.1
55-64	0	Part time	21.4
65-74	21.4	Retired	21.4
Gender			
Male	57.1	Income	
Female	42.9	£10,000 or below	0
Season ticket holder		£10,001 - £19,999	7.1
Yes	92.9	£20,000 - £29,999	35.7
No	7.1	£30,000 - £39,999	21.4
Main Driver		£40,000-£49,999	14.3
Yes	57.1	£50,000-£59,999	7.1
No	42.9	£60,000+	14.2

6.3.4.1 Influence of interventions

Figure 11 shows the combined frequency of ratings for all interventions in response to the question “Do you believe this intervention may influence the way you travel to XXXX stadium?” The table shows a low level of influence across all interventions with a number of respondents stating that the interventions were ‘Not at all influential’. However half of the respondents rated interventions 3, 7, 8 and 17 as ‘slightly influential’ to ‘influential’. Just under half felt the interventions were slightly influential – intervention, 2, 4, 12, 13, 15, 16, 18, 20.

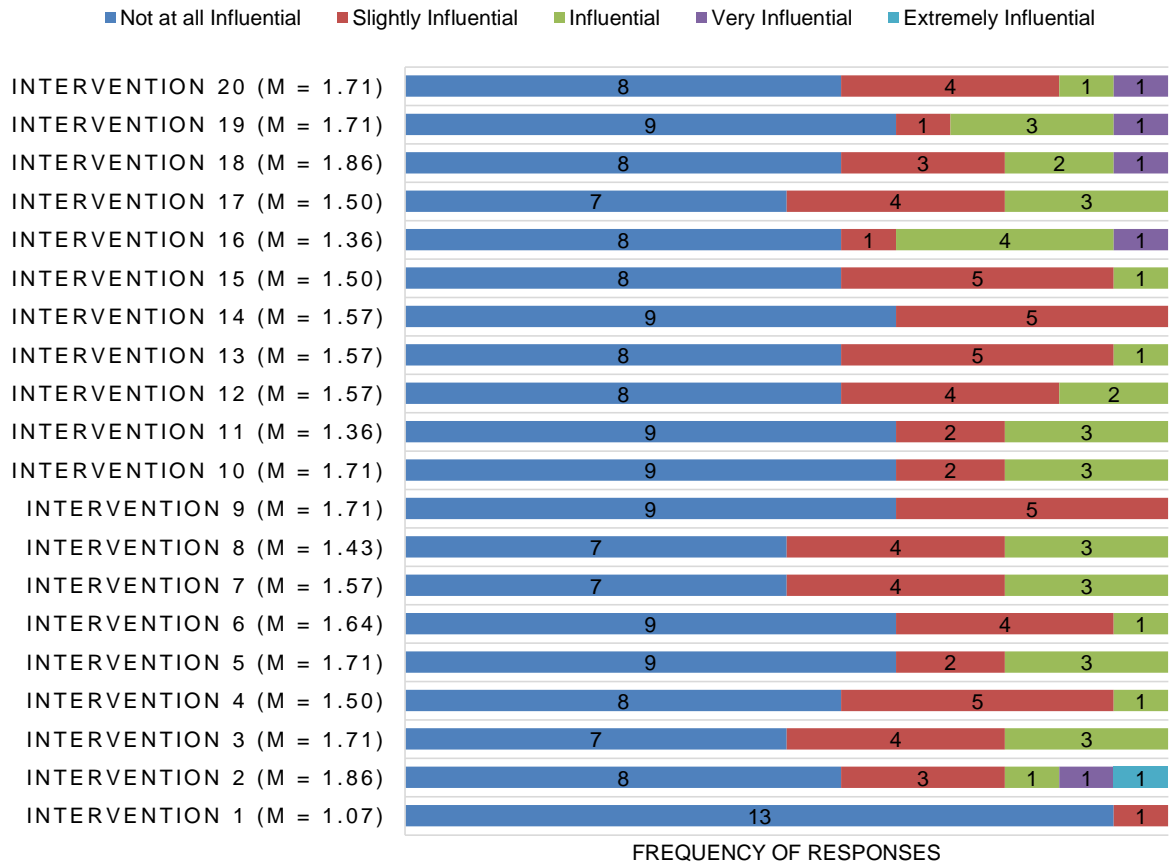


Figure 11 - Intervention Rating

To recap - the interventions were designed in groups and mapped to a particular stage of change. Each group of interventions had specific processes of change incorporated within the design alongside the other components of self-efficacy and decisional balance (see section 6.2.1). To narrow down the 20 interventions to 10, the highest rated intervention in each group was selected and used in study two. These are highlighted in table 11.

Table 11 - Interventions to be taken forward

Intervention Group	Intervention Number	Connection to TTM
One	Intervention 2	Consciousness raising (Cognitive) - Efforts by the individual to seek new information and to gain understanding and feedback about problem behaviour
Two	Intervention 3	Dramatic Relief (Cognitive) - Affective aspects of change, often involving intense emotional experiences related to the problem behaviour
Three	Intervention 5	Environmental re-evaluation (Cognitive) - Consideration and assessment by the individual of how inactivity affects the physical and social environments
Four	Intervention 7	Self-re-evaluation (Cognitive) - Emotional and cognitive re-appraisal of values by the individual with respect to problem behaviour
Five	Intervention 10	Social liberation (Cognitive)- Awareness, availability, and acceptance by the individual of alternative lifestyles in society
Six	Intervention 11	Behavioural self-liberation (Behavioural)- The individual's choice and commitment to change the problem behaviour, including the belief that one can change.
Seven	Intervention 13	Reinforcement management (Behavioural)- Changing the contingencies that control or maintain problem behaviour/lifestyle.
Eight	Intervention 16	Counter-conditioning (Behavioural)- Substitution of alternative behaviours for the problem behaviour.
Nine	Intervention 18	Stimulus control (Behavioural)- Control of situations and other causes that support problem behaviour.
Ten	Intervention 20	Helping relationships (Behavioural) -Trusting, accepting, and utilising the support of others during attempts to promote behaviour change.

The low levels of influence found within these results may be characteristic of Rex and Baumann (2007) in that the respondents may see the interventions as gimmicks. Moreover, they may see these interventions as irrelevant - having no consideration of the larger social, political, and economic environments that they see themselves living in – a criticism of social marketing made by Higham et al.(2013) and Hall (2013). This reflects Anable et al. (2006) and Ratchford and Parker's (2011) concern in only using marketing campaigns for pro-environmental behaviour change programmes. Indeed, whilst targeted information may support pro-environmental change, it is not a panacea for change itself. Nevertheless, these interventions were not aimed at being gimmicks

or irrelevant to the context within which they were placed. Indeed – context and emotional relevance were at the core of the designs (refer to section 6.2). So as Minton et al. (2012) puts it, the low levels of influence could simply be a result of respondents being so used to persuasive marketing campaigns they have become desensitised to the techniques (exploration of how the messages in the interventions are interpreted will be analysed in study three). Yet still there are those, such as Kotler et al. (2002), Firman et al. (2012) and De Guesse et al. (2008), who see social marketing campaigns as having the ability to persuade, influence, decrease social barriers and create social support for viable travel alternatives. Indeed, the intervention designs in this study adhered to best practice as described by Markowitz and Doppelt (2009) and Jones and Sloman's (2003) whereby the intent of the interventions were three fold – to generate cognitive dissonance; to increase efficacy; and to build awareness of benefits within a target group.

Yet the concept of 'building the awareness' of benefits in the target group may also link to the low levels of influence found within the results. Participants were asked to indicate the level of influence immediately after reading the marketing interventions. Thus, the concept of progressive 'building the awareness' did not take place. David and Warshare (1992) comment in their study that expected behaviours cannot form in in a short space of time. Accordingly, a test and re-test approach may better suit the type of data collection required for this study. This is also supported by Azjen (2002) who refers to a 'temporal sequence' of testing then re-testing of participants over longer periods of time to test the stability of behaviours. Thus, the low levels of influence may be due to methodological flaws and this is explored further in the limitations section 6.4. Despite these debates, Bamberg et al. (2003) highlights that travel mode choice is stable over short periods of time. Thus, there is little evidence to suspect that any delay in measuring levels of influence to change travel choice would present different findings. Nonetheless, as this study used methods that are incompatible to standard practices, it limits the ability to transpose and discuss the findings with other studies in a similar subject area. Once again, this is explored further in the limitations section 6.4.

Finally, the low levels of influence may reflect the challenge in incorporating components of the TTM in the design of the marketing interventions. Indeed it is Michie et al. (2011) who suggest that the challenge rests on connecting the message and design with the individual. For example, the marketing interventions were designed to cut across all stages of change in order to attract those participants in different stages. This approach is supported by Adams and White (2004) who suggest that a suite of interventions, utilising different components of the TTM, may be more effective. Nonetheless, given that the participants appear to want to keep to their car, it could be that the interventions targeted at the latter stages of change, such as Action and Maintenance, may use irrelevant messages and thus, reinforce the low levels of influence. Would a stage matched approach to the individual be more influential? Possibly not. Bamberg (2007) suggests that modelling car drivers through discreet stages is plausible but the stages of change still require further empirical testing. He goes on to suggest that rather than a stage based approach, change behaviour campaigns should simultaneously target awareness raising, motivations and action oriented variables. Interestingly, this reflects the work of Williams and French (2011) who outline a number of approaches to social marketing including (1) distributing pros/con information that builds awareness of existing behaviours and benefits of alternatives; (2) attempting to connect emotional inspiration to the benefits of pro-environmental behaviour - motivations. And this best practice is adhered to in this study – (1) pro and con information about current transport behaviour (2) using rugby terminology to connect at an emotional level (see section 6.2.1). So, the marketing interventions in this study can be theoretically justified from a social marketing perspective but may be limited by the use of TTM components or the way in which they have been operationalised. This limitation is explored further in section 6.4.

6.3.4.2 Attitude Scores

Semantic differential scales (+1 to +7) were used to test the stem statement “Driving to the rugby league stadium over the next season would be...” and were equally split between instrumental adjectives and experiential adjectives. Instrumental items refer to whether or not the behaviour is useful and if the participants attach value to the behaviour. Instrumental item scores for bad/good adjectives ($m = 4.57$, $sd = 2.37$) and

harmful/beneficial adjectives ($m = 5.36$, $sd = 2.06$) suggest a positive attitude to driving to the stadium.

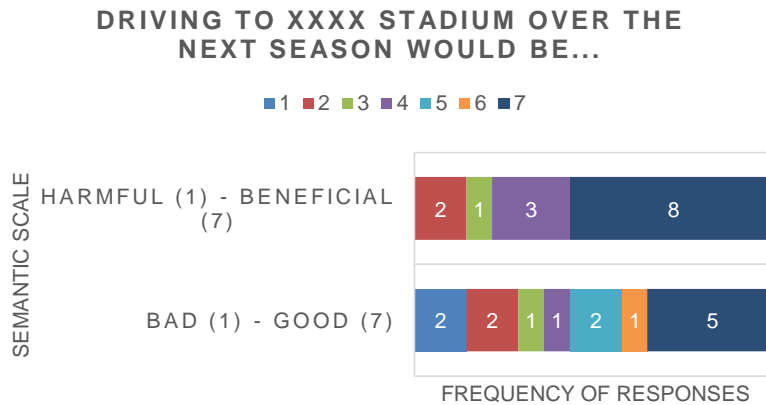


Figure 12 - Instrumental items score

Experiential scores for unpleasant/pleasant adjectives ($m = 4.86$, $sd = 2.3$) and not enjoyable/enjoyable adjectives ($m = 4.43$, $sd = 2.1$) reveal that respondents have a positive feeling towards driving to the stadium.

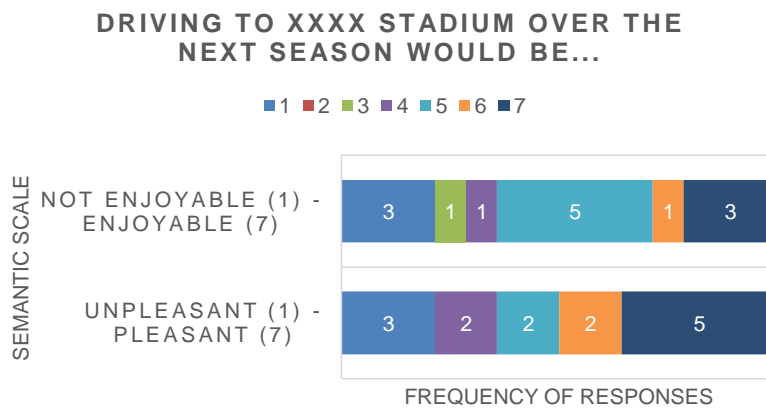


Figure 13 - Experiential items score

Given the rating +1 to +7 on semantic scale, figure 14 shows an overwhelming positive attitude towards driving to the stadium ($m = 4.93$, $std\ Dev = 1.59$). Overall the respondents see value in the instrumental act of travelling to the stadium. Thus, it appears that their Attitude towards using the car to get to the stadium over the coming

season may reject H1 in that there is no relationship between attitude and intention to change travel behaviour. The attachment of value to the car may also reflect the findings of Barff et al. (1982) and Innocenti et al. (2013) where comfort, cost and convenience are seen as dominating factors of travel choice, especially given the timings of the rugby matches and location of the stadium. Equally, the findings may reflect the work of Tarigan and Kitamura (2009) and Bhat and Lockwood (2004) whom suggests that leisure travel decisions may be affected by travelling in the company of others, frequency of travel and weather conditions. However, no exploratory data was collected to ascertain the underlying reasons for participant's responses.

The respondent's positive feeling towards driving to the stadium to watch rugby may be generated by social factors as noted by Mokhtarian et al. (2001) and Regan et al. (2012). For example, Regan suggests that travel for leisure provides an opportunity for social interaction, and Fairley (2009) considers travel to sport events as central to a group identify and sport fandom. However, respondents were not given an opportunity to explain the reasoning behind their attitude and this limits discussion here. Moreover, these items solely focused on driving and thus limits discussion of attitudes related to other modes of transport to get to the stadium. Studies such as Bamberg et al (2003) use car, bicycle, train and walking as possible alternatives in their measurement of Attitude in transport which resulted in a far greater analysis of transport methods to a specific destination (in this case the University campus). However, the criticism is tempered slightly given the fact that the majority of respondents in this study use the car to get to the stadium. Nonetheless, the constructs of the TPB questionnaire is further explored in the limitations section 6.4. Moreover, study three will explore post intervention travel behaviour and the perceived values attached to participant's travel choices.

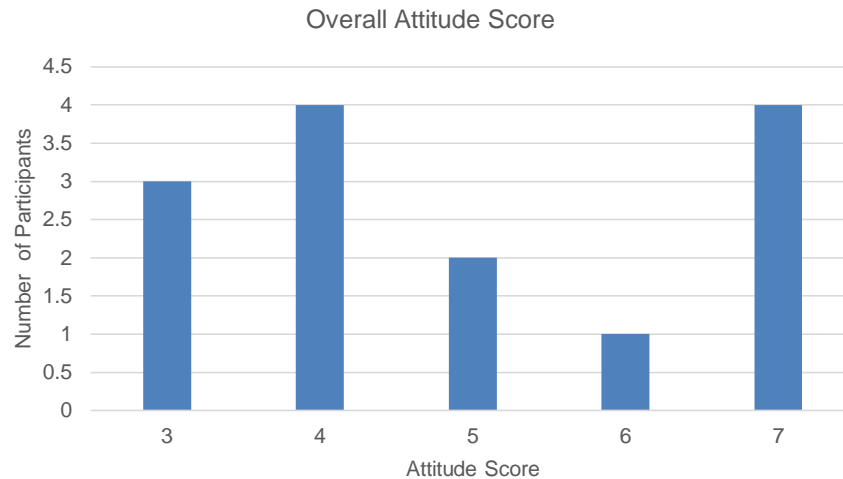


Figure 14 - Overall attitude score

6.3.4.3 Subjective Norm Score

Subjective Norm was measured using four statements, equally split between injunctive and descriptive items. A Likert scale was employed to test each statement (1 = strongly disagree to 5 = strongly agree). Descriptive items denote the importance of others and their actual actions towards driving to the stadium.

Both descriptive items 'My friends and family drive to the stadium' ($m = 3.79$, $sd = .975$) and 'Most people I know would not use an alternative to the car' ($m = 3.64$, $sd = 1.2$) reflect a split in participant response (figure 15). The majority of respondents seem to be unsure how family and friends get to the stadium. Interestingly, whilst the literature (Burke et al. 2005) denotes the importance of establishing social norms with a sport fan setting, the indifference in response may be due to participants not thinking of, or discussing travel to the stadium with their friends and family. Thus, travel alternatives may not even be a consideration. Nonetheless, it seems respondents are more aware if friends and family would use alternatives to the car to get the stadium. The majority of respondents suggest that most people (in this context sport fans) would not use an alternative. This may support the earlier suggestion that consideration and discussion of travel to the stadium is not considered in the social group and that there is an acceptance of the status quo.

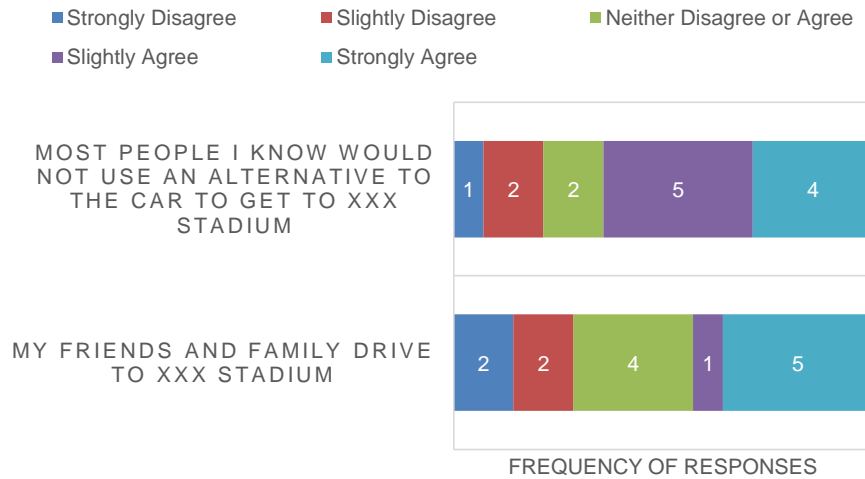


Figure 15 - Descriptive statement scores

Injunctive items denote the importance of others and their viewpoints in relation to driving to the stadium. Respondents suggest that ‘it is more socially acceptable to use the car to get the stadium’ ($m = 3.5$, $sd = 1.01$). Nonetheless, there is a degree of ambivalence, with respondents neither agreeing or disagreeing or slightly disagreeing with the statement (figure 16). Once again, does this suggest that there is uncertainty within the group? Does it suggest that there is little discussion of, or indeed little consideration of how friends and family get to the stadium?

The prevalence towards driving as a socially acceptable mode of transport is supported by the second statement ‘My friends and family think I should drive to the stadium’ ($m = 3.36$, $sd = 1.49$). First, no respondents disagreed with the statement – suggesting that family and friends are not averse to the car as the modal choice. Secondly, and similar to the first injunctive item, nearly half of the respondents slightly agreed or agreed with the statement. Overall the respondents had a more consistent viewpoint as to what their friends and family think about the car as a form of transport to get to the stadium.

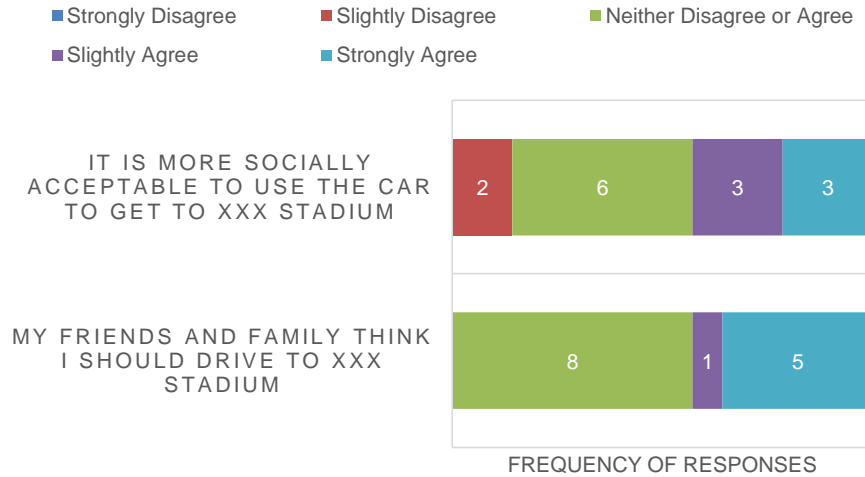


Figure 16 - Injunctive statement scores

Overall Subjective Norm score ($m = 3.71$, $sd = .726$) seen in figure 17 indicates that within the social group there is an acceptance of the status quo. It appears that friends and family are supportive of respondent's current position – to drive to the stadium – thus rejecting H1. It could also be suggested that there isn't pressure from family and friends to perform in a different way – thus their travel choices may not be recognised as a problem within their social group. It should be noted that the acceptance of the car as a modal choice by friends and family is reflective of literature and should not be a surprise. For example, Bottril et al. (2009) and Harvey (2009) state that the private car make up the majority of trips to an event (festivals and major national event). In addition, Collins et al. (2007) suggests that out of the 43 million kilometres travelled by spectators watching the 2007 FA cup, 47% of that distance was covered by private car. Indeed, the need for this research is demonstrated by the scale of private car journeys and the likely increase in travel for leisure purposes over the coming decade. Thus, it is not such a shock that the car is seen as socially acceptable.

Respondents may see their current travel patterns as a way to satisfy their self-identity with friends and family and other sport fans. For example, Mokhtarian et al. (2001) and Regan et al. (2012) refer to the positive utility of travel whereby travel for leisure can provide social interaction with likeminded people. In this sense, respondents may feel that the car provides this opportunity. Moreover, this opportunity for social interaction may reinforce the positive social value a car provides and explain the results found in

this study. Furthermore, it may illustrate that the mode of travel is a tool to construct a positive experience and reinforce group identity as discussed by Fairley (2009) in a sport fan context.

By the same token, this may also provide an underlying explanation for the levels of influence attached to the marketing interventions and establish if there is a correlation between the high SN score and the low level of influence. This is discussed in the next section and will help test H1 “there is no relationship between subjective norm, attitude and perceived behavioural control and intention to change the travel behaviour of sport fans attending home matches”. Certainly further exploration is needed to ascertain the underlying reasons for the social acceptance of the car to get to the stadium. Similar to comments by Murtagh et al (2012a) and Spear et al (2013), it might be a matter of instrumental or affective aspects; preferential routine that suits the situation, i.e. getting to the stadium on time and knowing where to park and meet friends. Unfortunately, this study missed the opportunity to elicit the behavioural beliefs behind the responses and this is reflected in more detail in the limitations section 6.4. Notwithstanding, study three will explore post intervention travel behaviour further and participants travel choices.

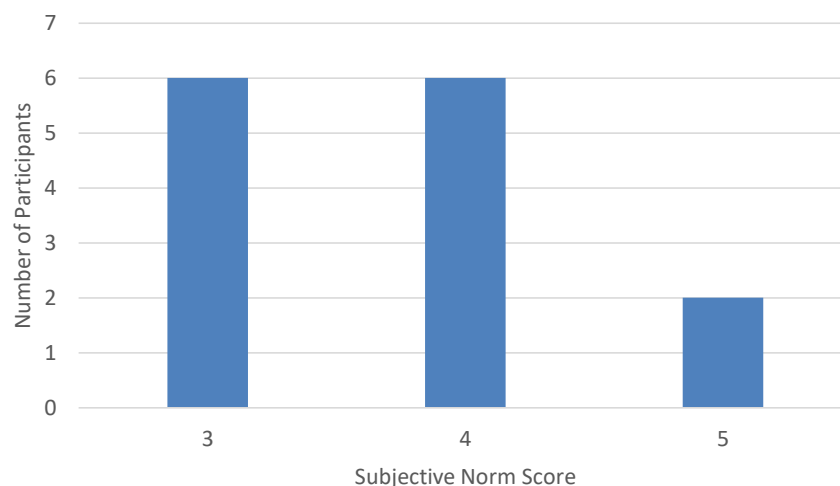


Figure 17 - Overall subjective norm scores

6.3.4.4 Perceived Behavioural Control Scores

Perceived Behavioural Control was measured using four statements, equally split between controllability items and autonomy items. A Likert scale was employed to test each statement (1 = strongly disagree to 5 = strongly agree). The higher the score the more respondents agree with the statements. This may indicate the level of confidence in future travel decision and the possibility of exploring new alternatives to get to the stadium. Figure 18 identified the responses for the controllability statements. Both sets of statements relate to the respondents perception of control and their sphere of controllability. First, there is a dominance of respondents feeling confident about car use, with the majority agreeing with the statement “If it was entirely up to me, I wouldn’t consider alternative ways” (m = 4.43, sd = .938). The statement “Whether or not I get to the stadium by other means than the car is entirely up to me” produced similar responses in the participants (m = 4.29, sd = .825). Once again, there appears to be a commitment to the car from the respondents which rejects H1. The commitment to the car is also reflected in respondents current travel choices where 93% (all but one respondent) stated they travel by car and 57% of respondents were self-reported main drivers. These high scores also reflect, within these participants, a positive attitude to the car and a social acceptance towards the car as the normal mode of transport.

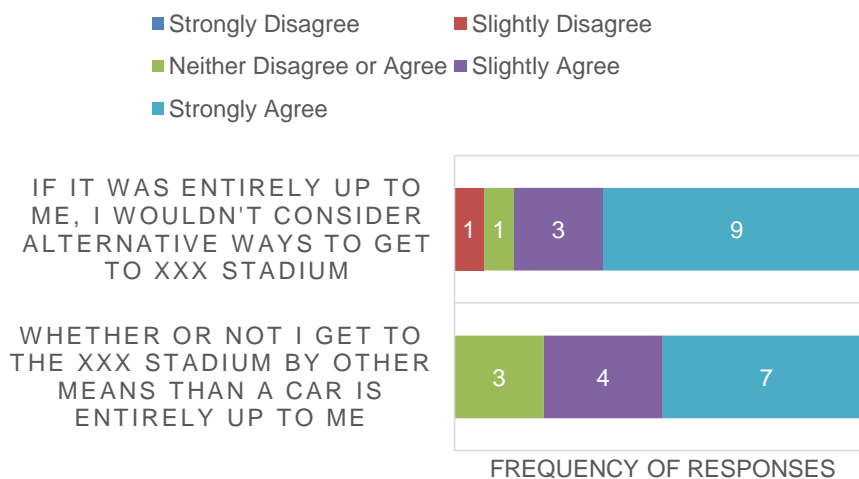


Figure 18 - Controllability Statements Score

Autonomy statement scores are presented in figure 19. These autonomy items reflect the level of confidence in participant's ability to alter their current behaviour. Respondents appear to have confidence in their ability to find alternative ways to get to the stadium ($m = 3.5$, $sd = 1.6$). Although there was a higher variance in answers and lower mean for this statement compared to controllability items. On reflection, the findings may be a result of how the question was phrased. For example, asking if participants were capable of finding alternative ways to get to the stadium could be interpreted as findings alternative routes and not just different modes entirely. Thus, the phrasing of this question could skew the findings. Notwithstanding, when it comes to employing that confidence and using alternatives to get to the stadium, respondents were not at all confident ($m = 1.86$, $sd = 1.3$). This reinforces the commentary above whereby these participants have a commitment to the car, supported by a positive attitude, which is surrounded by friends and family that see the car as the normal mode of transport.

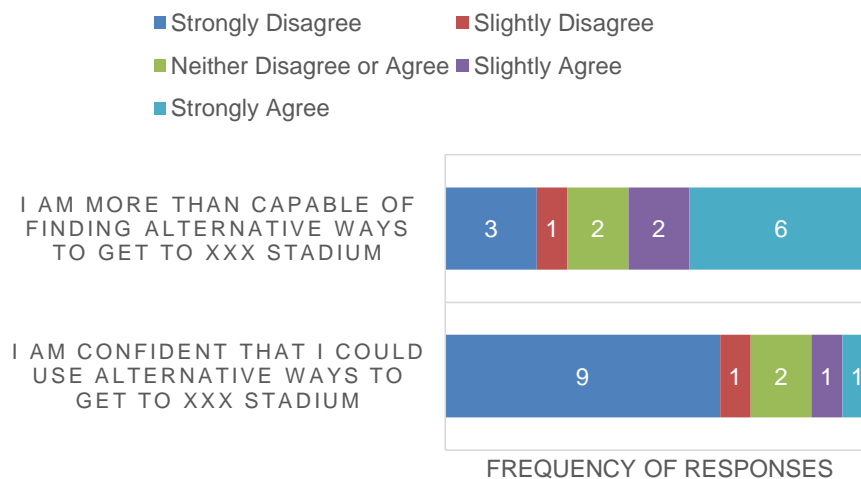


Figure 19 - Autonomy Statement Scores

The overall PBC scores reflect the judgment of the individual about how difficult, or easy, it will be to undertake new behaviour. There is an assumption in the construct of the theory that when a person is presented with a choice between two alternatives, the one with the most positive behavioural consequences is chosen – in this case

continuing to use the car to get to the stadium. Thus, the higher the score the more confidence the respondent is.

The mean PBC score ($m = 3.57$, $sd = .514$) is similar to that of SN and presents a confidence with current travel behaviour – getting to the stadium by car and rejects H1. In other words, there is no relationship between PBC and intention to change travel behaviour. However, it is slightly lower than the overall Attitude score and this may suggest mixed feelings towards future travel alternatives.

Clearly respondents are confident in their ability but choose not to employ it. This result is reminiscent of work by Sparks et al. (1997) and the challenges they found in applying the PBC construct to certain behaviour. In their study, women had personal control over the use of condoms during sexual encounters but found it embarrassing to talk to their partners – thus found it difficult to use them. Is there a similar implication here? Respondents are clearly capable of finding alternative ways to get to the stadium, yet find it difficult to carry out the action. Possibly because of the social acceptance of the car in the group or the positive attitude related to the car. Yet criticism can also be applied to the limitations of PBC as described by Darker et al. (2010) and Armitage and Arden (2002). Within the context of travel behaviour change if one is wedded to past behaviours, routines and rituals then visualising alternative behaviours and developing confidence in those alternative behaviours (modal choice) becomes less likely. Moreover the items used in this study are vague and simply refer to alternatives, thus they lack specificity. As a result, alternative behaviours are less likely to occur, as there is a lack of access and availability to resources or experience in how to utilise resources/information. In laymen terms the sport fans don't think that their current travel behaviour is a problem so don't look out for suitable alternatives.

Following on from Spark's challenges in operationalising the PBC construct, the results might be influenced by how the questions were phrased and interpreted. Trafimow, Sheeran, Conner and Finlay (2002) and Darker and French (2009) suggest that in field studies respondents may misinterpret the notions of control and difficulty in a variety of ways leading to a distinction between control and autonomy items. Thus, Trafimow et al. (2002) argues that the PBC scores should be separately loaded and

not amalgamated into one overall score. They argue that this may obscure possible behavioural intentions or behaviours.

This criticism is furthered by Sheeran (2002). He argues that PBC is determined by participant's knowledge, ability, resources, opportunity, availability and cooperation in determining the likelihood of control. And these factors create the environment for that control to influence intention. Yet, according to Sheeran, existing studies have only focused on controllable behaviours and that researchers are only interested in behaviours that participants can perform – in other words their locus of control. Indeed this locus of control is commented on in various transport related articles. For example Bamberg (2007) found that patterns in lifestyles make people attuned to the use of the car and disregard alternatives. Moreover, Meijkamp (1998); Rose and Marfurt (2007); Cairns and Okamura (2003) and Matthies et al. (2006) refer to recurring performances and circumstances that trigger habitual responses. This concept can be related to travelling to the stadium and as Fairley (2010) notes consumers with strong habits develop expectations at the event. In this case the routines may have been established over years – travel time, parking location, walking time, ritual meet up before the match and pressure of getting to the match on time (Karg and McDonald, 2011). Similarly to Bamberg (2007) these lifestyle choices and pre-match rituals present a disregard towards considerations of alternatives. Given this, is there an argument that these results exemplify the challenges put down by Sheeran, where travel behaviour is outside the remit of participant's control. Unfortunately, this study did not explore the underlying reasons behind the responses and this is reflected in more detail in the limitations section (see 6.4). However, study three will explore post intervention travel behaviour further and participants travel choices.

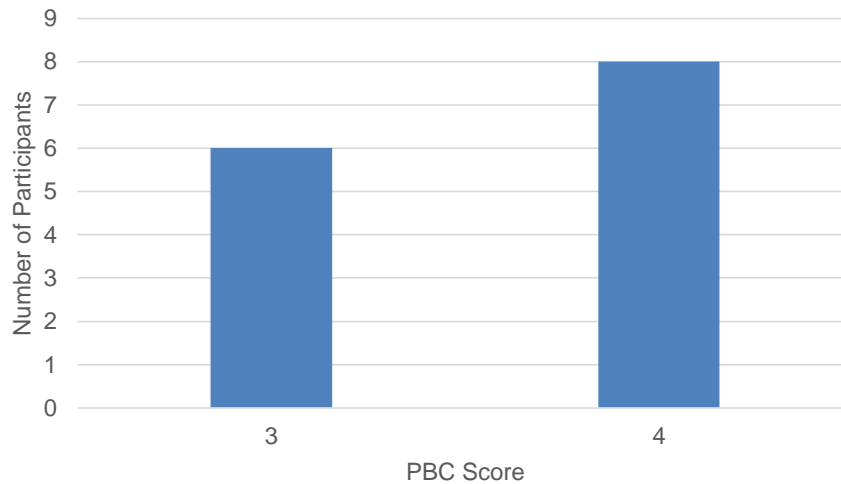


Figure 20 - Overall Perceived Behavioural Control Score

6.3.4.5 Correlation - level of influence and overall TPB scores

This section assists in the testing of hypothesis one (H1) “There is a positive relationship between subjective norm, attitude and perceived behavioural control and intentions to change the travel behaviour of sports fans attending home matches in response to a range of information interventions”.

To explore the TPB and to understand what might best predict a desired behaviour change, theory led marketing interventions intended to influence a reduction in car use were designed and distributed to participants prior to participants answering the TPB questionnaire. Participants were then asked to complete the TPB questionnaire applied to the context of travel and rate the influence of each intervention. As previously discussed, the application of the TPB measure in this context has deviated from the TPB in its truest form. A rationale has been provided and the implications will also be commented on in the limitations section 6.4. Notwithstanding, a Kendall's tau-b correlation was run to determine the relationship between TPB scores and level of influence generated by each intervention amongst the 14 participants and to establish whether or not there is a monotonic relationship. The influence ratings were assessed using a Likert Scale and re-coded (1 = Extremely Influential to 5 = Not at all influential). According to Chen and Popovich (2002) the closer Kendall's tau-b is to zero, the weaker the association, and the closer Kendall's tau-b is to +1 or -1, the stronger the association. Moreover, they suggest a Kendall's tau-b of zero (0) indicates no

monotonic association between the two variables. The author acknowledges the small sample size and that a larger sample size would perhaps assist the significance levels across the study. Indeed, Morgan et al. (2013) suggest that correlation coefficients with a small sample certainly don't accurately reflect the population. Moreover, a single case design can present challenges and can underestimate but equally provide overestimates of the true nature and impact of the causal effect from intervention designs (Moser and Bamberg, 2008).

Table 12 shows significant association between TPB components and level of influence in interventions 3, 4, 6, 7, 16 18 and 19. Those marked in grey are the interventions to be taken forward in field research and form the basis of the following discussion. For the interventions to be taken forward, there was a statistically significant association between Subjective Norm scores and influential ratings for intervention 3 ($\tau_b = .512, p = .042$), 5 ($\tau_b = .560, p = .028$), 16 ($\tau_b = .496, p = .050$), and 18 ($\tau_b = .504, p = .044$) and these reflect a monotonic relationship. As the social acceptance of the car increased the influence rating decreased. This supports earlier discussion that SN is a strong determinant of travel.

Although the results were not consistently statistically significant across all the interventions, the indication was that subjective norm may have a mediating level of association with influence scores beyond other TPB components. Thus, these findings go some way to rejecting H1. To recap – Subjective Norm reflects the influence of the immediate personal network of family, friends, and other sources of peer influence and returns us to the concept of *communitas* noted by Burke and Woolcock (2009). Respondents certainly see the use of the car as a socially acceptable form of transport and this may be explained in part by Gibson et al. (2003). They argue that the sport fans are motivated by a shared group or sub-cultural identity. Fairley (2009) adds to this, suggesting that travel mode choice is a way of reinforcing a sport fan's cultural identity with other sport fans (Regan et al. (2012). So the shared group experience described by Gibson et al. (2003) and the results from this trial may provide some evidence towards the agreement that Subjective Norm has a dominant association upon social marketing intervention scores (H1). It certainly builds upon existing

recommendations by Faraq and Lyond (2012) and Farber and Paez (2009) to further an understanding of sport fans and the differing factors that influence leisure and social travel.

Despite difficulties in establishing statistical significance across all the interventions, the results may underline other evidence where SN is a dominant component of the TPB. For example Coogan et al. (2006) found the largest shift between study phases related to SN and referred to the influence of personal social networks upon the formation of intent to change. Subjective norm's dominance is furthered by Hunecke et al. (2001) and Klöckner et al. (2004) yet Matthies's (2006) study into travel choice showed no significance towards SN. Nonetheless, Matthies's study did conclude that "soft measures" which targeted moral dimensions of pro-environmental behaviour may help shift individuals to more sustainable transport choices. In support Guell et al. (2012) revealed that transport choices were indeed made against the back drop of social contexts of family, work or local infrastructure. These comments reiterate that of Jones and Sloman (2003) and Clark et al. (2002) and this study, whereby knowing context/environment/audience enables change behaviour interventions that are entertaining and engaging to the targeted population. Yet despite applying knowledge of context to the design of the interventions, the level of influence was low across all interventions and the level of social acceptance towards the car was high. As noted earlier, it is not such a shock that the car is seen as socially acceptable. Yet, what is more worrying is that leisure travel is on the rise (Holden and Linnerud, 2011) and this is set to increase over the next 20 years due to an ageing European population. Thus, the challenge may lay in reducing the level of social acceptance of the car as a form of transport to leisure pursuits. However, given the scale of this present study, it is premature to suggest for certain what further research is needed.

There was a statistically significant association between Attitude scores and influential ratings for intervention 3 ($\tau_b = .488$, $p = .041$), and 7 ($\tau_b = .591$, $p = .013$) and these reflect a monotonic relationship. In these instances, as the positive attitude towards the car increased the influence rating decreased. This mirrors earlier commentary where a positive attitude towards the car reflected current travel behaviour (93% of respondents travel by car) and where comfort, cost and convenience are seen as

dominating factors of travel choice. Especially given the timings of the rugby matches and location of the stadium to alternative transport modes (Innocenti et al. 2013). Nonetheless, across all the interventions, Attitude scores showed little significant correlation with influential scores. Yet studies in sport and exercise, such as walking, show Attitude effect to be twice that of Subjective Norm (Biddle and Fuchs, 2009). Granted these results related to association of intent. In furthering discussion of Attitude, Bamberg and Moser (2007) reviewed 57 studies that applied the TPB to pro-environmental behaviours including transit, cycling and walking – and they found that Attitude and PBC were the most dominating mediating factors. What then, do these initial findings in this trial suggest?

According to Bohte and van Wee (2009) it could all be down to location. They argue that some people may always choose the car, others choose the car due to restrictions on location, time of day, cost and travel companions. Moreover, the attitude and associated utility may derive from the availability of facilities and services that surround a location – in this case the stadium. Thus, it comes back to the social context within which this study takes place. Does the location and timing of the match generate a default attitude within respondents similar to that described by Bohte and van Wee (2009), Barff et al. (1982), Inglehart and Welzel (2005), Murtagh et al. (2012b) and Innocenti et al. (2013) whereby the social and contextual environment influences attitude? As suggested in the literature review, it can be argued that individuals and their travel decisions are the partial products and producers of their own environment. Given these arguments, this case study may be flawed as Attitude may be influenced by far greater contextual factors which diminish efforts to change travel behaviour.

As attitude is also influenced by the travel choices themselves, attitude score may reflect what Bohte and van Wee (2009) refers to as ‘realm of concern’ and thus defines the scope of choice. This may be reflective of respondents in this study whereby the utility of the car is not considered in the decision making process – *it is how it has always been*. Equally, participants may be bounded by their own rationality or even their own life style. For example, in other aspects of their lives participants may be cognizant of their behaviour yet the act of travelling to the stadium may be constrained by time, public transport access or tradition/habit and thus the inclination to undertake

behavioural change is overlooked. Further qualitative exploration (see study 3) of the participant's behaviour may allow for a more rigorous understanding of participant's pre-match planning and attitudes towards different modes of transport.

Finally, no statistically significant association was found between PBC scores and influential ratings across the interventions. Moreover, there is no pattern in the scores and direction, whereby as the level of influence move up and down, so does the PBC score (monotonic relationship). This scattered result is in stark contrast to studies such as Darker et al. (2009), where PBC was established as a dominating factor, albeit towards intention to walk. Darker's contextual and theory based intervention study found that intention to walk was significantly supported by activities where participants perceive to do well in and where individual control was encouraged. Perhaps Darker's results reflect what they suggest is an easier action (walking) than changing travel to a rugby stadium. Similar to earlier comments in 6.3.3, respondents are clearly capable of finding alternative ways to get to the stadium, yet find it difficult to carry out the action. Thus the contextual factors of travel time, parking location, walking time, ritual meet up before the match and pressure of getting to the match on time (Karg and McDonald, 2011) may make it difficult for respondents to think objectively to notions of control and difficulty. Moreover, the scattered scores may reflect Tarfimow et al. (2002). They argue that control and autonomy items should be disaggregated and not amalgamated due to misinterpretation by respondents in the phrasing of PBC items and the lack of understanding between control and difficulty levels. Whilst the pilot study did not return any comments related to confusion in these items, the results may reflect the challenges set out by Sheeran et al. (2002) and Karg and McDonald (2011).

Armitage and Arden (2002) raise further criticism related to PBC. For example, it can be argued that behaviour is perceived to be easier if individuals are confident in their own ability. Within the findings, the respondents appear to be confident in their own ability and confident that it is their decision alone. Yet, there may be underlying influences. 90% of the participants in this trial attended matches with others or as part of a larger group and Attitude scores suggest a social acceptance of the car within this group. Thus, consideration of others and the contextual factors of travel time, parking location, walking time, ritual meet up before the match and pressure of getting to the

match on time - may temper the level of perceived individual control. Indeed, the TPB is primarily concerned with the individual (Ajzen, 1991) grounded mainly in self-interest and limited in its transposition to a group environment (Armitage and Conner, 2000). In contrast to this, Green (2001) and Gibson et al. (2003) find sports fans are motivated by a shared group or sub-cultural identity and, according to Fairley (2009), this may influence the motives and activities at the sport destination. Indeed, because of the sense of ownership and solidarity explored within sport fandom the originating constructs of the TPB may remain awry within this context.

Table 12 - Kendall's tau-b correlation for TPB constructs and level of influence rating for each intervention

	Marketing Interventions ^a																			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Attitude	.352	.134	.488*	.285	.361	.511*	.591*	.222	.207	.226	.291	.216	.190	.258	.270	.382	.222	.376	.384	.398
Subjective Norm	.286	.033	.512*	.355	.560*	.535*	.628*	.364	.308	.307	.398	.380	.266	.308	.461	.496*	.364	.504*	.501*	.479
Perceived Behavioural Control	-.240	-.001	-.037	.059	-.061	-.082	-.037	-.240	-.043	-.061	-.283	-.231	-.456	-.344	-.079	-.153	-.240	-.169	-.120	-.134

*p<0.05, **p<0.01

^a Interventions marked in grey are those to be taken forward into field research.

6.4 Limitations of the study

There are a number of decisions made in this study that has limited the discussions. First, the study may have benefited from the inclusion of the indirect measurement of each TPB construct. As Ajzen (2002) and Francis et al (2004) suggest the direct and indirect measurements make distinct assumptions about the underlying cognitive structures. For example, direct measurement assumes that people can accurately report their specific beliefs (i.e. consisting of some positive and some negative beliefs). In contrast, the indirect measurement assumes that people can report their beliefs in a probabilistic way (outcome) and can report relative weightings². Given this, the present study provided a narrow explanation of Attitude, PBC and SN which does not fully explain the constructs of the TPB. Using both measures (indirect and direct) may explain more variance of intention and behaviour targeted in this study – probabilistic and existing behaviour related to travel to the stadium. Moreover, the inclusion of indirect measures may further delineate beliefs related to travel as a sports fan. Indeed, as Francis et al. (2004) suggests, it may further an understanding of overall attitude and provide clarity towards performing the behaviour. In order to complete this, Francis et al (2004) suggest performing a qualitative study that elicits beliefs about the behaviour - such as “What do you believe are the *advantages* of driving to the stadium?” or “What do you believe are the *disadvantages* of driving to the stadium?” Using a content analysis, this will establish salient beliefs and help in the formation of direct items and semantic scales.

In an assessment of TPB measures Oluka, Nie and Sun (2014) argue that the role of questionnaires in predicting behaviour is undebatable and must follow consistent patterns – from the elicitation of salient beliefs to the wording and formatting of items.

² Attitudes - Behavioural Beliefs Strength (regarding behavioural outcome) and Outcome Evaluation (review of the advantages and disadvantages of the outcome of the behaviour). Subjective norms - Normative Beliefs Strength (how important people will approve/disapprove of the behaviour) and Motivation to Comply (compliance with important people). Perceived Behaviour Control - Control Beliefs Strength (beliefs about enabling or preventing behaviour) and Perceived Power (perception of the power of these factors and impact on performance of the behaviour).

Moreover, the items must consistently reflect to what, to whom, where and when – the TACT principle. Whilst the TACT principles have been adhered to in this study, the elicitation of salient beliefs has not. This may reduce the reliability of items. Certainly, the formation of salient beliefs related to travel to sport venues by sport fans is a basic step that must be achieved in future research that uses a TPB questionnaire. Indeed, on reflection, this study did not conform to traditional ‘principles of compatibility’ as defined by Fishbein (1967) in Ajzen (2002). Manstead (2001) and Bohte and van Wee (2009) explain that substantial correlation between TPB constructs will only be found if these constructs are assessed at the same level of generality or same level of specificity testing (principles of compatibility). Failure to comply with this principle can be seen in section 6.2.2, where intention was supposed to be measured. Using the term “Do you believe this intervention may influence the way you travel to XXXX stadium?” has very different levels of specificity to the direct items of Attitude, PBC and SN. Firstly, it is certainly more general in its timeliness. Secondly, it is difficult to report with confidence the association between attitude, PBC and SN and ‘influential’ levels as influence ratings do not adhere to constructs of the TPB. Finally, according to Ajze, Czasch and Flood (2009) the principle of compatibility is often understood to mean that in order to have predictive validity, measures of attitude, SN, PBS and intentions must be TACT. On reflection, it is clear to see that the measure of ‘influence’ rather than behavioural intent reduces the validity of the study and its commentary of the TPB.

Following on from this, it is clear that the study did not strictly assess intention and thus, its predictive utility cannot be established. Although there has been debate surrounding the constructs of intention in TPB questionnaires (Armitage et al. 2015, Darker and French, 2009 and Armitage and Conner, 2001), the decision to consider influence levels rather than behavioural intent (as a result of reading the interventions) had an impact on the subsequent analysis. This reduced these findings to mere description whereby the interventions were rated and the TPB constructs were described. In particular the study was unable to establish with clarity if attitude, subjective norm and perceived behavioural control towards sport fan’s existing travel behaviour underpinned their intention to alter their travel behaviour to the stadium. On reflection, any future studies will utilise Ajzen (2002), Francis et al. (2004), Armitage and Conner, (2001), Bamberg et al. (2003) and Darker and French (2009) and use

multiple items for intention measures (such as intention, self-prediction and desire) in order to reduce bias and overcome existing confusion in measuring intention.

Moving away from the construct of the TPB questionnaire, a limitation of this study was its cross sectional approach and the testing of attitude, PBC and SN immediately after respondents received the interventions. Although Bamberg et al. (2003) also used this approach it does have implications to what Ajzen refers to as 'temporal stability'. Ajzen (1996:389) cited in Conner et al. (2000) suggest "to obtain accurate prediction of behaviour, intentions and perceptions of behavioural control must remain reasonably stable over time until the behaviour is performed". Thus, the immediate measures taken in this study may not have accurately predicted the level of PBC, attitude and SN when respondents consider their next trip to the stadium. For example, new information, barriers to change or other influencing variable may influence weak intentions or PBC (Conner et al. 2000) in future travel decisions. Moreover, the study did not establish existing attitude, SN and PBC towards travel to the stadium prior to the distribution of the marketing interventions. As a result, the discussion was limited to participant's immediate responses and did not establish any changes in attitude, PBC or SN as a result of reading the interventions. Consequently, the study was unable to explore with certainty if differences in content (marketing interventions) and context (sport fans) impact on travel behaviour.

Chapter Seven

Study Two: Pre Intervention Analysis

7.1 Introduction

This study assists in achieving hypothesis 2 (People in different stages of change vary in their processes of change, self -efficacy and decisional balance ratings in line with the TTM theory). This means that to test H2, analyses were conducted to examine whether for instance people who are in Precontemplation were more likely to say that they were not considering changing their travel behaviour than people who were in Contemplation; or that people in Action are more likely to indicate that they have taken steps to change their travel behaviour than people in Contemplation.

In using all four constructs of the TTM in the pre-intervention questionnaire, this chapter will ascertain the travel behaviour of sport fans and their cognition towards personal travel to their home stadium. More specifically, it will look at the scores for each TTM construct and explore the theorised relationships between the SoC, PoC, Self-efficacy and Decisional Balance. The chapter will then discuss the application of the TTM to this context and the challenges in applying marketing interventions to the stage construct. Through discussion a deeper understanding of all four constructs of the TTM will be applied to the sport fan context and allow recommendations for further research and possible refinement of the TTM. Limitations will also be discussed.

7.2 Measures

There are four aspects to the TTM measures within this study (1) Stage of Change, (2) Process of Change, (3) Self-Efficacy and (4) Decisional Balance. All TTM measures used within this study demonstrate validity and reliability in a number of studies by Migneault et al. (2005). In general the questionnaire has been tailored to modal choice and behaviour change by appreciating the works of Mutrie et al.(2001); Wen, et al. (2005); Shannon, et al. (2006); Gatersleben and Appleton (2007); and Rose and Marfurt (2007) and their application of the TTM construct to modal change.

7.2.1 Stage of Change measure

The stage of change measures are based on studies using the University of Rhode Island Change Assessment (URICA). This measurement tool reflects the four SoC model (Precontemplation, Contemplation, Action and Maintenance) as discussed in chapter 3. In summary of this DiClemente et al. (2004) and Bamberg (2007) indicate that previous results do not categorically reflect the existence of the more recognised and up-dated five SoC model. Moreover, Migneault et al. (2005) comment upon a range of studies that report 3, 4, and 5 through to 12 SoC. Although several other measures have been developed, such as SoC Readiness and Treatment Eagerness Scale (SOCRATES), Change Ladder and SoC Algorithm (Carey et al., 1999, DiClemente et al, 2004 and West, 2005) there is no agreement on cut off scores and the parameters of stage based classifications – either 3,4,5 or even 12. In furthering this, West (2005) suggests that stage based classifications may be arbitrary and add very little to change behaviour theory. DiClemente et al. (2004) recognise these operational challenges and despite the criticism suggest that individuals earlier in a change process differ significantly from those at the latter end of change and thus, categorisation helps contribute to understanding the process of change despite the criticism from Carey and West. Moreover, Dixon et al. (2009) and Field et al. (2009) states that URICA continues to be one of the most reviewed and well regarded measures for assessing and categorising participants in change behaviour studies, thus reinforcing it as a valid and reliable measurement of change.

Consequently, the adaptation of the University of Rhode Island Change Assessment Scale (URICA) 12 item version was used. Where the ‘problem’ was noted within the item constructs, these were then contextualised to travelling to the stadium. More specifically driving to the stadium. A 5 point Likert scale was employed (1 = strongly disagree to 5 = strongly agree). Guidance for each question was provided to participants to enhance their level of understanding. The questionnaire can be found in appendix 5. Overall cut off scores were calculated using the Healthy and Addictive Behaviours: Investigating Transtheoretical Solutions (HABITS) University of Maryland, Baltimore County (2014). To obtain a stage of change score, the mean score for each subscale was calculated, then the sum means from the Contemplation, Action, and

Maintenance subscales were subtracted from the Precontemplation mean. Cut off scores were then applied as discussed by DiClemente, Schlundt and Gemmell (2004), Carey et al. (1999) and Teixeira et al. (2015). Those scoring $8 <$ were categorised as Precontemplation; 8-11 were coded as Contemplation, 12-14 were categorised as Action and those above 14 were categorised as Maintenance. Applying such a measure in this study allowed the researcher to track and monitor individuals stage of change pre and post intervention. Consequently, the results, analysis and discussion helped test hypothesis 2.

7.2.2 Process of Change measure

Based on Prochaska, Velicer, DiClemente and Fava's (1988) study of smoking cessation, a 20 item questionnaire to test aspects of the 10 processes of change was used. In this study, a 5-point Likert scale was employed in the design (see appendix 5). The 20 items were contextualised to travelling to the stadium. Although Perz et al. (1996) presents earlier studies that show a dominance of experiential processes to encourage transition between the stages, more recent meta-analysis by Rosen (2000) has shown an equilibrium between experiential and behavioural items. Thus, an even spread of experiential and behavioural processes were assessed within the measure. Moreover, support for short form measures in Callaghan and Horzog (2006) presents similar assessment patterns of the longer 40 item measures. For example, the correlation between the long and short form show a mean of 0.92 with alpha reliabilities (range 0.63-0.81) commensurable with other studies.

As noted in earlier, the processes of change are closely aligned with stages of change as noted in section 3.3. For example, in the Precontemplation stage individuals use the change processes significantly less than in any other stage. Individuals found within the Contemplation stage are most open to Consciousness Raising interventions. This underlying theoretical assumption was investigated within a sports event context and helped test H2 and examine the applicability of the TTM Model constructs to the context of sport fan travel behaviour. Moreover, a range of studies such as Boswell et al. (2010) and Bamberg and Schmidt (2003) state that the PoC are the mechanisms that facilitate movement between the stages. Given the importance attached to PoC items, it was essential to explore which of these factors were more

influential in each the stage of change within a sports event context in order to provide further recommendations in intervention design and application of the TTM to a sports event context.

7.2.3 Self-Efficacy measure

This study used a single item of measurement for self-efficacy as presented by Anis (1986) in Breslin et al. (2000) and focussed on situational confidence levels rather than situational and temptation items as described by Shwarzer (2014). Whilst Velicer et al. (1985) used a set of parallel items that covered both aspects of self-efficacy, authors such as Miller et al. (1989) and Breslin et al. (2000) have argued that presenting participants with a parallel set of items measuring two components (situational and temptation) can cause confusion and may require additional explanation. Whereas a single set of items covering situational or temptation components can yield similar results³. Given the sampling method, the subject of the questions⁴ and time constraints of the population outlined in chapter four a single set of items that focused on a situational confidence questionnaire (SCQ) was deemed appropriate – testing Negative Affect, Social/Positive, Physical and Other Concerns and Cravings and Urges. Each item was tailored to situations that might influence participants travel behaviour and was far easier to articulate whereas using temptation items could be seen as even more abstract and require further explanation at the point of data collection.

Given the more abstract and cognitive nature of this instrument particular attention was given to participant guidance and phrasing of the questions. This is in line with Bandura (2006) who advises that the items should reflect the ‘can’ do rather than ‘will do’ as self-efficacy is a judgement of capability rather than proposed intention. Moreover, perceived self-efficacy should reflect specific types of performance (use of

³ Breslin et al (2000) report correlation coefficients for the subscales ranged from 0.56 to 0.80. Both instruments showed similar, but not identical factor structures.

⁴ Many anecdotal conversations with the operations officer at the stadium - who notes the lack of interest in using alternative modes of transport and lack of engagement in previous initiatives....

alternative modal choices) and the social implications, expected personal outcomes and emotional connections. Given the time constraints of the population (getting to the match on time) the original 20 item scale was reduced to 12 items by reducing the repeating pattern of the 4 SCQ categories. Similar 12 item questionnaires have been used in other studies (Migneault et al. 2005). The underlying statement was “Given the scenarios below, we would like to know how confident you may feel in using an alternative to the car”. The assumption here is that those in Precontemplation would not feel confident and those further through the SoC would feel more confident. This prescribed relationship was tested within a sports event context and helped test H2 (Sport Fans in different stages of change vary in their processes of change, self - efficacy and decisional balance ratings in line with the TTM theory).

At this point it should be noted that self-efficacy traditionally explores those ‘active’ in the stage of change process and as Velicer (1990) note, it is not necessary to explore participants in Precontemplation or Contemplation where apriori exists of the sample behaviour. Consequently, analysis should focus more on those participants categorised as ‘changing’ behaviours (Di Noia and Prochaska, 2010). However, as discussed in chapter three, the lack of published work in travel behaviour of sport fans suggests a need for exploring the relationship between self-efficacy and the constructs of SoC and can add to the epistemological notion of contributing to knowledge. Moreover, there are studies published such as Al Otaibi (2013) that explore self-efficacy responses across all SoC and counter the principles of Velicer (1990) that analysis of self-efficacy must be fixed to participants categorised as ‘changing’. As a result, this study explored Self-efficacy responses across all SoC.

7.2.3 Decisional Balance measure

The Decisional Balance items are based on original work from Janis and Mann and applied to addictive behaviours by Velicer et al. (1985) whereby a two-component structure was identified - pros and cons – the items consider gain versus losses. Di Noia and Prochaska (2010) suggest that the 2-factor structure has been successfully tested in a variety of health related studies and as such, presents a robust construct to test in an alternative context such as sport and transportation. Ward et al. (2004) suggests that recent studies have implemented 3 items to measure the pros and cons. However, data does not prove the effectiveness of 3 item measures. Simply trying to illustrate items that convey varied pros and cons would be difficult in a 3 items scale. For example, Velicer et al. (1985) describes the Pros scale containing items that represent pleasure, tension, self-image and habit. The Cons scale offers health, motivates, social pressure and aesthetics as components. Thus, a 10 item measure was used to test pros and cons of travelling to the stadium to watch professional rugby league clubs home matches (see appendix 5).

Similar to Self-efficacy, the response to Pro and Con items can be dependent on the SoC (Di Noia and Prochaska, 2010 and Velicer et al., 1985). In a review of studies by Ling and Horwath (2001) they found that as individuals progress through the stages, there is a synchronous reduction in cons and an increase in pros. Thus, by using similar items in the construct of the questionnaire there is an expectation that the results will follow this pattern. Once again, this prescribed relationship was tested within a sports event context and helped test H2 (Sport Fans in different stages of change vary in their processes of change, self -efficacy and decisional balance ratings in line with the TTM theory).

7.3 Procedure

Piloting of the pre-intervention survey was completed whereby 15 respondents were asked to complete the survey individually, then asked to make comments related to clarity, interpretability, format and speed of completion. Changes were made to

question structure to increase clarity. Moreover, the survey format was altered significantly in order to view all questions on two pages to provide a perception of brevity (appendix 5).

17 volunteers were enlisted to help with the main data collection and distribute the pre intervention surveys to the professional rugby league clubs fans (season and non-season ticket holders). A formal briefing by the researcher outlined volunteer responsibilities, ethical procedures and participant recruitment and information. Volunteers distributed questionnaires at strategic points throughout the stadium prior to match kick off on March 21st 2014. On completion of the questionnaire the volunteers established those participants willing to take further part in the study and noted down contact information.

In order to increase participation incentives were offered to participants in the form of a prize draw. The prize draw included a 2015 season ticket; an ipod classic and a £50 meal voucher. To increase participation further volunteers also distributed flyers to notify sport fans of the online version of the questionnaire using Bristol Online Survey software solution.

171 surveys were successfully collected. Unfortunately only 62 participants were prepared to participate further. Due to concern over the statistical relevance and retention of participants in a longitudinal study it was decided to re-visit the population and try to increase the sample. On the 2nd May and 23rd May 2014 the researcher was granted access to the stadium and a further 21 respondents participated in the study. Out of these 21 participants 10 were prepared to participate further. Thus providing a longitudinal sample of 72 and initial sample of 192.

Prior to absorption into the total sample, an un-related *t*-test was performed against the supplementary group (combined respondents from 2nd May and 23rd May 2014) to establish if the two groups differed with regards to age, income and employment status – see table 13. Simply, the un-related *t*-test assesses two groups of scores, from two distinct groups of people. In this instance the preferred outcome was to show no

difference within the population. In other words how likely was it that there could be a difference between the two groups? Assumptions of the unrelated t - test were adhered to here where (1) the variances of the dependent variable in the two populations were equal, (2) the data sets were independent.

Table 13 Comparison of March and May responses across demographic indicators

Variable ($n = 171$ March and 21 May)	M	SD	t	df	P
Age			<i>-1.84</i>	<i>190</i>	<i>0.67</i>
March	3.04	1.473			
May	3.67	1.3461			
Annual Income			<i>-1.27</i>	<i>177</i>	<i>0.206</i>
March	3.91	1.794			
May	4.43	1.630			
Employment Status			<i>1.18</i>	<i>190</i>	<i>0.240</i>
March	2.09	1.912			
May	2.62	2.224			

The F -test revealed that variance between the two groups (March and May) were not statistically significant, thus the assumption of equal variance was maintained. The t -test for equality of means re-affirms the statistical insignificance, thus it can be argued that absorption of the two groups imposed no statistical effect across the sample and could be subsumed together without skewing the data set.

7.4 Data analysis rationale

Cronbach's alpha were calculated to test the reliability of the TTM measures. This derived from respondents' ratings of the descriptive statements that related to the characteristics of each measurement tool across the TTM. Data was collected from demographic questions in order to provide a descriptive analysis of the sample. This data related to such aspects as age, gender, car ownership, education levels and distance travelled to the rugby league stadium. In addition, the means, modes, range

and standard deviation from the questions were used in order to establish relationships and possible variances. Chi-square tests were used to examine relationships between SoC and demographics. This analysis provided base line data in order to explore behavioral insights into sport fans and their behavior towards travelling to the stadium for home matches. Further details are discussed in each findings section.

An analysis of demographic differences across the PoC was carried out using a Mann-Whitney *U* test in order to provide underlying context of the participants. Alternatives such as the t-test were considered but assumptions were markedly violated. The mean differences in PoC scores were assessed across the SoC categories to assess alignment with theory and stage characteristics. T-tests were run to determine if there were differences in PoC scores between those in Precontemplation and Contemplation and to test the application of the TTM in this context (H2). To further theoretical assumptions and to ascertain if the PoC scores increased as the SoC increased, a Spearman Rank correlation was used. A Pearson Correlation was considered however the scatter plots revealed a weak linear relationships. Further details are discussed in each findings section.

To explore the difference between SoC and SCQ subscales a non-parametric Kruskal-Wallis analysis of variance was employed. Once again, this provided further evidence to test H2. Decisional Balance items were ranked according to their median score in order to explore the Pro and Con items in each SoC and further the discussion of stage characteristics. T-tests were used to assess the difference in mean scores of Decisional Balance between SoC and to test the application of the TTM in this context (H3). To ascertain if there was a relationships between Decision Balance score and overall SoC scores a Kendal's Tau was completed. Once again, this tested the TTM construct, specifically if Pro items increased and Con items decreased from earlier to latter stages of change. Further details are discussed in each findings section.

7.5 Findings

7.5.1 Sample descriptors

192 responses were received. Out of that, 83% of the sample stated that they travelled to the stadium by car (table 14). 73% of participants travelled with up to 3 people and 20% travelled with 4-6 people. What is surprising is the distance people travel. Nearly 29% travelled more than 16 miles to the stadium and 25.5% of the sample took 26-35 minutes to get to the stadium. Males' showed a slight dominance in the response with nearly 59% of responses. The spread of age is more consistent. The largest response was from 35-44 year olds (29.2%). More evenly, the results showed 50.9% of participants' classed themselves as the main driver. Just over 65% of the sample were employed full time, with 12.5% employed part time.

Table 14 Sample Descriptors

Variables	Sample (%)	Variables	Sample (%)
Age		Dependents	
18-24	16.7	Yes	41.7
25-34	18.2	No	58.3
35-44	29.2	Employment	
45-54	17.2	Full time employment	65.6
55-64	12.5	Part time employment	12.5
65-74	4.7	Casual employment	1.0
Gender		Unemployed	1.0
Male	58.3	Student	5.7
Female	41.7	Retired	10.4
Season ticket holder		Other	3.6
Yes	56.3	Income	
No	43.8	£10,000 or below	5.2
Main Driver		£10,001 - £19,999	12.5
Yes	50.9	£20,000 - £29,999	26.0
No	49.1	£30,000 - £39,999	18.8
		£40,000-£49,999	13.5
		£50,000-£59,999	6.8
		£60,000 - £69,9999	5.2

7.5.2 Stages of Change – Findings and Discussion

This discussion focuses on H2 and examines the applicability of the TTM Model constructs to the context of sport fan travel behaviour. It comments on the categorisation of participants to the SoC and the possible reasons behind the categorisation. It draws upon contextual perspectives of the case study and the methodological challenges associated with stage of change categorisation. Second the analysis of demographic variables against the SoC provides further insight into why interventions might be applicable to sport fans and their travel behaviour in line with the TTM (H2).

The findings here simply represent stages of change pre-intervention and apply the stages of change measure to the sports fan context. Cronbach's α for the scale across the 12 items measured .71, suggesting internal reliability with the scale and in line with Carey et al. (1999) who suggest that internal consistency (alpha) for the four scales range from .70 to .83. Z scores were computed for raw SoC scores. The histogram with a normal curve overlay is depicted in figure 21. Whilst a slight negative skewness is shown the values are considered a reasonable approximation of the normal curve. In other words, 68% of the areas lies between ± 1 Z(SD) and 95% of the area lies between ± 2 Z(SD).

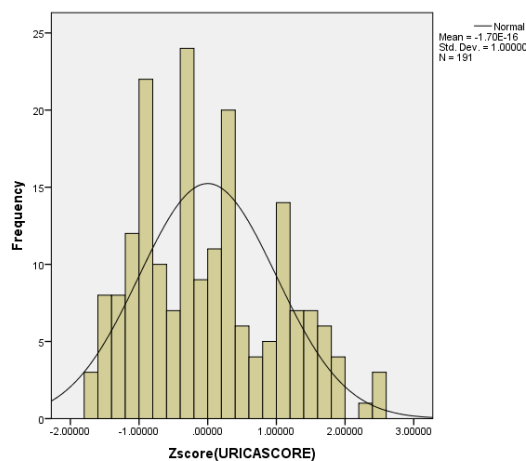


Figure 21 Z scores for SoC

Nonetheless, the data set presented was slightly skewed. Using a Shapiro-Wilk's test ($p < .05$) it showed that the SoC scores were not approximately distributed. There was slight skewness for females .290 (SE.269) and evidence of a little kurtosis -.719 (SE.532). Yet values within the range of $\pm 2(\text{SE})$ are generally considered normal. This is supported by the visual inspection of their histograms show little departure from normal distribution of the population, indicating a slight skewness and kurtosis of data (see figure 22). As Howitt and Cramer (2003) and Nelson (2010) suggest slight skewness can still be acceptable for data to be further analysed using parametric and/or non-parametric testing dependent upon other assumptions.

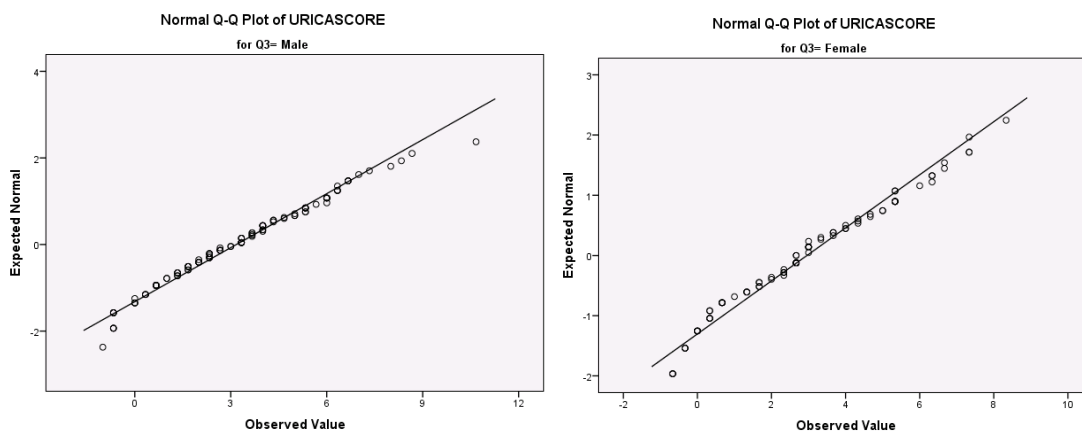


Figure 22 Q-Q plots and histograms for Gender across SoC

The majority of participants were categorised as Pre-contemplators (92%) with some categorised as Contemplators (7.5%). Only 0.5% were categorised within Action and no participants at the Maintenance stage. Thus, no further analysis was undertaken for these two categories – Action and Maintenance.

Chi-square tests were used to examine relationships between SoC and gender, season ticket holders and dependents. Assumptions and conditions for the use of Chi-square were met namely (1) the data for the variables was independent, (2) data was treated as nominal and (3) frequencies were larger than 5 in each cell. The Chi-square test (see table 15) proved gender not to be significant at the 0.05 level ($\chi^2 = .006$, $df = 1$, $N = 191$, $p = 0.93$) across Precontemplation and Contemplation. No significance was also reported between season and non-season ticket holders across

Precontemplation and Contemplation ($\chi^2 = .263$, $df = 1$, $N = 191$, $p = 0.61$). Moreover, having dependents was not significant across Precontemplation and Contemplation ($\chi^2 = 4.09$, $df = 1$, $N = 191$, $p = 0.52$). Finally, Chi Squared reports no significance within main drivers ($\chi^2 = 1.57$, $df = 1$, $N = 191$, $p = 0.21$) across the two SoC.

Table 15 Chi-square analysis between SoC and demographic data

Variable	<i>n</i>	Category		χ^2	<i>p</i>
		Dependents			
Do you have any dependents you are responsible for on a regular basis?		Yes	No	4.09	0.52
Precontemplation	177	73	104		
Contemplation	14	7	7		
		Gender			
Please state your gender		Male	Female	.006	0.93
Precontemplation	177	103	74		
Contemplation	14	8	6		
		Main Driver			
Are you the main driver to the stadium?		Yes	No	1.57	0.21
Precontemplation	177	94	83		
Contemplation	14	5	9		
		Season ticket			
Are you a season ticket holder at Professional rugby league clubs?		Yes	No	0.26	0.61
Precontemplation	177	101	76		
Contemplation	14	7	7		

The results implied that the majority of participants did not recognise travel by car to the stadium as a problem behaviour (Pre-contemplators 92%, Contemplators, 7.5%, Action, .5%). As Prochaska and Norcross (2007) propose individuals in the Precontemplation stage are not thinking about or intending to change a problem behaviour and do little to shift their attention on the environment in the direction to overcoming their problems. However, at the same time Pre-contemplators are not usually armed with the facts about the risks associated with their behaviour. Since Prochaska and DiClemente (1982) first introduced the SoC there has been debate surrounding SoC categorisation and characteristics of each stage (Carey et al., 1999, Sutton, 2001, DiClemente et al., 2004 and West, 2005). These debates centre on cut

off scores. In other words, where do you draw the line to categorise individuals? This study used procedures from URICA and HABITS to determine SoC categorisation, yet the aforementioned authors suggest there isn't a set method. Indeed, DiClemente et al. (2004) has stated that different measures don't always generate the same findings and classification. West (2005) and Sutton (2001) further this by arguing that the cut off lines in the TTM are arbitrary and do not represent genuine stages. So it may be simplistic to suggest here that those categorised as Precontemplators follow similar characteristics. Thus, it is difficult with certainty to suggest stage status and predict the characteristics of individuals placed in the stages of change construct. So the earlier claim that participants don't recognise travel by car as a 'problem behaviour' may be flawed. In other words, they may be thinking about their car use, and indeed they may be armed with all the facts related to the wider environment but the nature of SoC classification clumps them together into a homogenous group.

This argument may also exemplify the challenge in applying SoC categorisation to a particular segment and/or context as evidenced by Sutton (2001) and DiClemente et al. (2004). For example, DiClemente argues that the evaluation, measurement and ultimately categorisation of stages of change is more complicated when the target behaviour is complex and or the potential goals are multi-faceted. This study certainly reflects this commentary. For example, travel is recognised by many (Regan et al. 2012, Kaplanidou et al., 2012 and Green, 2008) as multi-faceted. These multi-faceted interactions are between people (shall I travel with others), place (where are we travelling to and for how long?), social institutions (does the rugby team promote alternative travel modes?) and political institutions (does the local council support and provide incentives to use alternative travel modes to the car?). Alongside these interactions sit the broader cultural, social and economic externalities that are placed against travel decisions such as time, family circumstances, cost, status, safety and convenience (Innocenti, 2013). Finally, travel mode choices are made against a backdrop of motives such as excitement, escapism and socialisation (Trail and James, 2001) of the sports fan. Thus, the sheer complexity of the problem targeted (travelling to a match) may be so overwhelming to each participant that they simply don't consider alternatives. This may go some way to explaining the low scores and negative behaviour towards using alternative modes to the car and ultimately their

categorisation as Precontemplators. Clearly it is premature to suggest that the model cannot be applied to this context (H2) but it certainly highlights the methodological and contextual challenges that face the TTM.

Notwithstanding, DiClemente et al. (2004) notes that whether one uses continuous and/or staged based classification, individuals differ between early change behaviour and latter stages. Moreover, there is consistent evidence (Migneault, et al., 2005, DiNoia and Prochaska, 2010, Doppelt, 2008, DeVet et al., 2008) that this segmentation supports the levels of engagement with processes of change. In other words, those at the beginning of their change don't engage with the PoC as much as those at the latter end of change. This is explored further in section 7.5.3. In the meantime, questions remain over the influence of underlying antecedents (gender, age, income, dependents, and season ticket holder). These fundamental questions help establish where difference may be found between SoC and move some way to achieving H2. Specifically, the results may offer insight into appropriate future intervention design within a sport event context.

Results indicated that demographic variables, such as gender ($\chi^2 = .006$, $df = 1$, $N = 191$, $p = 0.93$), having dependents ($\chi^2 = 4.09$, $df = 1$, $N = 191$, $p = 0.52$) and being the main driver presented little influence between SoC responses (Precontemplation and Contemplation). The results re-affirmed the work of Thrane (2001) who suggested there is no systemic relationship with sport spectatorship attendance and demographics variables. Similarly, studies in transportation such as Steg (2005) report no significant gender differences in the attractiveness of car use. This is furthered by Polk (2004) where, contrary to stereotypical viewpoints, no variations in car use were found between men and women. Consequently, it can be suggested that any future transport behaviour interventions within this context should not focus on demographic variables of gender, dependents and main driver as there is no statistical difference between these groups and their SoC classification. In ascertaining underlying constructs of sport fans travel behaviour, these findings provide indicators to assist in the achievement of H2.

Moreover, chi-square reported no significance within season ticket holders ($\chi^2 = .263$, $df = 1$, $N = 191$, $p = 0.61$). This is somewhat surprising when considering sport fan psychology. For example, findings from Snelgrove et al. (2008) and Smith and Stewart (2007) suggest sport fans develop a sense of collective and personal identify which can develop into a shared responsibility of a bigger group - in this case a season ticket holder. This is furthered by Prochaska and Norcross (2007) who suggest that contemplators are more aware of the consequences from their personal actions. Yet in this study, being a 'season ticket holder' presents little difference across the SoC. These results might be diluted by the even spread of season ticket and non-season ticket within Contemplation and Precontemplation. Equally it could suggest that the characteristics of a season ticket holder and non-season ticket holder are similar. Thus, being a 'sport fan' - rather than delineating between season and non-season ticket holders - may be the important factor. As a result, interventions that focus on group roles, rules and conformity may increase the relevance and influence within a sport event context such as this study. Indeed, this idea of shared responsibility links directly with the awareness of consequences of personal actions identified by Prochaska and Norcross (2007) and provides further evidence that knowing context and applying this context to the design of interventions may assist in changing the travel behaviour of sport fans (H2).

7.5.3 Process of Change – Findings and Discussion

This section presents Process of Change (PoC) findings and discusses these within the context of the study and relationship with stages of change. Ultimately this section focuses on H2 "Sport Fans in different stages of change vary in their processes of change, self-efficacy and decisional balance ratings in line with the TTM theory".

Using methods by Prochaska et al. (1980 and 1988) to obtain a PoC score for experiment and behavioural process, sum item scores were calculated and divided by 10. Z scores were computed for behavioural and experiential PoC scores in order to assess distribution of the variables. The histogram with a normal curve overlay is depicted in figure 23. Whilst a slight positive skewness is shown for both experiential

and behavioural PoC scores, the values are considered a reasonable approximation of the normal curve. In other words, 68% of the areas lies between $\pm 1 Z(SD)$ and 95% of the area lies between $\pm 2 Z(SD)$. Cronbach's α for the scale across the 20 items measured .88, suggesting internal reliability with the scale. In other analysis the mean scores were taken for each process item and applied to SoC responses. This provided an overview of which processes were used the most.

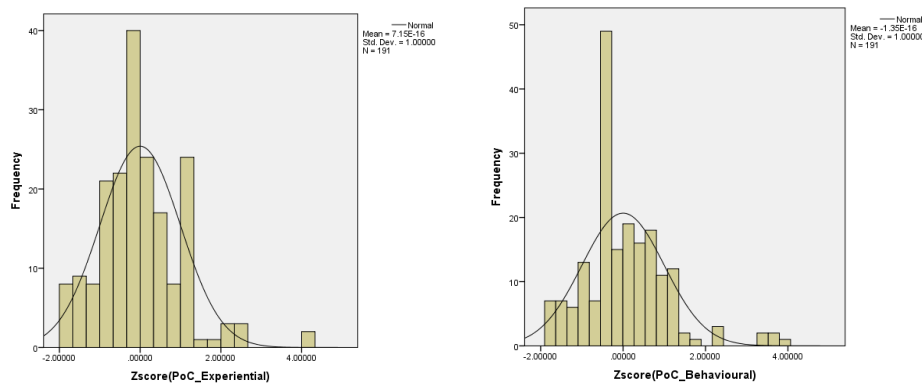


Figure 23 Z scores for behavioural and experiential PoC

Demographic influences on process of change

An analysis of demographic differences across the PoC was carried out using a Mann-Whitney U test. Alternatives such as the t -test were considered but assumptions were markedly violated, such as variance between the dependent variable between the two populations were unequal. Assumptions of the Mann-Whitney test were adhered to where there was a continuity of low to high scale in the dependent variable and the score of one participant were not dependent upon the other. The test helped to determine the significance between the groups. Given the aforementioned conditions and sample characteristics, according to Howitt and Cramer (2003) and Morgan et al. (2013) a Mann-Whitney Test is a more appropriate test to explore multiple comparisons across PoC subscale and between demographic variables. Table 16 presents an overview of the most significant demographic influences across PoC items. Overall MW results indicate little significance between genders (Male $N = 111$, Female $N = 80$). The only PoC item to show significance between genders was Self-evaluation (behavioural) with males reporting higher rank mean than females.

Nevertheless, the r effect size ($r = z/\sqrt{N}$) was $-.17$ suggesting a small effect. The only experiential item to show significance between season and non-season ticket holders was Environmental Re-evaluation ($r = -.18$). The only behavioural items to show significance between season ticket holders and non-season ticket holders was Self-liberation ($r = -.16$) and Self-re-evaluation ($r = -.17$). For those self-reported as main drivers and non-main drivers a similar level of non-significance was found between each PoC item. Environmental Re-evaluation (experiential item) showed significance between main drivers with non-drivers having a high mean rank but little effect ($r = -.18$). There were a number of behavioural items that showed some significance such as Reinforcement Management ($r = -.22$), Self-liberation ($r = -.16$), Self-re-evaluation ($r = -.31$) yet once again a small effect was noted.

Table 16 Mann-Whitney U test - Demographic influences across PoC items

		Mean Rank	Sum of Ranks	u	Z	p	r
Experiential Self Re-evaluation	Gender						
	Male	104.07	11552	3544	-2.431	.015	-.17
	Female	84.80	6784				
Behavioural Self-Liberation	Season Ticket						
	Season	88.44	9551	3665	-2.226	.026	-.17
	Non season	105.84	8785				
Experiential Environmental re-evaluation	Season Ticket						
	Season	86.59	9352	3466	-2.774	.006	-.18
	Non season	108.24	8984				
Experiential Environmental re-evaluation	Main Driver						
	Yes	86.74	8587.50	3637.50	-2.842	.013	-.18
	No	105.96	9748.50				
Behavioural Self-liberation	Main Driver						
	Yes	87.94	8706	3756	-2.157	.031	-.16
	No	104.67	9630				
Behavioural Reinforcement management	Main Driver						
	Yes	84.29	8344.50	3394.50	-3.100	.002	-.22
	No	108.60	9991.50				
Behavioural self-re-evaluation	Main Driver						
	Yes	79.98	7918.50	2968.50	-4.248	.001	-.31
	No	113.23	10417.50				

The MW test revealed that there was no variance between gender across the PoC and that equal variance was maintained. This reaffirms the responses across SoC and clarifies gender has no significance. This is supportive of other sports related studies such as Davis et al. (2010) and Crawford and Gosling (2004) where sport consumption is equal across genders. In line with the SoC results, these findings imply that PoC mechanisms within this study have no gender bias and as a consequence change behaviour interventions should be gender neutral to gain a broad and optimum effect.

Results did show that there were more statistically significant differences in the mean score between main drivers to non-main drivers. Whilst there was a small effect realised in all three behavioural items (Reinforcement Management $r = -.22$, Self-liberation $r = -.16$ and Self-re-evaluation $r = -.31$), this may be in part to the small sample size. Interestingly, in all cases where significance was found there is a trend towards a lower mean from main drivers across the PoC. For example, the PoC items employed a scale 1 = Never through to 5 = Always. The lower the mean suggests less engagement with the mechanisms that, in theory, develop a shift in behaviour change. These results do echo a strong concept of traditions and habitual behaviour as outlined by Verplanken and Wood (2006). These results are also reflective of escalated commitment whereby individuals repeat and repeat the behaviour over time, fixing their patterns of behaviour to one approach and disregarding other alternatives. These findings also reinforce the struggle identified by Anable (2005) and the battle in overcoming the psychological barriers of those addicted to car use whilst at the same time ignoring appropriate and relevant opportunities to change. These findings offer insights for H3, whereby theory led interventions may have no impact on the travel behaviour of sport fans to home matches.

Processes of change comparisons across stages of change

It was hypothesised that the constructs of the TTM could be applied to this context (H2). In order to test this, the mean PoC scores were assessed against participants categorised in Precontemplation and Contemplation. Data are mean \pm standard

deviation, unless otherwise stated. There were 177 Precontemplators and 14 Contemplators. Table 17 shows Reinforcement Management, Counter Conditioning, Helping Relationships and Dramatic Relief scored highest within Precontemplation respondents. Conscious Raising, Dramatic Relief, Social Liberation, Helping Relationships and Counter Conditioning scored highest within Contemplation respondents. The higher scored PoC items in Precontemplation certainly reflect a concern for others. Yet these are more commonly seen in the latter SoC (Prochaska and Norcross, 2007, Petrocelli, 2002). For example, Reinforcement Management focuses upon reward sought after by others; Self-Liberation requires a commitment to oneself and others; and Counter Conditioning suggests travel alternatives can be sought. The means scores found here may be also be reflective of sport fan psychology and work by Fairley (2009) and Fairley and Gammon (2010). They found that the mode of transport is central in creating and maintaining the identity of groups that travel and follow a sports team. Moreover, the opportunity for reinforcement and socialisation of the sport by travelling with other fans (73% travelled with up to 3 people and 20% travelled with 4-6 people) may promote 'self-identification' within the travelling group. So concern for others seems to be a factor that may influence these preliminary results and challenge the applicability of the TTM within the context of sport fans travel behaviour (H2).

However, mean PoC scores within Contemplators show some alignment to theory. For example Social Liberation items are expected to be present within Contemplation. However, the findings also oppose the prescribed theoretical constructs once again. High means were reported for Helping Relationships ($m = 3.1$) and Self-Liberation ($m = 3.1$). According to Petrocelli (2002) Helping Relationships is a process that encourages Action through to Maintenance by combing elements of trust, strong relationships and a caring environment. Moreover, Self-Liberation is seen as a mechanism to support movement from Action to Maintenance by communicating commitments, such as New Year's resolutions and sharing these with others. These findings are in stark contrast to what Prochaska and DiClemente (1992) suggest as behaviours for Contemplation. They suggest that this stage characterises an exploration of personal values and personal goals rather than an articulation of commitment to others. In summary, these results suggest some movement away from

the expected PoC constructs between the SoC (Migneult et al. 2005, Di Noia and Prochaska, 2010). Consequently, the postulated PoC mechanisms might not fit against the context of this study as sport fans look towards relationships with their travelling group to gain support and encouragement and see these principles as central within the founding SoC (H2). Thus, the question arises if the PoC and SoC constructs are still applicable to the context of travel behaviour change within sport fans? It could be argued here that the idea of sport fandom and *communitas* and having a sense of belonging towards the group (professional rugby league clubs) is a fundamental characteristic of this group and may assist in behaviour change.

Table 17 Mean Scores across Precontemplation and Contemplation

Process of Change	Precontemplation (N=177)		Contemplation (N = 14)	
	M	SD	M	SD
Conscious Raising	1.9	.76	3.4	1.1
Dramatic Relief	2.2	.85	3.4	1.0
Environmental Re-evaluation	2	.70	3	1.1
Self-re-evaluation	2	.90	2.9	.95
Social Liberation	2.1	.75	3.1	1.2
Counter Conditioning	2.3	1.1	3.1	.73
Helping Relationships	2.2	1.4	3.1	1.1
Reinforcement Management	2.5	.79	3	1.1
Self-Liberation	2.1	.81	2.9	.98
Stimulus Control	1.9	1.1	3	1.3

As noted earlier it was hypothesised that the TTM could be applied in this context (H2) and thus, this section assessed if differences in the mean score indicated a stage difference as prescribed in theory. An independent-samples t-test was run to determine if there were differences in PoC scores between those in Precontemplation and Contemplation. In this case, the independent variable was the SoC (with two levels) and follows approaches taken by Blanchard et al. (2003) in assessing mean scores of participants. DiNoia, Schinke and Prochaska (2006) have used the same approach to examine difference in vegetable consumption across two levels of stage of change. There were some outliers in the data, as assessed by inspection of a

boxplots (appendix 6) but these were considered valid data points. The Shapiro-Wilk's test showed movement away from non-normality but inspection of Q-Q plots for each PoC show near normal distribution. Given the t-test is fairly robust to deviations from normality, the test was considered appropriate (Morgan et al. 2013). Levene's test of homogeneity reported significance for Environmental Re-evaluation and Social Liberation and Conscious Raising, thus the assumption of equal variance was violated. These PoC items were not reported in table 18. In all other PoC items, the assumption of equal variance was maintained.

Table 18 presents each separate t-test. Statistical significance was found in the PoC scores between Precontemplation and Contemplation except for Dramatic Relief. For example the variation between the mean of Counter Conditioning was statistically significant, -0.779 (95% CI, 1.4 to .2), $t(189) = -2.55$, $p = .011$. The mean score in Precontemplation was $2.3 (\pm 1.4)$ and in Contemplation the mean score was $3.1 (\pm .2)$. This statistical significance suggests a higher engagement with PoC items in Contemplators. It reinforces the theoretical stance of DiClemente et al. (2004) whereby individuals differ between early change behaviour and goes some way to supporting H2. According to Cohen (1998) and Morgan et al. (2013) the effect size d was smaller than typical ($d = .3$), suggesting a small change in Counter Conditioning on account of SoC groups. Small effect size was also found for Reinforcement Management ($d = .3$) and Helping Relationships ($d = .3$). Typical effect size was found for Self-Liberation ($d = .5$), Stimulus Control ($d = .5$) and Self-reevaluation ($d = .5$).

Table 18 T-test and Descriptive Statistics for PoC Items across SoC

	SoC						95% CI for Mean Difference				
	Precontemplation			Contemplation				<i>t</i>	<i>df</i>	<i>p</i>	<i>d</i>
	M	SD	n	M	SD	n					
Dramatic Relief	2.2	.85	177	3.4	1.1	14	1.9, 1.1	-4.769	189	.261	
Reinforcement Management*	2.5	.79	177	3	1.1	14	.9, .1	-2.237	189	.026	.32
Counter Conditioning*	2.3	1.1	177	3.1	.73	14	1.4, .2	-2.556	189	.011	.37
Helping Relationships*	2.2	1.4	177	3.1	1.1	14	1.6, .1	-2.212	189	.028	.32
Self-Liberation*	2.1	.81	177	2.9	.98	14	1.2, .38	-3.613	189	.001	.52
Stimulus Control*	1.9	1.1	177	3	1.3	14	1.75, .53	-3.718	189	.0002	.54
Self-Re-evaluation*	2	.90	177	2.9	.95	14	1.42, .43	-3.685	189	.003	.53

* $p < .05$.

SoC and PoC Correlation

Given the debate surrounding SOC classification in section 7.5.2, raw SoC Scores rather than groups (Precontemplation and Contemplation) were considered alongside Experiential and Behavioural PoC score⁵. The intention here was to test the relationship between the scores and ascertain if the findings behave in the way in which the theory is prescribed within this context (H2). In other words, do the PoC Scores increase as the SoC increases? According to Prochaska and Norcross (2007) change process associated with experiential and cognitive persuasions are most useful during the earlier Precontemplation and Contemplation stages. Behavioural PoC Items are traditionally associated with those in Action and Maintenance. Indeed Horiuchi et al. (2012) purports that where the use of experiential processes increases over time and tend to peak at the contemplation stage. In this study, most of the

⁵ Using methods by Prochaska et al. (1980 and 1988) to obtain a PoC (PoC) score for experiential and behavioural processes, sum item scores were calculated and divided by 10.

participants were categorised as either Precontemplators or Contemplators so there was an expectation of high engagement with experiential items as the scores increased.

A Pearson Correlation was considered, however the scatter plots revealed a weak linear relationship (Appendix 6). Nonetheless, on visual inspection of the scatter plots a monotonic relationship was evident. Thus, a Spearman Rank-Order Correlation was used to investigate if there was a statistically significant association between SoC scores and behavioural and experiential PoC scores. For the Experiential score, Spearman Rank Correlation showed $r_s(189) = .33, p = .001$. The direction of the correlation was positive, which means that respondents with a higher SoC score tended to have a higher Experiential PoC score. Using Cohen (1998) and Morgan et al. (2013) guideline, the r effect size was medium for studies in this area. The same approach was taken for Behavioural PoC scores - $r_s(189) = .36, p = .001$. Once again, the r effect size was medium. These results support earlier findings which reported higher PoC mean score for those categorised as Contemplators against Precontemplators. Indeed these findings support the premise that levels of engagement in PoC items move in parallel with higher SoC scores (DiClemente et al. 2004, Migneault et al. (2005); Bernard et al., 2014 and Bamberg, 2007) and thus, go some way to supporting H3.

In summary this section found two theoretical points. (1) The analysis of the PoC items suggest that those categorised in the SoC demonstrate different characteristics to what is theorised. (2) Notwithstanding, PoC scores increase as SoC scores increase, bringing the findings back in alignment with theory. There is an important theoretical implication here. Whilst authors such as Boswell et al. (2010) and Hirvonen et al. (2012) suggest that the integration of stages and process of change can provide a pathway to individual behaviour change by focusing on the PoC items that foster movement between the stages, this study shows that there are challenges to this assumption. For example, DiClemente et al. (2004) and Prochaska and Norcross (2007) characterised Precontemplators as having fewer emotional reactions to the negative aspects of their problems and are less open with significant others about their

problems. Yet these findings suggest that those in Precontemplation reflect a concern for others by scoring highly on Reinforcement Management items which focuses upon reward sought after by others and Self-Liberation items which requires a commitment to oneself and others. Carey et al. (1999); Lenio (2006); Rhodes et al. (2004) and Sutton (2009) support the evidence in this study, suggesting that discrete SoC are difficult to establish given the arbitrary nature of cut off scores and simplified item based algorithms that ascertain self-reporting behavioural intentions. This may reinforce the debate surrounding the challenges in categorising individuals to the SoC and aligning the PoC items to these characteristics – thus supporting the hypotheses (H2).

7.5.4 Self-Efficacy Findings and Discussion

Cronbach's α for the scale across the 12 items and between Precontemplation and Contemplation suggested internal reliability (see table 19). Mean score for individual subscales were taken between SoC and observes work from Velicer et al. (1990) as a basis for analysis. The data set presented was skewed. Using a Shapiro-Wilk's test ($p < .05$) showed that the SCQ scores were not approximately distributed for both males (.001) and females (0.01). There was skewness of .488 (SE .228) and a kurtosis of .968 (SE .453) for males and a skewness of .320 (SE.269) and kurtosis of -.220 (SE.532) for females. Visual inspection of their histograms, normal Q-Q plots and box plots showed departures from normal distribution of the population, indicating a skewness and kurtosis of data. Z scores were computed for overall SCQ scores in order to assess distribution of the variables. The histogram with a normal curve overlay is depicted in appendix 6. The lack of normality in the distribution of this variable reinforces the use of non-parametric tests in this instance.

Given the dominance of Pre-contemplators (92%) and Contemplators (7.5%) within this study it was important to explore where the responses sat across each SoC. According to Schwarzer (2014) results should reflect a low score in Precontemplation and as participants move towards changing their behaviour their confidence levels to abstain from particular behaviours (in this case driving to the Rugby League Stadium) should increase. However, it should be noted that the underlying statement within this SCQ questionnaire was "Given the scenarios below, we would like to know how

confident you may feel in using an alternative to the car". The assumption here was that those in Precontemplation would not feel confident (present a lower mean) and those in contemplation would feel more confident (a higher mean).

There was a defining pattern with the results that showed a low mean in Precontemplation through to a high mean in Contemplation. This was a repeating pattern across each SCQ subscale (refer to table 19). These results supported the expected trends outlined and published by Schwarzer and Luzyczynska (ND), Velicer et al (1985) and McKiernan et al (2011) where confidence levels of participants to abstain from certain behaviours increased through SoC.

Table 19 Self-efficacy Mean Score and Standard Deviation

SCQ Subscale	Precontemplation (n=177)		
	Mean	SD	Alpha
Negative Affect	2.11	.86	.83
Social/Positive	2.33	.92	.80
Physical and Other Concerns	2	.84	.85
Cravings and Urges	2	.92	.83
SCQ Subscale	Contemplation (n=14)		
	Mean	SD	Alpha
Negative Affect	2.66	1.06	.96
Social/Positive	2.71	1.05	.92
Physical and Other Concerns	2.79	1.06	.95
Cravings and Urges	2.76	1.09	.95

To explore the difference between SoC and SCQ subscale, a non-parametric Kruskal-Wallis analysis of variance was employed. Assumptions of the test were met whereby the data was independent and there was an underlying continuity in the Likert scale. First, the median scores for each group were listed in rank order and shown in table 20. As there were only two groups (Precontemplation and Contemplation) no post hoc analyses was used to explore where the significant differences were between the SoC. Overall KW results indicated no significance between SCQ subscales of Cravings,

Social and Negative Affect across SoC items. For example in reporting items categorised as cravings $\chi^2(1, N= 191) = 2.47, p = .115$. Similar non-significance was found in the social SCQ subscale $\chi^2(1, N= 191) = 2.32, p = .127$, whilst the negative affect subscale was approaching significance $\chi^2(1, N= 191) = 3.58, p = .058$.

Table 20 KW Analysis of Variance between SoC and across SCQ Items

SCQ Subscale	<i>n</i>	Category	χ^2	<i>p</i>
Cravings		Mean Rank	2.47	0.115
Precontemplation	177	94.25		
Contemplation	14	118.14		
Negative Affect		Mean Rank	3.58	0.058
Precontemplation	177	93.9		
Contemplation	14	122.5		
Physical		Mean Rank	6.56	0.01
Precontemplation	177	93.17		
Contemplation	14	131.82		
Social		Mean Rank	2.32	0.127
Precontemplation	177	92.25		
Contemplation	14	117.10		

The only SCQ subscale to show significance was physical SCQ $\chi^2(1, N= 191) = 6.57, p = .010$ with Precontemplation showing a lower mean of 93 against a Contemplation mean of 131. The mean and ranked scores seemed to reflect the theorised progression of low mean in Precontemplation to a higher mean score in Contemplation (Bernard et al. 2014). Thus it can be argued that the majority of participants have a low level of confidence in abstaining from car use when travelling to the stadium and are more prone to car use. These findings are reflective of De Geus et al. (2008) and their study into cycling as a mode of transport whereby those with a higher self-efficacy score or more likely to take the bicycle. This provides support for H2.

As an aside Bandura (1990) states that higher self-efficacy derives from two aspects (1) personal performance and past experiences and (2) the ability to visualise success. Given these theoretical assumptions, it is difficult to see where sport fans within this

sample will be able to achieve personal reflection as they appear to be committed to the car (Precontemplation 92%). Nonetheless, as McKiernan et al. (2011) note, anticipatory feelings are strong and a high sense of efficacy coupled with the ability to visualise success can be a mediating factor. Thus, the suite of interventions as identified in chapter five, may feed into participant's cognition and assist in the visualisation of completing or achieving change (H3) as noted by McKiernan.

The findings revealed that social SCQ items were the most highly ranked items, suggesting an affinity with others. Statements such as 'when I want to celebrate with my friends and family' showed a higher score, suggesting more confidence in abstaining from using the car. This supports the importance of others within the group and is reiterated in the results and discussion from the PoC and may account for the results here. So whilst the majority of participants in this study have no interest in changing as indicated by the SoC score, the influence of the travelling group may present a stronger challenge to their current travel behaviour and assist in the visualisation of completing or achieving change. These cognitions may assist an understanding of why or why not theory led interventions impact on the transport choices of the sport fan (H3). This is explored further in study 3.

Results of craving and urges suggested a dominance and addiction towards the use of the car, demonstrated by a lower score within Precontemplation than Contemplation, thus supporting the theorised movement of low to high through the SoC and support hypothesis 2. This is reflective of the current mode of transport, whereby 83% of the sample travelled by car. Physical SCQ items reported significance between Contemplation and Precontemplation with those in Precontemplation reporting a lower mean ranked score. These items referred to the physical situation of the individual (tiredness, injury or time to plan) and their willingness to consider alternatives based on the item descriptions. Once again, it appears that interventions that focus upon the ease and availability of alternatives and creation of a positive social message may have an impact on the decision making of those in Contemplation and assist in behaviour change movement.

Overall the findings reported an extremely low confidence level in the sample. Whilst it has been stated by Prochaska and Norcross (2007) that participants do not need to accept they have a problem behaviour it may be a variable that clearly affects the effect of the TTM within the decision making process of modal choice and how to get to a sport venue. Moreover, the results indicate little significance of stage effect on the results. Whilst it is premature at this stage to dismiss the application of the SoC to the context of sport fan travel, it is worth noting that these findings endorse Rhodes et al. (2004) and Sutton's (2001) view that discrete SoC are difficult to establish given the arbitrary nature of cut off scores and simplified item based algorithms that ascertain self-reporting behavioural intentions (H2).

7.5.5 Decisional Balance Findings and Discussion

A 10 item measure was used to test pros and cons of travelling to the Rugby League Stadium for home matches. Con items reflected barriers to changing travel behaviour decisions such as "Driving to the stadium is a pleasure", whilst Pro items reflected affirmative items that may encourage a change in travel behaviour decisions such as "I would be healthier if I walked to the stadium". Within this study Cronbach's α for the scale across the 10 items measured .69 suggesting internal reliability. Moreover, the 10 item scale was preferred given the situation and conditions of the data collection mentioned previously in section 7.2.1

Table 21 presents the mean of Pro and Con items within each SoC. Overall the Con items had a higher mean suggesting barriers to change. There were similar mean scores between the two groups (Precontemplation and Contemplation). For example Con items were $M = 3.17$ in Precontemplators and $M = 3.21$ in Contemplators. Responses across PRO items were once again similar - Precontemplation ($M = 2.51$) and Contemplation ($M = 2.94$). This is also supportive of existing work reviewed by Ling and Harworth (2001) and mirrors the constructs of decisional balance moving through the SoC (Di Noia and Prochaska, 2010). Indeed, according to Di Noia and Prochaska (2010) the crossover between the pros and cons occurs between Contemplation and Action stages. So it could be argued that any stage effect in this study is limited as it only comments upon Precontemplation and Contemplation.

However, Prochaska and Norcross (2007) note that because individuals in precontemplation are not intending to take action to change a behaviour, the Cons outweigh the Pros in this stage and should be targeted. A number of other studies such as Hirvonen et al. (2012) and Zhu et al. (2014) suggest that interventions should target Pros and generate awareness and consideration of change, whilst decrease the Con items to accept the change in behaviour in earlier SoC.

To determine if there was a staged based difference between the Decisional Balance scores, an independent-samples t-test was run. In this case, the independent variable was the SoC (with two levels). There were no significant outliers in the data, as assessed by inspection of the boxplots. The Shapiro-Wilk's test showed movement away from non-normality but inspection of Q-Q plots for each DB Item showed near normal distribution (appendix 6). Given the t-test is fairly robust to deviations from normality, the test was considered appropriate. There was homogeneity of variances, as assessed by Levene's test for equality of variances (CON $p = .752$, PRO $p = .506$). Given the close proximity of the means it was assumed that no significance was to be found between the stages. Indeed findings in table 21 underline this assumption that no significance was found in the mean scores of Pros and Cons scores across the SoC. These findings support the prescribed theory where decisional balance crossover is usually found between Contemplation and Action (Di Noia and Prochaska, 2010, Hirvonen et al. 2012). Thus, the findings help support H2.

Table 21 T-test and Descriptive Statistics for PRO and CON scores across SoC

	SoC						95% CI for Mean Difference			
	Precontemplation			Contemplation						
	M	SD	n	M	SD	n		<i>t</i>	<i>df</i>	<i>p</i>
PRO	2.51	.76	177	2.94	.75	14	.21, -.84	-4.769	189	.054
CON	3.17	.60	177	3.21	.72	14	.17, -.38	-2.237	189	.059

* $p < .05$.

To ascertain if there was an association between decision balance score and overall SoC scores a Kendal's Tau was completed. Z scores were used for Pro and Con scores as well as SoC scores. According to Prochaska and Norcross (2007) and Ling

and Harworth (2001) the TTM construct suggest that Pro items increase and Con items decrease from earlier to latter stages of change. Appendix 6 shows that there was a strong positive association between SoC scores and Pro item scores, $r_b = .159$, $p = .002$. In other words as the SoC score increase so did the Pro Items suggesting an alignment with the prescribed theory and providing further evidence to support H2. However there was a negative association between Con Items and SoC score as you might expect, $r_b = -.194$, $p = .00025$.

An analysis of Decisional Balance item was undertaken (irrespective of SoC categorisation) to ascertain which statements were highly ranked. This provided further insights into the characteristics of the participants. Overall the top ranked items were Pro Items. These reflected the social pressure and concern for others coupled with personal insights into lifestyle such as 'Driving to the stadium can have a negative impact upon my health', 'My friends and family think I should consider other means of getting to the stadium' and 'Driving to the stadium increases traffic pollution in the local area'. These results reaffirm the immediate needs of family and friends and group loyalty within participants travel decision making processes. Indeed, the conflict of personal pleasure, pleasing others and environmental concern may be indicative of sport fans. Whilst the results show a positive attachment to changing travel behaviour, attachment to the car remained extremely strong within the sample (83% travel by car to the stadium). Thus, overcoming negative action rather than negative perceptions of alternative travel remains an appropriate strategy.

Table 22 Decisional Balance Items - Ranked Median, Mean and Std Deviation

Decisional Balance Items	Mean	Median	Std.Dev
My friends and family think I should consider other means of getting to the stadium (Pro)	3.84	4	.87
Driving to the stadium can have a negative impact upon my health (Pro)	3.52	4	.962
Driving to the stadium is a pleasure (Con)	3.05	4	1.25
Driving to the stadium increases traffic pollution in the local area (Pro)	2.99	3	1.12
I would be healthier if I walked to the stadium (Pro)	2.94	3	1.26
I shouldn't ignore the warning about climate change (Pro)	2.9	3	1.12
I like the idea of driving to the stadium (Con)	2.52	2	1.02

Driving to the stadium keeps me in control (Con)	2.45	2	1.03
Driving to the stadium suits my situation (Con)	2.2	2	1.07
My friends and family like me driving to the stadium (Con)	2.51	1	1.02

The findings seem to suggest these respondents are fully aware of the positives to alternative travel choices but have a low level of confidence (explored in section 7.5.4). To recap, Decisional Balance explores the comparative gains and losses of certain behaviours. Janis and Mann suggest these gains and losses are a mix of personal losses for oneself, gains for significant others and self-approval or disapproval and approval from others. And it is this socially constructed mixture of gains and losses that Gou, Aveyard and Sutton (2009) heavily criticise. They argue that applying simplistic Pros and Cons statements to decision making simplifies what is a complex and socially constructed process. Indeed, Green (2008) argues that modal choice sits within a social and political framework which is linked to physical space, ethnicity and class. Applying this argument to these results – it is clear that the respondents have an awareness of the social (driving has a negative impact on health) and moral complexities (local air pollution and family and friends suggest looking at alternatives) that travel behaviour can generate. But ultimately and as Sheeran (2002) purports, participant's ability to change is constrained by the context he/she finds himself in and the resources available. In this case, getting to the match on time, together and leaving the match on time, together. Thus, decisional balance may be superseded by perceived levels of control?

However, these results are moderated by the self-reporting method used in this study. Similar to Velicer and DiClemente (1985) the lack of differentiation between the items may not be as sensitive in the questionnaire to the constructs outline by Janis and Mann's original work. Indeed, Janis and Mann's empirical evidence was based on interviews to formulate their constructs rather than questionnaires. They argue that the complex nature of utilitarian and non-utilitarian items such as personal losses for oneself, gains for significant others and self-approval or disapproval and approval from others requires a more idiographic approach. However, Velicer and DiClemente (1985) suggest that if one is to use self-reporting questionnaires one should generate a pool of items first and test the structure of these items and delete items that are poor. However in this study the items were adapted from existing work and simply piloted.

Thus, there may be disconnect between the participants interpretation of each item and what is theorised as Pro and Con items.

In furthering the limitations of Decisional Balance Di Noia and Prochaska (2010) have suggested that people bring pre-existing beliefs which are difficult to change. Indeed for these participants evidence suggests that there is a social acceptance of the car and as a consequence they may be less likely to change (refer to study 1). Di Noia and Prochaska (2010) go further, suggesting that people have limited control over such factors as availability and cost thus, their perceptions of the cons may persist above and beyond any Pros. Therefore, it may be easier to increase this awareness than it is to decrease pre-existing beliefs in order to generate cognitive dissonance and form alternative pro-environmental behaviours. Clearly this has implications for the use of marketing interventions and is discussed further in study 3 and in study 4.

7.6 Summary

To summarise study two, the TTM model can be applied to a sport fan context but there are limitations to the application of the model. To recap, the majority of participants did not recognise travel by car to the stadium as a problem behaviour. Moreover, they appeared to show little intent to shift their behaviour. Further analysis of the sample showed that there is no demographic influence between the SoC. This trend is repeated in PoC, where gender showed no difference between the mechanisms that in theory should influence movement between the stages. However, there was less engagement in PoC items from main drivers, suggesting a strong attachment to the car from this group. Overall, there was a lack of synergy between the PoC and SoC findings and the prescribed theory. For example, in theory the mixture of behavioural and experiential process items found with Precontemplators and Contemplators are more commonly found in the latter SoC. Discussion then focused upon the challenges associated with SoC categorisation, associated characteristics and its synchronicity with other TTM constructs. Although PoC and SoC showed some movement away from the prescribed theory, Self-efficacy results provided some synergy. The expected behaviour of low levels of confidence within Precontemplators and a higher level of confidence in abstaining as one progresses

through the SoC was prevalent. Results from decisional balance reaffirmed congruence between the theory and the application to sport fans and their travel behaviour. For example there were similarities between SoC scores in Precontemplation and Contemplation and significant association between Con item scores and SoC Score. However, Decisional Balance findings also purported a more complex and layered approach to decisions. For example, attachment to the car remained strong despite respondents' awareness of the environmental and health benefits of the alternatives. Thus presenting some misalignment to characteristics of the SoC and Decisional Balance items. Finally limitations have been identified throughout the findings and are explored further in section 8.6.

Chapter Eight

Study Three: Post Intervention Analysis

8.1 Introduction

This chapter builds on study two and analyses the response of participants post intervention and assists in the testing of hypothesis 3 (Respondents in the intervention group were more likely to show movement in stages of change, processes of change, self-efficacy and decisional balance scores than respondents in the control group). More specifically, it will look at the scores for each TTM construct – pre and post intervention. In addition, the analysis will provide further data in order to examine the applicability of the TTM model within a sport fan context (H2).

8.2 Procedure

Upon completion of the pre intervention survey participants were asked if they were willing to participate further in the study. As discussed in chapter seven a sample of 72 was generated. The intervention programme was in situ for 3 months (see appendix 1). Whilst Prochaska (2005) suggests that imposing a timeframe on behaviour change is arbitrary, Cotter et al. (2002) and Ribisl et al. (1996) suggest that a shorter longitudinal period maintains interest and reduces attrition. Thus, given the time frame, and to retain the sample size, generic information was sent to both the control and experimental group to maintain their interest– such as ‘thank you for continuing to participate in the study’ postcards and ‘the study is nearly complete’ postcards.

Above and beyond the generic information sent to both groups, the experimental group received ten marketing interventions taken from the intervention matrix justified in chapter six. To ensure parity of impact each intervention followed the same method of communication – hand written envelopes with colour print outs of each intervention. As supported by Ribisl et al. (1996) the interventions were sent out at strategic intervals (before home matches at the rugby league stadium) for three reasons (1) to remind participants of the key messages prior to the cognitive process of travel planning, (2) to reaffirm provide project identity and (3) to establish a link with the

project and professional rugby league club (see appendix 1 for the intervention schedule).

A post intervention questionnaire was distributed to the control and experimental group (see appendix 7) week commencing 25th August 2014. 40 returned completed surveys. To encourage a higher response rate a second reminder was sent week commencing 15th September 2014 to those that had not returned the post intervention survey. 2 returned completed surveys whilst 4 were returned blank or incomplete. At this point it was decided not to return to the sample to ask for further responses in case of perceptions of harassment. In addition, it was deemed that 58% (a total of 42 responses) return rate represented a high response rate and low attrition and reflects similar transport related longitudinal results found by Tourangeau, Zimowski and Ghadialy (1997).

The questionnaire followed a similar format used in the pre intervention stage. However, a number of the questions were changed to reflect the actual time period assessed rather than present or future behaviour. It was envisaged that the questionnaire would assist in three ways. (1) To provide comparative information between the pre and post intervention, (2) to provide comparative information between the control and experimental groups and (3) to help indicate any movement between SoC, positive or negative, within the participants. Two additional questions were asked of the experimental group only. The first focused on the overall ranking of the interventions the participants received. The ranking was based on how engaging the participants considered the interventions (qualitative and idiographic aspects of engagement were further explored in study three of the thesis). The second question explored the level of influence each intervention had on the way the participants travelled to the stadium. This question can be traced back to stage one where pre-testing of the interventions took place. Analysis between both results provided a comparison between intention and actual change behaviour and helped answer hypothesis 3. It's noted that placing preference related questions within travel surveys is nothing new. Whilst critics argue that asking for stated preferences within an experiment will lead to biased responses (positively and negatively), Kroes and

Sheldon (1998) argue these worries are ill-founded since stated preferences in transport research are intended to estimate relative utility rather than provide absolutes. The ranking of preference and influence helped establish the efficacy of the interventions that were based on the constructs of the TTM and helped compare the intent against the actual effect presented in the experimental group (H3). Moreover it helped develop a theory based pathway that will assist in refining the constructs of the TTM against group targeted intervention design with a sport related context.

8.3 Data analysis rationale

To examine the relationship between SoC and other variables within the experimental and control group Chi Squared tests of association were used (χ^2). Where assumptions were markedly violated Fishers Exact Test was used. Descriptively spider diagrams were used to explore SoC scores pre and post intervention in the experimental and control group. To determine difference in SoC scores pre and post intervention, a two way mixed ANOVA was performed with one within subjects factor (Time) having two levels (Pre and Post intervention) and one between subjects factor (Group) with two levels (Experimental and Control). In order to meet the assumptions of the two way ANOVA, raw SoC scores were used.

In support of this approach Norman (2010) argues that parametric statistics, such as ANOVA can be used with Likert data, equally with small sample sizes, with unequal variances and with non-normal distributions. Other authors such as Morgan et al (2013) and Coolican (2014) support Norman's viewpoint. All argue that sum scores are commonly used as interval scales and not ordinal; one cannot guarantee the true distance between Likert scales even if they are classed as ordinal; and finally, ANOVA is extremely robust to skewness and non-normality and can be used regardless. Moreover, the use of ANOVA is common place in the analysis of SoC and other TTM constructs as noted by Fava, Velicer and Prochaska (1985) Fahrenwald and Walker (2003), Di Noia and Prochaska (2006) and Callaghan et al (2010). This analysis helped test H3.

To ascertain if there was a stage matched difference in PoC scores, an independent t-test was undertaken on scores for the experimental and control group. To determine the effect of Groups (Experimental or Control group) over Time (Pre and Post Intervention) on PoC scores a two-way repeated mixed ANOVA was undertaken for both the experiential and behavioural PoC scores. Once again, this analysis helped test H2 and H3. The mean differences in PoC scores were assessed across the SoC categories in order to ascertain alignment with theory and stage characteristics.

A two way mixed ANOVA was considered to determine the effect of different conditions (Experimental or Control group) over Time (Pre and Post Intervention) on SCQ scores. However, when running the tests, homogeneity of variance was violated for some of the SCQ items. Whilst it is recognised by Norman (2010) that ANOVA is robust to skewness and non-normality, SCQ variables, it was decided to run three separate Kruskal-Wallis. The first test was used to determine if there were differences in SCQ scores between the experimental group and control group and to help test H3. Two additional Kruskal-Wallis analysis of variance tests was used to determine if there were differences in SCQ scores between pre and post intervention irrespective of SoC (Precontemplation and Contemplation). This helped explore if the interventions had a significant effect on SCQ scores. In a meta-analysis of health related TTM studies Rosen (2000) suggested that K-W Analysis of Variance is prevalent due to the low response of panel tests and skewness of normality distribution. Morgan et al. (2013) further supports the use of the K-W by suggesting that it has similar power to that of ANOVA.

To ascertain if there was a stage matched difference in Decisional Balance, an independent t-test was undertaken on Decisional Balance scores for the experimental and control group. To further the discussion and consider changes in Decisional Balance scores between the control and experiment group, pre and post intervention, a two-way repeated mixed ANOVA was run. This determined the effect of Groups (experimental or control group) over Time (Pre and Post Intervention) on Pro and Con scores rather than separate decisional balance items.

Finally, the experimental group was given two additional questions that investigated the level of engagement and influence of the interventions received. The mean scores were ranked intervention by intervention to ascertain the most engaged and the most influential. To ascertain if there was a statistically significant association between level of influence and level of engagement in the experimental group, Kendall's coefficient was used. This helped test H3 and ascertain if engagement and influence were associated or separate components of reflection for the participants in the experiment group. Further details are discussed in each findings section.

8.4 Findings

8.4.1 Sample descriptors

Post Intervention descriptors were split into two groups – experimental ($n = 20$) and control ($n = 22$). The experimental group consisted of 55% female and 45% male, the control group consisted of 64% male and 36% female. Season ticket holders dominated the control group (68%) whilst there was an even spread in the experimental group with 55% season ticket holders (see table 25).

Table 23 Post Intervention – Sample Descriptors Experimental Group

Variables	Sample (%)	Variables	Sample (%)
Age		Dependents	
18-24	25	Yes	35
25-34	10	No	65
35-44	25	Employment	
45-54	10	Full time	60
55-64	20	Student	15
65-74	10	Retired	20
Gender		Other	5
Male	45	Income	
Female	55	£10,000 or below	5
Season ticket holder		£10,001 - £19,999	5
Yes	55	£20,000 - £29,999	40
No	45	£30,000 - £39,999	25
Main Driver		£40,000-£49,999	15
Yes	45	£50,000-£59,999	5
No	55	£60,000 - £69,9999	5

Table 24 Post Intervention – Sample Descriptors Control Group

Variables	Sample (%)	Variables	Sample (%)
Age		Dependents	
18-24	9.1	Yes	36.4
25-34	13.6	No	63.6
35-44	36.4	Employment	
45-54	9.1	Full time	59.1
55-64	27.3	Student	13.6
65-74	4.5	Retired	4.5
Gender		Other	22.7
Male	63.6	Income	
Female	36.4	£10,000 or below	13.6
Season ticket holder		£10,001 - £19,999	13.6
Yes	68.2	£20,000 - £29,999	36.4
No	31.8	£30,000 - £39,999	9.1
Main Driver		£40,000-£49,999	13.6
Yes	63.6	£50,000-£59,999	4.5
No	36.4	£60,000 - £69,9999	90.9

Post intervention 85% of the experimental group and 90% of the control group took the car. There was an even spread of car ownership between the groups. 90% of those in the experimental group had regular access to a car with 91% from the control group. Within the experimental group 45% stated that they were the main driver, whilst in the control group 64% classed themselves as the main driver. 70% of participants in the experimental group travelled with 1-3 people and 77% of respondents in the control group travelled with 1-3 people. There was a broad spread of ages across the experimental group (see table 23). The largest response was from 18-25 year old (25%) and 35-44 year olds (25%). The control group (see table 24) was dominated by respondents aged 35-44 (36.5%) and those between ages 55-64 (27.3%). The majority of the participants within the experimental group travelled 16 miles or more to the stadium (25%) with an even spread of those travelling 3-5 miles, 6-8 miles, 9-11

miles and 12-15. The control group showed a less even spread with the majority of participants travelling 3-5 miles (23%) and 6-8 miles (23%) to get to the stadium. In terms of travel time it took the majority of those in the experimental group 36-45 minutes (40%) with some surpassing 46-60 minutes. Those in the control group tended to take between 26-35 minutes (50%) or even less time. Finally, in terms of income and employment status there were some fairly distributed ranges. 36% of participants in the control group earned £30,000 - £39,999 whilst in the experimental group only 25% earned a similar figure. The majority of participants in the experimental group earned £20,000 - £29,999 (40%). 60% of the experimental group and 59% of the control group were in full time employment.

8.4.2 Findings and Discussion - Stage of change

As in study three, overall SoC scores were calculated using the Healthy and Addictive Behaviours: Investigating Transtheoretical Solutions (HABITS) University of Maryland, Baltimore County (2014). This provided a comparative basis between the study periods pre and post intervention.

To explore demographic influences in the control and experimental group Fisher's exact test was reported instead of chi-square due to the small sample and violation of assumptions for Chi Square, such as cell count. Using Fisher's exact test Gender was not significant between the SoC at the 0.05 level ($p = .423$) within the control group and showed similar non-significance from the experimental group ($p = .499$). Non significance was also found for main drivers between the SoC (control group $p = .853$ and the experimental group $p = .175$). Across all underlying demographics of gender, age, income and having dependents the Fisher's exact test reported no significance. Being a non-season or season ticket holder was the only variable that showed significance ($p = .40$ control group, $p = .037$ experimental group). The control group showed more season ticket holders in contemplation (7) and action (4). Within the experimental group there was a dominance of season ticket holders within contemplation (7).

SoC classifications pre and post intervention are outlined in table 25. The results suggest that the experimental group had some movement from Precontemplation, with more participants categorised as Contemplators and Action post intervention. However, the same can be said of the control group - suggesting little effect based on interventions alone.

The slight movement in both groups might rest on the SoC constructs not being a valid measurement for transport, more specifically within a leisure context (H2). As noted in section 7.2.1, the cut off scores are arbitrary and measures don't always generate the same findings or classification (DiClemente et al., 2004, West, 2005 and Sutton, 2001). Consequently, there may be more significant movement but this is not recognised in the categorisation methodology used here. In contrast Prochaska and DiClemente (1992) and Prochaska and Norcross (2007) propose there can be multi directional movement between stages and individuals – as noted here in these findings. Therefore, the findings can be considered reflective of what is prescribed in theory. Thus, supporting H2. The consideration of multi-directional movement is supported by Rhodes and Claudio (2011). They recognise that there is an important distinction between those who are ready to change and those that are ready to participate.

Table 25 Stage of Change Classification Post Intervention

	Pre Intervention	
	Control Group Frequency	Experimental Group Frequency
Action	1 (4.5%)	0
Contemplation	1 (4.5%)	1 (5%)
Precontemplation	20 (91%)	19 (95%)
	Post Intervention	
	Control Group Frequency	Experimental Group Frequency
Action	4 (18%)	1
Contemplation	8 (36%)	7
Precontemplation	10 (45%)	12

Given the struggle in applying the prescribed characteristics of each stage to these participants by authors such as Carey et al. (1999); Lenio (2006); Rhodes et al. (2004) and Sutton (2009) it can be argued that the SoC categorisation may hide an increase movement within the SoC scores rather than categorisation change. Moreover, the challenges are not just TTM led. For example there are challenges in the accuracy of self-reported measures. Whilst Patrick et al. (1994) and Velicer et al. (2001) are advocates of self-reporting questionnaires, the potential for miscalculation, self-reporting bias and survey fatigue is prevalent. To overcome these concerns SoC scores were analysed to reveal a more transparent account of the participant's movement and detect any outliers. The SoC scores were aligned to each participant in each group (Control and Experimental) and across pre and post intervention questionnaires (figure 24 and figure 25).

The spider diagrams indicate once more a multi directional movement taking place across pre and post intervention. For example, Participant 28 had a pre-intervention SoC score of 8. This reduced post-intervention to 6. Although it is premature to conclude that the interventions are ineffective or effective and it is premature to dismiss the application of the SoC to the context of sport fan travel, some basic insights can be drawn from these results. Firstly, some movement has taken place across experiential and the control group. Secondly, the theory led interventions don't seem to promote an isolated change in the consideration of travel to the stadium by sport fans and thus, reject H3.

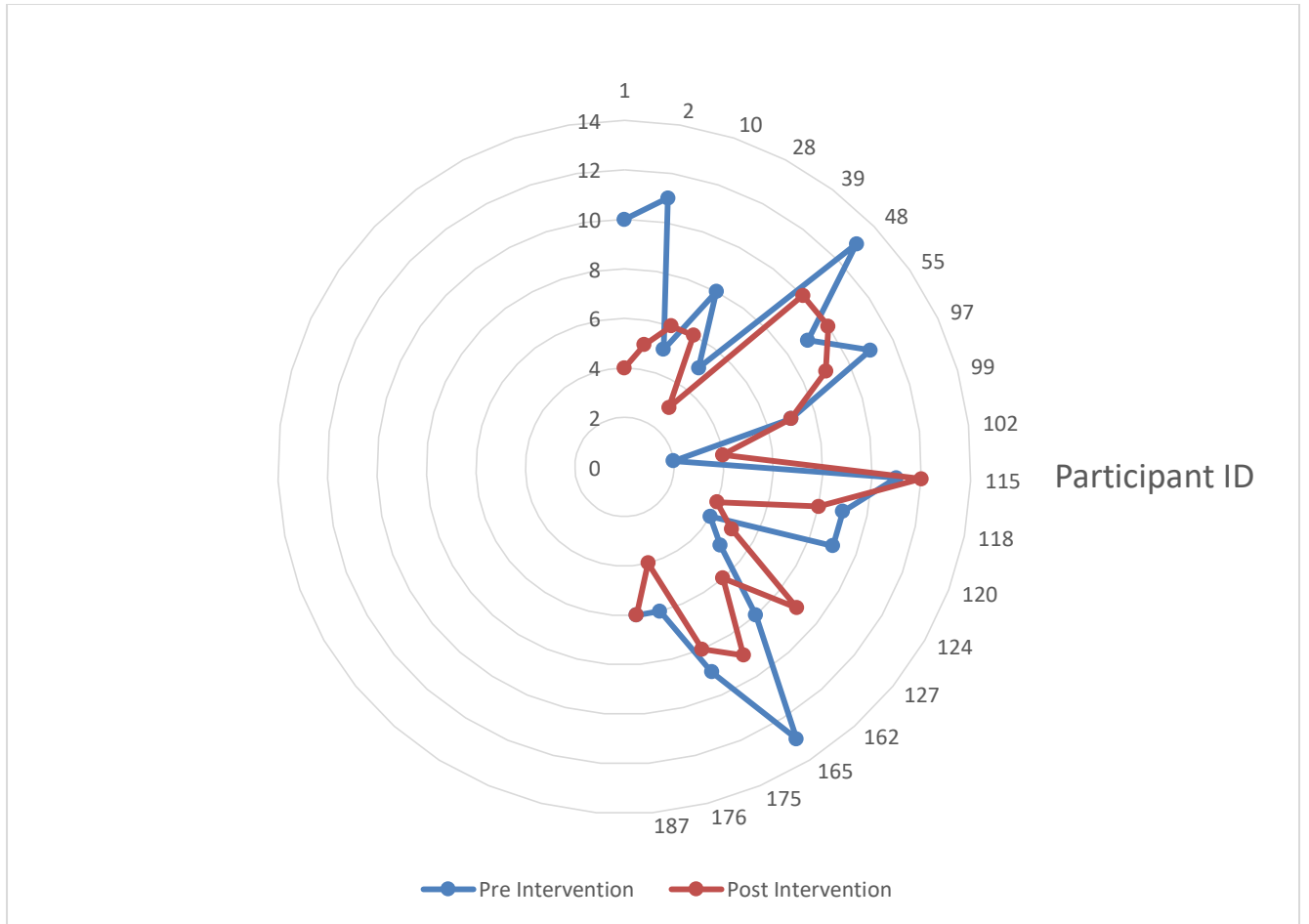


Figure 24 Stage of Change Score - Experimental Group by participant

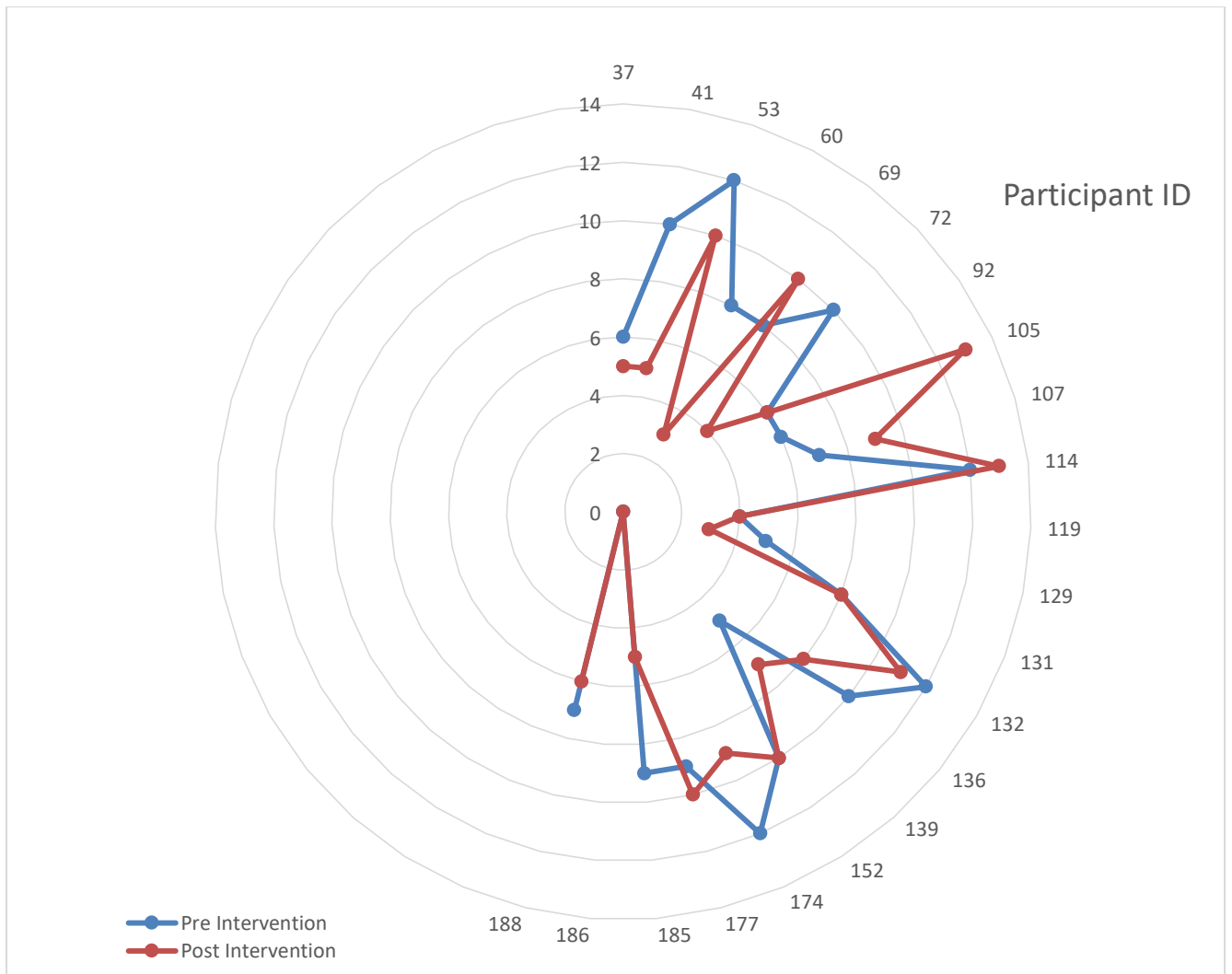


Figure 25 Stage of Change Score - Control Group by participant

Notwithstanding, SoC can emerge from external pressure rather than cognitive volition. For example Bamberg's (2006) study into residential relocation as a conduit for commuter travel change found positive association between lifestyle changes and people's responsiveness to interventions. Consequently other variables outside the remit of this study may have had an impact on stage of change scores – exemplified here in the movement within the control group. However, it must be noted that there is no reason to suggest that this group of participants were more resistant to change than others. For example, the results re-affirm the discussion in chapter seven where findings reported no systemic relationship within the SoC classification and demographics variables. Despite there being little evidence of variable effect from demographic variables there clearly is an effect somewhere as participants within the

control group appear to be more active in changing their thoughts towards travel than those in the experimental group (see table 25). However the Fishers exact test does suggest a significant difference between season and non-season ticket holders. Season ticket holders appear to be classified further along the SoC. For example, those in Contemplation and Action appear to have a strong affinity with the group, exemplified by the season ticket and may be more aware of their personal actions upon the group and the club. This affinity with a group, more specifically the sports fans, reiterates earlier comments by Snelgrove et al. (2008) and Smith and Stewart (2007) whereby individual sport fans reveal a shared group identify. Moreover, Snelgrove et al. (2008) suggests that being part of a group can socialise the individual and develop a 'description of self by others'. These may be important indicators in exploring the effect of interventions on the travelling sport fan and thus, explored further in the study four.

Yet two fundamental questions remain – (1) Is there are statistical difference between the control and experiment group SoC score pre and post intervention and (2) Is there an underlying variable that has influence over the participants? It was hypothesised that there would be a difference in scores pre and post intervention in the experimental group, but not the control group.

To explore the first question, a two way mixed ANOVA was performed on SoC scores with one within subjects factor (Time) having two levels (Pre and Post intervention) and one between subjects factor (Group) with two levels (Experimental and Control). In order to meet the assumptions of the ANOVA, the raw SoC scores were used. There were no outliers in the data, as assessed by inspection of a boxplot (see appendix 8) and the Shapiro-Wilk test showed normality ($p > .05$). There were no studentised residuals greater than ± 3 standard deviations. There was homogeneity of variances ($p > .05$) and covariances ($p = .575$), as assessed by Levene's test of homogeneity of variances and Box's M test, respectively. Mauchly's test of sphericity was not considered as there were only two levels of repeated measure. There was a main effect of Time on SoC scores, $F(1, 40) = 5.806$, $p = .021$, partial $\eta^2 = .127$, whereby post intervention scores ($M = 6.89$) were lower than pre intervention ($M =$

8.03). There was no main effect of Group on SoC scores $F(1, 40) = .066, p = .798$, partial $\eta^2 = .002$. No interaction was found between the Group and Time on SoC scores, $F(1, 40) = .376, p = .543$, partial $\eta^2 = .009$ (table 26).

Table 26 Mixed ANOVA – Repeated two way – SoC Score

	SS	df	MS	F	p	η^2
Intervention (Control and Experimental Group)	.956	1	.956	.066	.798	.002
Time (Pre and Post)	22.504	1	22.504	5.806	.021	.127
Intervention/Time	1.456	1	1.456	.376	.543	.009
Error	155.032	40	3.876			

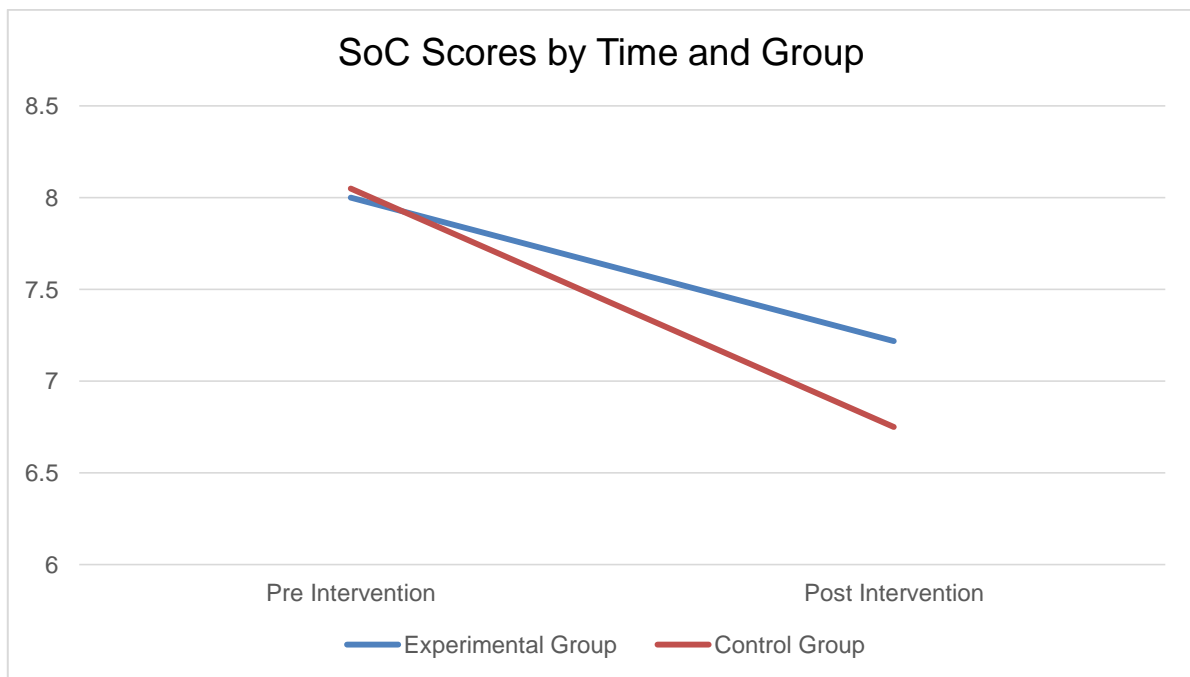


Figure 26 SoC Scores by Time and Group

Why were SoC scores lower, post intervention? The findings clearly suggest a relapse of some kind. Of course there is an argument that relapse is a naturally occurring element of the SoC and is expected, suggesting an alignment with theory. On the other hand it could be an example of experimenter effect and response bias. For example, the first round of testing took place in the stadium, in front of volunteers and straight after the act of getting to stadium. Thus, their readiness to change may have been

artificially high depending upon the relative ease of the journey just taken. The second round of testing took place in their home in a more relaxed and less constrained setting. Ultimately the post intervention survey may have been a true reflection of their readiness to change. Further exploration of this limitation is found in section 8.6

Despite this consideration, the overall evidence suggests that the interventions had no significant impact on the stage of change score, thus go some way to rejecting the hypothesis (H3). Therefore, what were the reasons for this apparent lack of change?

It may be that the type of interventions used in this study and the synchronisation of the interventions to the SoC characteristics may be flawed. Indeed, these findings provide a cautionary note for Sport Event practitioners wishing to implement change programmes in travel. For example, despite matching interventions to the discernible nature of stages, the behavioural beliefs of the participants may not have altered. Indeed pre-intervention findings show respondents have a positive attachment to changing travel behaviour but had not changed the attachment to the car (83% of the sample travelled by car to the stadium pre intervention). Similarly post intervention, 85% of the experimental group and 90% of the control group took the car to the stadium. Evidently little actual change has occurred – rejecting H3. Indeed these findings are reflective of Adams and White (2005) and Heath and Gifford's (2002) criticism regarding TTM and stage matched interventions. They put forward that interventions may induce some change but this is not followed by actual behaviour change.

Notwithstanding, Prochaska and DiClemente (1992) suggests that more staged based interventions can assist in the effectiveness of an intervention programme and promote change through the stages (de Vet et al. 2007). However, the apparent challenges in the SoC classification and characteristics discussed in section 8.4.2 temper Prochaska and DiClemente's claim for more stage based interventions. Moreover, studies such as Aveyard et al. (2001) and Velicer et al. (1999) yield similar results with two to six different types of interventions. Thus, there is no consensus as to the type and scale of interventions and little to suggest which are more effective

than others. Indeed, stage of change classification is not the same as changing behaviour itself (Prochaska and Norcross, 2010). Thus, further exploration of the SoC against the PoC, Self-efficacy, and Decisional Balance post intervention will help test H2 and evidence how the TTM behaves within this context.

The mixed ANOVA showed no statistical difference in Group (Experimental and Control) or Time (Pre and Post), thus suggesting no intervention effect. This leads on to the remaining question - is there an underlying variable that has influence over the participants? Context may be the ultimate variable in this study. Sheeran (2002) purports that a person's ability to change is constrained by the context he/she finds himself in. As noted earlier in section 6.3 and 7.5 the constraints are the timing of the match, location of the venue and relative infrequent nature of the trips. This reinforces the challenge in applying the TTM to this context. As West (2005) purports application of the TTM often fails to ignore strong contextual determinants of behaviour. Transposing this argument to this study - the underlying cause of participant behaviour may be the characteristics of the case study and not the ineffectiveness of interventions based on the TTM constructs.

Authors such as Bowles et al. (2006) Heath and Gifford (2002) and Kenyon and Lyons (2003) Anable (2005) and Thogerson and Crompton (2009) argue the merits of targeting travel decisions in a leisure context – less opportunity for habit formation and greater perceived control due to convenience of local leisure pursuits. However, in this case, the convenience may be diluted by the timing of the match and the distance travelled by the fans. 40% of respondents travelled between 3 and 8 miles, 32% of participants travelled between 9 and 15 miles with over 18% travelling more than 16 miles to get to the stadium. Unfortunately, the self-reporting questionnaire didn't provide an opportunity for deeper insights into the context of participants and their constraints. Similar concerns were noted in study two. Study four explores these themes in further detail and analyses the response of those from the experimental group. For example, which interventions were seen as influential and why, which interventions were preferred? Could it be that the leisure based context influenced participant responses? Furthermore, given that travel to a leisure venue doesn't occur

every day, does it have an impact on choice? As leisure travel is not an everyday occurrence is this type of travel seen as highly damaging to the environment or in developing adverse health implications?

8.4.3 Findings and Discussion - Process of Change

This analysis and discussion focuses on the PoC scores for those in Precontemplation and Contemplation. It tests the theorised constructs of the TTM within this context (H2) and the impact the interventions have on respondents PoC score (H3). To recap, the transtheoretical model proposes that particular change processes are applied at each stage. For example, during the Precontemplation stage, individuals use the change processes significantly less than people in any of the other stages. Typically Precontemplators do not re-evaluate themselves and experience fewer emotional reactions to the negative aspects of their problems. Individuals in the Contemplation stage are most open to consciousness-raising techniques and respond to emotional arousal, which leads to a lowering of negative affect when the person changes (Prochaska and Norcross, 2007 and Bernard et al., 2014).

Given the aforementioned argument and the concept that those in Precontemplation engage in PoC items less than in any other stage, it was important to ascertain the level of engagement with each PoC item. Table 27 outlines the Mean PoC Score for each PoC for the control and experimental group. As noted earlier it was hypothesised that the TTM could be applied in this context (H2) and thus, this section assessed if differences in the mean score indicated a stage difference as prescribed in theory. An independent-samples t-test was run to determine if there were differences in PoC scores. In this case, the independent variable was the SoC (with two levels). The t-test was separately run for the Control group and Experimental group.

For the Experimental group there were no significant outliers in the data, as assessed by inspection of a boxplots (appendix 8). The Shapiro-Wilk's test showed movement away from non-normality but inspection of Q-Q plots for each PoC show near normal distribution. Once again, given the robustness of the t-test against minor deviations from normality, the test was considered appropriate. Levene's test of homogeneity

reported no significance for any PoC items, thus the assumption of equal variance was not violated. Statistical significance was found for 6 of the PoC items. In all cases, the mean score was higher in Precontemplation than Contemplation.

Table 27 T-test and Descriptive Statistics for PoC Items - Experimental Group

	SoC						95% CI for Mean Difference				
	Precontemplation			Contemplation				<i>t</i>	<i>df</i>	<i>p</i>	<i>d</i>
	M	SD	n	M	SD	n					
Conscious Raising	1.92	.56	12	1.36	.56	7	-.23, 1.5	1.478	17	.158	
Dramatic Relief	3.25	.5	12	3.07	.83	7	-.46, .82	.587	17	.565	
Environmental Re-evaluation	2.5	5.22	12	2.07	1.01	7	-.31, 1.16	.192	17	.238	
Self-re-evaluation*	2.25	.72	12	1.43	.61	7	.13, 1.5	.592	17	.022	.28
Social Liberation*	3.25	.34	12	2.43	.84	7	.25, 1.3	.205	17	.007	.09
Counter Conditioning*	2.66	.39	12	1.92	.53	7	.29, 1.18	.646	17	.003	
Helping Relationships*	2.66	.68	12	1.93	.35	7	.14, 1.32	.058	17	.017	.02
Reinforcement Management	3.25	.75	12	3.14	.90	7	.70, .91	.403	17	.784	
Self-Liberation*	3.00	.80	12	1.80	.75	7	.42, 2	.898	17	.005	.43
Stimulus Control*	2.54	.58	12	1.64	.63	7	.29, 1.49	.533	17	.006	.25

* $p < .05$.

6 PoC items reported significance difference in the mean scores between Precontemplation and Contemplation. In all cases, mean scores were higher in Precontemplation. For example, Stimulus Control item was more engaging for Precontemplators ($M = 2.54$, $SD \pm .58$) than Contemplators ($M = 1.64$, $SD \pm .63$), a statistically significant difference of .437 (95% CI, 0.29 to 1.49), $t(17) = .533$, $p = .006$. This statistical significance suggests a higher engagement with PoC items in the earlier stages. Thus, the findings deviate from expected constructs whereby those in the higher SoC are more aware and respond to change mechanisms. These findings help reject H2. However, according to Cohen's d the effect size was small. This was also the case for Self-Liberation, Helping Relationships, Social Liberation, Self-Re-evaluation.

An independent t-test was also run for the Control group. For the Control group, statistical significance was found in the mean scores for 3 PoC items between Precontemplation and Contemplation. These were Stimulus Control, Self-Liberation and Conscious Raising. Once again where significance was found, the mean score was higher in Precontemplation than in Contemplation (see table 28). The Self-Re-evaluation item was more engaging for Precontemplators ($M = 2.75$, $SD \pm 1.1$) than Contemplators ($M = 1.5$, $SD \pm .53$), a statistically significant difference of 1.25 (95% CI, 0.33 to 2.16), $t(16) = 2.91$, $p = .010$. This statistical significance suggests a higher engagement with PoC items in the earlier stages. Thus, the findings deviate from expected constructs whereby those in the higher SoC are more aware and respond to change mechanisms. These findings help reject H2. However, according to Cohen's d the effect size was small. This was also the case for Self-Liberation and Conscious Raising, suggesting the change was of little practical importance.

Table 28 T-test and Descriptive Statistics for PoC Items - Control Group

	SoC						95% CI for Mean Difference				
	Precontemplation			Contemplation				t	df	p	d
	M	SD	n	M	SD	n					
Conscious Raising*	2.65	.91	10	1.44	.62	8	.40, 2.0	3.19	16	.006	.15
Dramatic Relief	2.75	.75	10	2.4	.35	8	.24, .99	1.29	16	.215	
Environmental Re-evaluation	2.35	.94	10	2.1	.68	8	-.55, 1.13	.723	16	.480	
Self-re-evaluation*	2.75	1.11	10	1.5	.53	8	.33, 2.16	2.91	16	.010	.14
Social Liberation	2.65	1.1	10	2.19	.46	8	-.42, 1.35	1.10	16	.286	
Counter Conditioning	2.75	.92	10	2.5	.56	8	-.60, .97	.50	16	.621	
Helping Relationships	2.5	.62	10	2.44	.62	8	-.56, .68	.211	16	.835	
Reinforcement Management	3.15	.88	10	3.13	.79	8	-.82, .87	.062	16	.951	
Self-Liberation*	3.2	.91	10	2.31	.70	8	.05, 1.7	2.25	16	.039	.11
Stimulus Control	2.25	1.06	10	1.81	.75	8	-.5, 1.3	.983	16	.340	

* $p < .05$.

As the findings deviated from the prescribed theory, a review of the coding and items was undertaken to ensure the data entry and coding were correct. All measurements and coding aligned with Prochaska, Velicer, DiClemente and Fava's (1988) and the 20 item questionnaire to test aspects of the 10 processes of change detailed in section 7.2

But why were those categorised as Precontemplators more engaged with PoC items?

Similar to Rhodes et al. (2004) where the TTM was applied to physical activity, and where discriminant analysis between SoC and PoC show no support for experiential processes, it might suggest that the failure to replicate previous research in the association of PoC to SoC may be an outcome of the challenges in applying SoC constructs to a particular population. This is furthered by Macnee & McCabe (2004) who question the applicability of the model to specific populations as well as the modification of stage based interventions for such specific populations. Similar to Rhodes and Claudio (2011) who note the strong evidence that outlines the nonlinear distinction between stages, these findings also suggest PoC items are not used to move participants in a linear fashion from precontemplation to contemplation and so on. These results also support the work of Riley et al. (2008) who reported the PoC Items had limited differences across the stages. Once again, the suggestion here was that the SoC was not an appropriate categorisation technique. And whilst Migneault et al. (2005), and DiNoia and Prochaska (2010) pronounce that the TTM is applicable to various behaviours, where participants may or may not be aware of their problem behaviour, the evidence thus far suggests a failure to replicate previous research in this particular population. Thus furthering evidence to reject the hypotheses (H2). Moreover, the failure in aligning these findings to the prescribed theory may be due to the SoC constructs themselves. Lenio (2006) suggested the staging algorithm could be reduced to Precontemplation and then one could use the term 'others' or even reduce the study down to one question: are you thinking of quitting your addictive behaviour in the next six months? Despite this more flippant criticism, there is a real concern that the stage of change construct (which is central to the theory) is not proven outside certain behaviours. Contemporaneously, within addiction and health behaviour studies a review by Migneault et al. (2005) reported the use of 3, 4, and 5 through to 12 SoC. This discussion provides further evidence in support of these

results and reaffirms Macnee & McCabe's (2004) and West's (2005) suggestion that the application of the TTM model to specific populations may be incompatible.

SoC and PoC Correlation

Given the challenges in SoC classification, raw SoC scores were used as an alternative to test the prescribed theory. It is theorised that PoC scores move in parallel with higher SoC scores (DiClemente et al. 2004, Migneault et al. (2005); Bernard et al., 2014 and Bamberg, 2007). A Spearman Rank-Order Correlation was used to investigate if there was a statistically significant association between SoC scores and Behavioural and Experiential PoC scores. These were run for the Experimental and Control group.

Results from the Control group suggested Experiential scores reduced as SoC scores increased and this was significant $r_s(16) = -.624, p = .006$. Morgan et al. (2013) guideline, the r effect size was moderate for studies in this area. This supports earlier findings from the t -test. The Spearman's rank correlation reported no significant association between SoC scores and Behavioural scores, $r_s(16) = -.309, p = .213$. Once again results from the Experimental group suggested Behavioural scores reduced as SoC scores increased and this was significant $r_s(17) = -.636, p = .003$. Similarly, the Spearman's rank correlation reported a negative but significant association between SoC scores and Experiential scores, $r_s(16) = -.672, p = .002$. Experiential scores reduced as SoC scores increased.

Why was this pattern forming? The answer may lie in the debate over the duality of the PoC items and their application across the SoC. Marshall and Biddle (2001) exemplify the point well by suggesting Self-Liberation focuses on dichotomous points of reference "one's self and others". This also furthers Sutton's (2009) view made earlier in this section. This may create confusion within the respondents. Nonetheless Cronbach's α for the scale across the 20 items measured .88 suggesting internal reliability with the items. However, on reflection PoC items used within this study warrant further examination in future use. Questionnaire development could have broadened and an initial sample and a cross validation sample could have been used

to analyse PoC items further. A larger pool of PoC items could have used and then reduced to determine the most valid items. Testing distributional characteristics and using factor analysis to determine low loadings to generate more specific PoC items would overcome Marshall and Biddle's argument of duality and confusion in the items.

Ranking PoC items – irrespective of SoC

According to Prochaska and Norcross (2007) change process associated with experiential and cognitive persuasions are most useful during the earlier Precontemplation and Contemplation stages. Behavioural PoC Items are traditionally associated with those in Action and Maintenance. Since its inception, Migneault et al. (2005) Bernard et al. (2014) and Bamberg (2007) found that the PoC have been validated in various contexts and literature and support the existence of two distinct types of change processes (behavioural and experiential). Indeed Horiuchi et al. (2012) purports that where the use of experiential processes increases over time and tend to peak at the contemplation stage. In this study, most of the participants were categorised as either Precontemplators or Contemplators so there was an expectation of high engagement with Experiential items.

Table 29 Median, Mean and Std Dev PoC Items for the Control group

PoC	Median	Mean	Std Dev
Reinforcement Management	3	3.05	.78
Self-Liberation	3	2.77	1.04
Dramatic Relief	2.5	2.56	.58
Social Liberation	2.5	2.5	.87
Counter Conditioning	2.5	2.66	.74
Helping Relationships	2.5	2.34	.69
Environmental Re-evaluation	2	2.14	.80
Self-Re-evaluation	2	2.05	1.04
Conscious Raising	2	2.02	.98
Stimulus Control	1.5	1.9	.91

Table 30 Median, Mean and Std Dev PoC Items for the Experimental group

PoC	Median	Mean	Std Dev
Reinforcement Management	3	3.17	.78
Dramatic Relief	3	3.15	.63
Social Liberation	3	2.92	.67
Self-Liberation	2.5	2.55	.94
Counter Conditioning	2.5	2.42	.56
Environmental Re-evaluation	2.5	2.32	.73
Helping Relationships	2.25	2.4	.66
Self-Re-evaluation	2	1.97	.76
Stimulus Control	2	2.22	.71
Conscious Raising	1.5	1.68	.81

The findings in table 29 and table 30 represent means scores irrespective of SoC categorisation. There was similarity in the Control and Experimental group. As predicted by theory, there was a predominance of Experiential items with Self-Liberation, Dramatic Relief and Social Liberation scoring high – thus providing some evidence to reject the hypothesis 3. The results may suggest that the responses of the Control and Experimental group remained broadly similar. Thus, it could be argued that despite receiving interventions, the cognition towards travel to the stadium showed no change between the Control and Experimental group. These results are in line with other studies such as Horiuchi et al (2012) and Norcross et al. (2011) that suggest little significant change between Precontemplation and Contemplation and the use of PoC items. They argue that the results are consistent with the predictions from the TTM. However, there is some disagreement between authors as to the extent of the difference between those in Precontemplation and Contemplation. In a Meta-analysis of 47 cross sectional studies Rosen (2000) argued that the steepest increase in all change processes occurred between Precontemplation and Contemplation. The contrast between Precontemplation and all other stages (combined) accounted for roughly 70% of the between-stage variance in use of experiential processes. Nonetheless, this was only specific to certain addictions, and moreover, this is to be expected as experiential items are used more in the early SoC. What is clear here is that Experiential PoC items are prevalent in the early stages (Prochaska et al. 1992)

and this aligns to the theory thus helps reject hypothesis 2. The lack of consistently significant findings linking specific processes to particular stages mirrors the difficulties researchers have experienced in trying to apply stage of change interventions to various health related outcomes (Hall, 1999, Little and Girvin, 2002 and West 2005). Indeed Rosen (2000) argues that the use of change processes varies substantially across stages and no sequence of change processes is common to all health behaviours.

Similar to pre intervention results, the highly rated PoC items reflect a commitment to others as well as an exploration of personal values and personal goals. Given this, there is a possibility that thinking to change travel in this context is a tandem approach (thinking and doing) and reflective of sport fan Psychology. In other words the use of experiential and behavioural processes of change. This is supported of work by Fairley (2009) and Fairley and Gammon (2010). They found that the mode of transport is central in creating and maintaining the identity of groups that travel and follow a sports team. This is reinforced by the opportunity of socialisation within a sport fan context (Snelgrove et al. 2008). Shamir (1992) underlines this view but suggesting that shared time (in this case travelling to the stadium) may reinforce a shared value, and conformity towards norms and possible behaviours as described by Shamir (1992). Of course this has yet to be confirmed empirically. Consequently, it may be more beneficial to mix experiential and behavioural processes of change themes within the marketing interventions and move away from stage based characteristics.

Experiential and Behavioural PoC Scores Pre and Post Intervention

The following section discuss Behavioural and Experiential processes scores. It was hypothesised that there would be a difference in PoC scores pre and post intervention in the Experimental group, but not the Control group (H3). To test this assertion, a two way mixed ANOVA was performed on PoC scores with one within subjects factor (Time) having two levels (Pre and Post intervention) and one between subjects factor (Group) with two levels (Experimental and Control). In order to meet the assumptions

of the two way mixed ANOVA, the sum experiential and behaviour PoC scores were used. Thus, two mixed ANOVAs were completed.

For the Experiential PoC score analysis of the studentised residuals showed there was no outliers greater than ± 3 standard deviations. Whilst the Shapiro-Wilk test showed movement away from normality, normal Q-Q plots showed little departures from normal distribution (see appendix 8). As argued in earlier sections, given the robustness of the ANOVA against deviations of normality, the ANOVA was used. There was homogeneity of variances ($p > .05$) and covariances ($p = .779$), as assessed by Levene's test of homogeneity of variances and Box's M test, respectively. The main effect of Time showed statistical significance in Experiential PoC score, $F(1, 40) = 9.673$, $p = .003$, partial $\eta^2 = .19$, whereby post intervention scores ($M = 2.4$) were higher than pre intervention ($M = 2.0$). The main effect of Group showed that there was no statistically significant difference in experiential PoC score between the Control and Experimental groups $F(1, 40) = .201$, $p = .656$, partial $\eta^2 = .005$. This reinforces earlier findings in this section. There was no statistically significant interaction between the Group and Time on Experiential scores, $F(1, 40) = .739$, $p = .395$, partial $\eta^2 = .018$ (See table 31).

Table 31 Mixed ANOVA – Repeated two way – Experiential PoC Score

	SS	df	MS	F	p	η^2
Intervention (Control and Experimental Group)	.107	1	.107	.201	.656	.005
Time (Pre and Post)	2.323	1	2.323	9.673	.003	.195
Intervention/Time	.178	1	.178	.739	.395	.018
Error	9.605	40	.240			

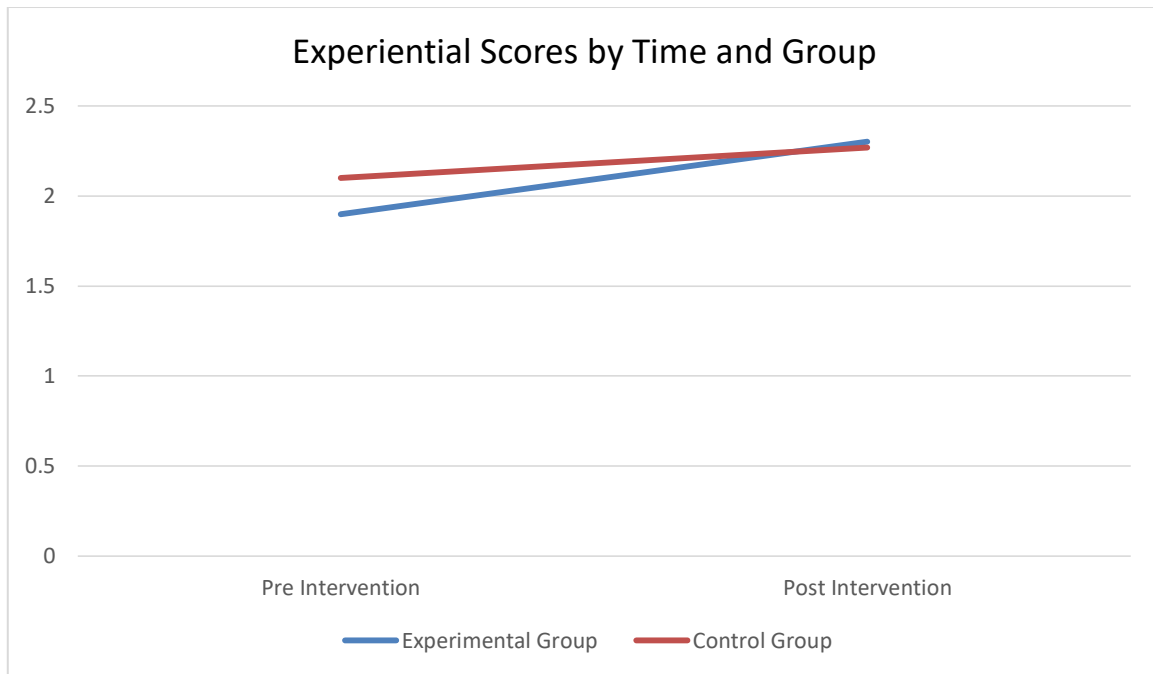


Figure 27 Experiential PoC Scores by Time and Group

Irrespective of Group (Experimental or Control), why were the Experiential scores different before and after the interventions? Once again, the higher mean may be a result of participant experimenter effect and response bias. It has already been established that PoC items can be abstract and present dual meanings (Sutton, 2009 and Marshal and Biddle, 2001). Given this, participants may have been challenged to answer the questions with due consideration during the first phase of surveys. The second phase of surveys may have provided all respondents time to reflect and contemplate their answers.

For the Behavioural PoC score analysis studentised residuals were approximately distributed as assessed by normal QQ plots, yet there was one outlier which had a residual value of 4.25. The Shapiro-Wilk test showed non normality ($p < .05$). However, as argued in earlier sections, given the robustness of the ANOVA against deviations of normality the ANOVA was used. There was homogeneity of variances ($p > .05$) and covariances ($p = .366$), as assessed by Levene's test of homogeneity of variances and Box's M test, respectively.

Table 32 ANOVA – Repeated two way – Behavioural PoC Items

	SS	df	MS	F	p	η^2
Intervention (Control and Experimental Group)	.148	1	.148	.166	.686	.004
Time (Pre and Post)	.079	1	.079	.259	.614	.006
Intervention/Time	1.746	1	1.746	5.720	.022	.125
Error	12.207	40	.305			

The main effect of Time showed no statistical significance in Behavioural PoC scores, $F(1, 40) = .286$, $p = .614$, partial $\eta^2 = .006$ with before ($M = 2.35$) and after ($M = 2.41$) scores performing similarly overall. The main effect of Group showed that there was no statistically significant difference in Experiential PoC score between the Control and Experimental groups $F(1, 40) = .166$, $p = .686$, partial $\eta^2 = .004$ with Experimental ($M = 2.43$) and Control ($M = 2.34$) performing similarly overall. In contrast, there was a statistically significant interaction between the Group and Time on Behavioural PoC scores, $F(1, 40) = 5.720$, $p = .022$, partial $\eta^2 = .125$ (See table 32). From looking at figure 28, those in the Control group had a higher Behavioural score pre-intervention ($M = 2.45$) than post intervention ($M = 2.27$). Whereas the Experimental group showed the opposite pattern. Behavioural PoC scores were higher post intervention ($M = 2.6$) than pre intervention ($M = 2.25$) suggesting a higher engagement with Behavioural PoC items after receiving the interventions. However, according to Cohen, the effect size is medium and thus the results should be reviewed in light of this.

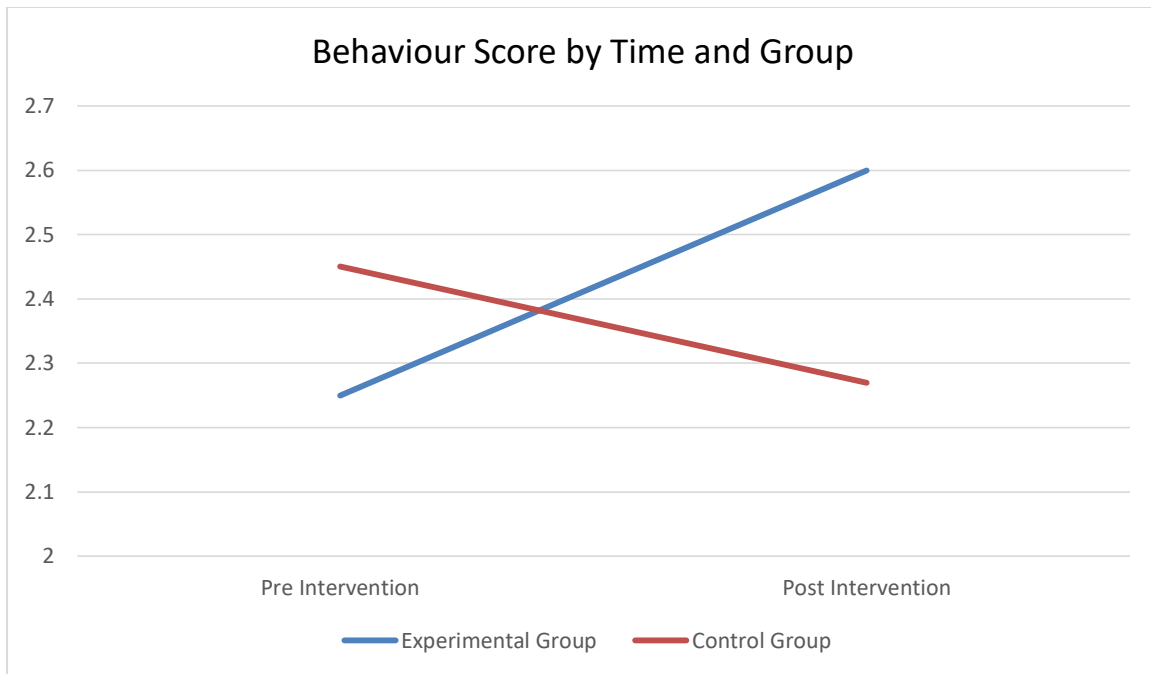


Figure 28 Behavioural PoC Score by Time and Group

Of course the pattern identified in the control group (figure 28) and their initial score may be a direct response to participant bias. Similar to SoC scores, the first round of testing took place in the stadium and in front of volunteer researchers. Thus their response may not have been a true reflection of their behaviour. The 'after' point of testing may have provided a more honest response. However, the same argument could be applied to the experimental group. However this argument is slightly diluted given the fact that the experimental group's initial score was lower than the control group. Moreover post intervention, the experimental score was higher. So which score was a true reflection of their engagement with PoC Items? And did the interventions have a direct response on the experimental group scores after the interventions had been received? Study 3 explores in detail the reaction and response to the interventions by those in the experimental group.

Overall, analysis of the experiential and behavioural PoC scores, across Time and between Groups are not consistent. This inconsistency may go some way to rejecting hypothesis 2: theory led interventions have no impact upon the transport choices of sport fans. Why? The results show no main effect between groups (Control and Experimental) for both Experiential and Behavioural PoC scores (irrespective of Time).

Thus, despite receiving interventions, the cognition towards travel to the stadium showed no change between the Control and Experimental group. This may suggest a weakness in the use of social marketing campaigns. In study 1, it was put forward that the study aimed to use an entire suite of marketing interventions that cut across all stages and all PoC in order to attract those participants in different SoC. Yet it appears that this approach has its limitation. As noted in study 1 – section 6.2.1, there certainly is a challenge in using psychology constructs in the design of the message (Luca and Suggs, 2013) as the messages may appear abstract, cause confusion and lack clarity. Macnee & McCabe (2004) suggest that this challenge is compounded when attempting to modify stage based interventions to specific populations – given the challenges in operationalising SoC. Rather than stage based, individually tailoring the message may be more effective. Indeed, Noar et al. (2007) concedes that unlike mass targeted campaigns where everyone receives the same message, tailored approaches enable customisation of the message. In order to explore this point further, Study 3 will explore participant's interpretation of the messages and assess the level of understanding, enabling a deeper insight into the utility of the marketing interventions.

More broadly the fluctuating change in PoC scores over Time and across the Group bring up a methodological point. To eliminate questions over respondent bias in the first round, a mid-point should have been undertaken. This would have allowed the researcher to assess PoC scores against the base line score. Moreover, it would have provided a further indication as to the effect of the intervention on participant score.

8.4.4 Findings and Discussion - Self-Efficacy

This section focuses on Self-efficacy items for those in the Precontemplation and Contemplation and test the theorised constructs of the TTM within this context (H2) and the impact the interventions have on respondents Self-efficacy score (H3). Self-efficacy items report on the confidence to abstain from the use of the car to get to the stadium on match days. It is prescribed that low confidence levels are expected in Precontemplation. As participants move towards changing their behaviour their confidence levels should increase.

An independent-samples t-test was run to determine if there were differences in Self-efficacy scores between those in Precontemplation and Contemplation. The t-test was separately run for the Control group and Experimental group. Alternatives such as a one way ANOVA was considered but as there were only two independent variables (Precontemplation and Contemplation), the t-test was deemed appropriate. For the Control group there were no significant outliers in the data, as assessed by inspection of a boxplots (appendix 8). The Shapiro-Wilk's test showed movement away from non-normality but inspection of Q-Q plots for each SCQ score showed near normal distribution. As noted by Nelson (2010) and Morgan et al. (2013) the t-test is robust against deviations from normality, the test was considered appropriate. Levene's test of homogeneity reported no significance for any SCQ items, thus the assumption of equal variance was not violated.

Table 33 T-test and descriptive statistics for SCQ items across SoC – Control Group

SCQ Subscale	SoC						95% CI for Mean Difference	<i>t</i>	<i>df</i>	<i>p</i>
	Precontemplation			Contemplation						
	M	SD	n	M	SD	n				
Negative Affect	2.1	.47	10	2	.59	8	-.43, .63	4.0	16	.69
Social/Positive	2.8	.81	10	1.75	.46	8	-.26, 1.1	1.29	16	.21
Cravings and Urges	2.2	.67	10	2	.89	8	-.57, .98	.54	16	.59
Physical and Other Concerns	1.9	.55	10	1.5	.62	8	-.22, .94	.13	16	.21

* $p < .05$.

For the Control group the t-test found no statistical difference between Precontemplation and Contemplation (table 33). Although DiClemente et al. (1991) report that Contemplators did have significantly higher Self-efficacy scores than Precontemplators, analysis by Marcus et al. (1992), Henry et al. (2006) and Hildebrand et al. (2009) suggests similar Self-efficacy scores in Precontemplation and Contemplation – making it difficult to determine stage based effects. Indeed, this follows on from Velicer (1990) who prescribed that Self-efficacy is strongly influenced by performing new behaviour, and thus, those in the early stages (in this case all participants in the analysis were at the lowest SoC) may not be effected by Self-efficacy principles of behaviour rather than Experiential processes.

An independent-samples t-test was also run for the Experimental group and SCQ items (table 34). The Shapiro-Wilk's test showed movement away from non-normality but the Q-Q plots for each SCQ score near normality. As noted by Nelson (2010) and Morgan et al. (2013) the t-test is extremely robust against deviations from normality, thus the test was considered appropriate. Levene's test of homogeneity reported significance for Social/Positive and Physical/Cravings SCQ items, thus the assumption of equal variance was violated. The remaining two SCQ maintained equal variance.

Table 34 T-test and descriptive statistics for SCQ items across SoC – Experimental Group

SCQ Subscale	SoC						95% CI for Mean Difference				
	Precontemplation			Contemplation				<i>t</i>	<i>df</i>	<i>p</i>	<i>D</i>
	M	SD	n	M	SD	n					
Negative Affect*	2.64	.64	12	1.76	.71	7	.21, 1.5	2.75	17	.013	.55
Social/Positive	2.89	.48	12	2.1	1.1	7	.05, 1.54	1.87	17	.10	
Cravings and Urges*	3.22	.46	12	2.9	.85	7	.69, 1.95	3.77	17	.005	.54
Physical and Other Concerns	2.11	.76	12	1.2	.51	7	-.064, 1.24	1.91	17	.074	

* $p < .05$.

First, no significance was found between the SoC (Precontemplation and Contemplation) and social affect and Physical items. For the Experimental group Cravings SCQ items reported significance, 1.31 (95% CI, 0.69 to 1.95), $t(17) = 3.77$, $p = .005$, with Contemplators having a lower mean ($M = 2.9$) to Precontemplators ($M = 3.22$). Negative affect items also reported significance .877 (95% CI, 0.21 to 1.5), $t(17) = 2.75$, $p = .013$ with Precontemplators having a higher mean (2.64) to Contemplators ($M = 1.76$). According to Cohen's d the effect size is typical. Of course, the assumption here was that those in Precontemplation would not feel confident and those further through the SoC would feel more confident. As the findings deviated from the prescribed theory, a review of the data was undertaken to ensure the data entry, items and coding were correct. All measurements and coding aligned with Anis (1986) in Breslin et al. (2000).

So what does this finding suggest? Confidence levels seemed to be higher in those Categorised as Precontemplators. This may also reflect the arbitrary nature of the SoC cut off scores as noted in section 8.4.2, whereby a readiness to change score doesn't reflect the complex nature of changes.

Self-Efficacy Scores Pre and Post Intervention Analysis

The next step was to ascertain if SCQ scores were different pre and post intervention. It was hypothesised that there would be a difference in SCQ scores pre and post intervention in the Experimental group but not the Control group on account of the interventions. A two way mixed ANOVA was considered to determine the effect of different conditions (Experimental or Control group) over Time (Pre and Post Intervention) on SCQ scores. However, when running the tests, homogeneity of variance was violated for some of the SCQ items. As an alternative, three separate Kruskal-Wallis tests were undertaken. The first test was used to determine if there were differences in SCQ scores between the experimental group ($n = 19$) and control group ($n = 18$) and to help test H2. Social/Positive SCQ scores were significantly different between the two groups, $\chi^2(1, N = 37) = 8.02$, $p = .005$. Cravings and Urges also reported significance $\chi^2(1, N = 37) = 7.22$, $p = .007$. Overall, the Experimental group exemplified a higher SCQ score but at this stage it is too early to articulate if this

was down to an intervention effect as pre and post intervention scores were not considered.

Table 35 Self-Efficacy Mean Rank – Pre and Post Intervention – Control Group

	Time	N	Mean Rank
Negative Affect	Pre Intervention	18	21.12
	Post Intervention	18	17.25
	Total	35	
Social/Positive	Pre Intervention	18	23.09
	Post Intervention	18	13.89
	Total	36	
Physical and Other Concerns	Pre Intervention	18	19.47
	Post Intervention	18	18.36
	Total	36	
Cravings and Urges	Pre Intervention	18	22.29
	Post Intervention	18	14.14
	Total	36	

Table 36 Self-Efficacy Mean Rank – Pre and Post Intervention – Experimental Group

	Time	N	Mean Rank
Negative Affect	Pre Intervention	19	18.97
	Post Intervention	19	20.66
	Total	38	
Social/Positive	Pre Intervention	19	19.87
	Post Intervention	19	23.84
	Total	38	
Physical and Other Concerns	Pre Intervention	19	21.76
	Post Intervention	19	19.61
	Total	38	
Cravings and Urges	Pre Intervention	19	23.61
	Post Intervention	19	19.82
	Total	38	

Two additional Kruskal-Wallis analysis of variance tests was used, for the Control group and one for the Experimental group, to determine if there were differences in SCQ scores between pre and post intervention irrespective of SoC categorisation (Precontemplation and Contemplation). This helped explore if the interventions had a significant effect on SCQ scores and help test H3: 'Respondents in the intervention group were more likely to show movement in stages of change, processes of change, self-efficacy and decisional balance scores than respondents in the control group'. Two SCQ items showed statistical significance between pre and post intervention for the control group. Social/Positive SCQ scores, $\chi^2 (1, N = 36) = 8.40, p = .004$. Mean

rank scores before the intervention was ($M = 19.87$) and after the interventions ($M = 23.84$). Cravings/Urges SCQ scores, $\chi^2(1, N = 36) = 8.40, p = .004$. Mean rank scores before the intervention was ($M = 23.61$) and after the interventions ($M = 19.82$) (see table 35). Clearly an opposing pattern is emerging from these results. Evidently within the Control group there were variables outside the experiment that had an impact on pre and post intervention scores. There are a number of possibilities as to why this is happening. For Cravings, the changes in score may be another example of experimenter effect, whereby their responses may have been artificially high when face to face with the researcher. This issue may have been compounded by the items in the questionnaire that were hypothetical and somewhat abstract. Similar to Miller et al. (1989) and Breslin et al. (2000), participants may have struggled with visualising the scenarios such as “When I simply want to use the car to get to the stadium” and “When people I know encourage me to drive to the stadium” in a time constrained situation just before the match. Nonetheless, high scoring Social SCQ items post intervention may reiterate the social aspects of watching rugby and celebrating it with friends and family. The importance of the group and formation of social norms in sport fans has already been established and this may be reinforced here by the high confidence scores in finding alternatives to the car, especially when wanting to celebrate the match with friends.

The Experimental group had no statistical difference in the SCQ score scores pre and post intervention (see table 36). This reinforces the suggestion that within this study the theory led interventions had no impact on travel behaviour of sport fans – thus rejecting H2. There could be a variety of reasons for these findings. (1) The appropriateness of marketing interventions to change travel behaviour, (2) The context of the study and (3) participant bias. First, it appears that the interventions had no influence on the cognition or visualisation of achievement as noted by McKiernan et al. (2011) and as inferred in chapter 3. This supports the null hypothesis (H2) whereby the theory led interventions have no impact on transport choices of sport fans. As discussed earlier in this section Velicer (1990) prescribe that Self-efficacy is strongly influenced by performing new behaviour. Williams and French (2011) support this and suggest interventions that reflect action planning, information and instruction-setting show the most effect in physical activity. Within this study, the theory led interventions

were marketing based and experiential based. On reflection, whilst these interventions were seen as using mechanisms on the fringe of practices (see study 1 section 6.2.1), the application to Self-efficacy and early stage based constructs may have been misplaced. This criticism is reflected in Rhodes et al (2011) and Marcus et al (1992) where broad based exercise campaigns have had poor results in changing Self-efficacy levels due to a focus on educational factors rather than behavioural factors. Second, context may be an underlying issue. In studies where interventions presented positive effects on Self-efficacy, they tended to be small and focused on health, smoking and drug addiction. For example, Ashford, Edmunds and French (2010) reported very small success in their meta-analysis of health interventions and an increase in Self-efficacy. Henry et al (2006) reported stage matched effect to Self-efficacy in healthy food consumption between Precontemplators and Contemplators. As Sheeran (2002) purports, participant's ability to change is constrained by the context he/she finds himself in and the resources available. Similar to discussion in study 1, low SCQ scores seem to suggest that travel is outside the behavioural control of the individual. And the contextual factors of travel time, parking location, walking time, ritual meet up before the match and pressure of getting to the match on time may make it difficult for respondents to think objectively to notions of control and difficulty.

8.4.5 Findings and Discussion - Decisional Balance

This section presents findings on Decisional Balance items post intervention. The findings and discussion assessed the difference in Decisional Balance scores pre and post intervention to determine if there was an intervention effect (H3). Moreover, this section explored the extent of a stage based difference that prescribed to the theorised expectations of the TTM (H2). In summary Di Nioa and Proachaksa (2010) and Velicer et al. (1985) prescribe that Pro and Con Decisional Balance can be stage matched. As individuals progress through the stages, there is a synchronous reduction in cons and an increase in pros. However, it should be noted that the stage based effect occurs between Contemplation and Action (Ling and Harworth, 2001 and Velicer et al. 1985) therefore, there may be a similarity of score between those in Precontemplation and Contemplation. Table 37 and 38 outlines the median scores for each group (Experimental and Control) listed in rank order.

Table 37 Ranked median Decisional Balance for the Control group

Decisional Balance Items ^a	Ranked Median
Driving to the stadium increases traffic pollution in the local area (Pro)	4
I like the idea of driving to the stadium (Con)	4
Driving to the stadium suits my situation (Con)	4
Driving to the stadium keeps me in control (Con)	4
I would be healthier if I walked to the stadium (Pro)	4
I shouldn't ignore the warning about climate change (Pro)	4
My friends and family like me driving to the stadium (Con)	3.5
Driving to the stadium is a pleasure (Con)	3.5
Driving to the stadium can have a negative impact upon my health (Pro)	2
My friends and family think I should consider other means of getting to the stadium (Pro)	2

Table 38 Ranked median Decisional Balance for the Experimental group

Decisional Balance Items	Ranked Median
Driving to the stadium increases traffic pollution in the local area (Pro)	4
I like the idea of driving to the stadium (Con)	4
Driving to the stadium can have a negative impact upon my health (Pro)	4
Driving to the stadium suits my situation (Con)	4
Driving to the stadium keeps me in control (Con)	4
I would be healthier if I walked to the stadium (Pro)	4
I shouldn't ignore the warning about climate change (Pro)	4
My friends and family like me driving to the stadium (Con)	3
Driving to the stadium is a pleasure (Con)	3
My friends and family think I should consider other means of getting to the stadium (Pro)	2

The findings reiterate the discussion in chapter seven whereby a mixture of Pro and Con items are ranked highly and suggest a more complex and layered views of decisions about travel. For example, the median score across the experimental group suggest a reflection of the impact travel has on the environment and group “Driving to the stadium increases traffic pollution in the local area”, yet at the same time scored “I like the idea of driving to the stadium” as equally important. Similar statements can be

seen within the control group. What is interesting is that both the Control and Experimental group rank “My friends and family think I should consider other means of getting to the stadium” as the lowest, thus reinforcing the view that sport fans are happy in their travel behaviour yet are fully aware of the implications (positive and negative). This reaffirms the findings in Foster and Neighbours (2013) and reflects discussion in chapter seven, thus rejecting the hypothesis (H3) and provides underlying evidence to support H4.

To ascertain if there was a stage difference, an independent-samples t-test was run between those in Precontemplation and Contemplation. The t-test was separately run for the Control and Experimental group. Alternatives such as a one way ANOVA was considered but as there were only two independent variables (Precontemplation and Contemplation), the t-test was deemed appropriate. For the Control group there were no significant outliers in the data, as assessed by inspection of a boxplots (appendix 8). The Shapiro-Wilk's test showed normality and inspection of Q-Q plots for each DB Item showed near normal distribution. There was homogeneity of variances, as assessed by Levene's test for equality of variances (CON $p = .488$, PRO $p = .578$).

Table 39 T-test and descriptive statistics for Pro/Con scores across SoC in Control Group

	SoC							95% CI for Mean Difference	<i>t</i>	<i>df</i>	<i>p</i>
	Precontemplation			Contemplation							
	M	SD	n	M	SD	n					
PRO	2.68	.61	10	2.8	.56	8	-.71, .47	-.430	16	.673	
CON	2.38	.56	10	1.95	.43	8	-.84, .94	1.774	16	.095	

* $p < .05$.

For the Experimental group there were no significant outliers in the data, as assessed by inspection of a boxplots (appendix 8). The Shapiro-Wilk's test showed normality and inspection of Q-Q plots for each DB Item showed near normal distribution. There was homogeneity of variances, as assessed by Levene's test for equality of variances (CON $p = .066$ PRO $p = .092$).

Table 40 T-test and descriptive statistics for Pro/Con scores across SoC in Experimental Group

	SoC						95% CI for Mean Difference	<i>t</i>	<i>df</i>	<i>p</i>
	Precontemplation			Contemplation						
	M	SD	n	M	SD	n				
PRO	2.55	.49	12	2.51	.31	7	-.4, .47	.173	17	.865
CON	2.62	.58	12	2.43	.21	7	-.29, .68	.825	17	.421

* $p < .05$.

The findings purport no difference between the decisional items of Precontemplation and Contemplators in the Control or Experimental group (See table 39 and table 40). The similarity across the groups reinforce the concept that change for Decisional Balance is placed higher up the stages. Indeed, according to Di Noia and Prochaska (2010) the crossover between the Pros and Cons occurs between Contemplation and Action stages. Moreover, these findings mirror base line Decisional Balance in chapter eight. So it could be argued that any stage effect in this study is limited as it only comments upon Precontemplation and Contemplation. Yet the similarities across the early stages fit the prescribed behaviour of the SoC and DB behaviour (Prochaska et al. 1994, Ling and Harworth, 2001, Di Noia and Prochaska, 2010) and go some way to supporting hypothesis 2 – the TTM model cannot be applied to the context of sport fan travel behaviour. Notwithstanding the contextual debate, Foster and Neighbours (2013) suggest that ambivalence towards changing behaviour is not altered by the inclusion of Decisional Balance items. Moreover, they suggest that the limitation in the utility of Decisional Balance items is caused by the researcher who generates the Decisional Balance items rather than using participant generated items. Thus, suggesting an improvement in the methodology.

Decisional Balance Scores Pre and Post Intervention Analysis

The next step was to ascertain if Decisional Balance scores were different pre and post intervention. It was hypothesised that there would be a difference in Decisional Balance scores pre and post intervention in the Experimental group but not in the Control group. To ascertain if there was any significant change in Decisional Balance

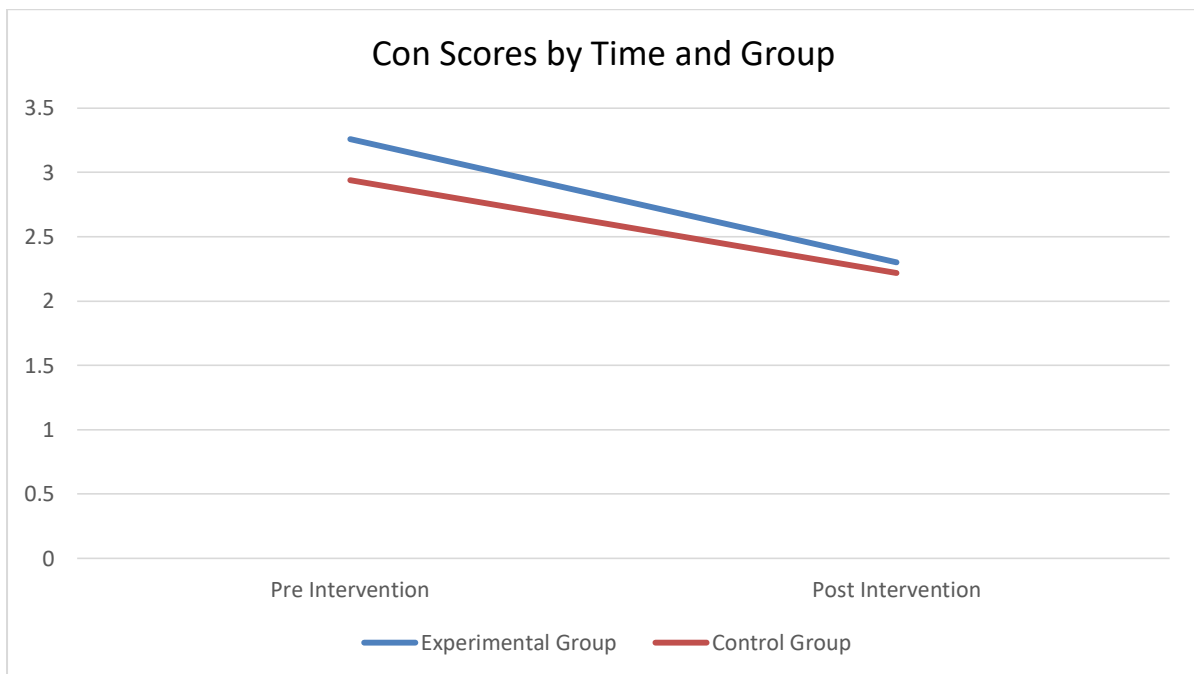
scores a two way mixed ANOVA was run on overall Con and Pro Items. Thus, two mixed Anova were performed. Both had one within subjects factor (Time) having two levels (Pre and Post intervention) and one between subjects factor (Group) with two levels (Experimental and Control).

Inspection of the box plots for the Con scores identified a number of outliers in the data but these were considered genuine values and kept in the analysis. The Shapiro-Wilk test showed non normality ($p > .05$). Nonetheless, there were no studentised residuals greater than ± 3 standard deviations. Moreover, there was homogeneity of variances ($p > .05$) and covariances ($p = .180$), as assessed by Levene's test of homogeneity of variances and Box's M test, respectively. Given the robustness of ANOVA to deviations from normality, particularly if the sample sizes (numbers in each group) are equal, or nearly equal (Morgan et al. 2013) the test was deemed appropriate.

There was a main effect of Time on Con scores pre and post intervention, $F(1, 35) = 23.509$, $p = .00025$, partial $\eta^2 = .402$, whereby post intervention scores ($M = 2.37$) were lower than pre intervention ($M = 3.1$) (table 41). Why have the Con item scores reduced post intervention? To reiterate, Con items reflect barriers to changing travel behaviour decisions such as "Driving to the stadium is a pleasure". A lower Con score suggests lower perceived barriers to change. This result may reflect an underlying variable as discussed in 8.4.2. As discussed, a person's ability to change is constrained by context. Indeed, Di Noia and Prochaska (2010) go further, suggesting that people have limited control over such factors as availability and cost. Verplanken et al. (1997) adds to this, suggesting that personal travel experiences have a direct impact on decisional balance. Given this, the Con scores, post intervention, may be reflective of their immediate travel experiences. In other words, the underlying cause of participant behaviour may be the characteristics of the case study and not the ineffectiveness of interventions based on the TTM constructs.

Table 41 Mixed ANOVA – Repeated two way – Con Scores

	SS	df	MS	F	p	η^2
Intervention (Control and Experimental Group)	1.793	1	1.793	6.384	.016	.154
Time (Pre and Post)	9.839	1	9.839	23.509	.00025	.402
Intervention/Time	.001	1	.001	.002	.962	.006
Error	14.648	35	.419			

**Figure 29 Con Scores by Time and Group**

There was a main effect of Group on CON scores $F(1, 35) = 6.384$ $p = .016$, partial $\eta^2 = .154$, whereby the Experimental group had a higher overall mean ($M = 3.0$) than the control group ($M = 2.5$). Overall it shows that those in the Experimental group had a higher Con score - possibly highlighting continued support for the car. As noted in section 7.5.5, con items suggest that 'driving to the stadium is a pleasure' and that 'driving to the stadium keep me in control'. This is not a surprise. As noted in study two evidence suggests that there is a social acceptance of the car in the group and as a consequence they may be less likely to change. Moreover, in this context respondents have limited control over such factors as availability, timing and cost thus, their perceptions of the Cons may persist above and beyond any Pros. Yet no interaction

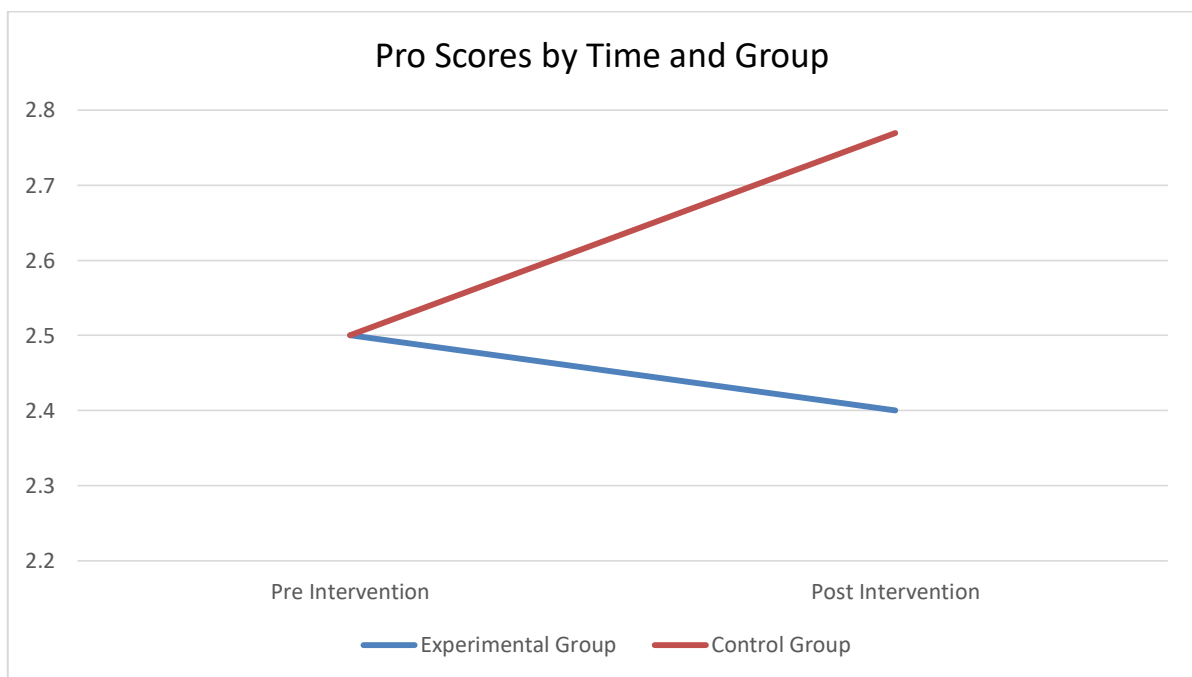
was found between the Group and Time on Con scores, $F(1, 35) = .002$, $p = .962$, partial $\eta^2 = .0006$ (see figure 29).

Authors such as Bowles et al. (2006) Heath and Gifford (2002) and Kenyon and Lyons (2003) Anable (2005) and Thogerson and Crompton (2009) argue the merits of targeting travel decisions in a leisure context – less opportunity for habit formation and greater perceived control due to convenience of local leisure pursuits. However, in this case, the convenience may be diluted by the timing of the match and the distance travelled by the fans. 40% of respondents travelled between 3 and 8 miles, 32% of participants travelled between 9 and 15 miles with over 18% travelling more than 16 miles to get to the stadium. Unfortunately, the self-reporting questionnaire didn't provide an opportunity for deeper insights into the context of participants and their constraints. Similar concerns were noted in section 8.4.3. Study four explores these themes in further detail and analyses the response of those from the experimental group. For example, which interventions were seen as influential and why, which interventions were preferred? Could it be that the leisure based context influenced participant responses? Furthermore, given that travel to a leisure venue doesn't occur every day, does it have an impact on choice? As leisure travel is not an everyday occurrence is this type of travel seen as highly damaging to the environment or in developing adverse health implications?

For the Pro item scores there were no outliers in the data, as assessed by inspection of a boxplot (appendix 8) but the Shapiro-Wilk test showed non normality ($p > .05$). There were no studentised residuals greater than ± 3 standard deviations There was homogeneity of variances ($p > .05$) and covariances ($p = .421$), as assessed by Levene's test of homogeneity of variances and Box's M test, respectively. Mauchly's test of sphericity was not considered as there were only two levels of repeated measure. The main effect of Time and Group on PRO scores showed no significance. Moreover, no interaction was found between the Group and Time on PRO scores (see table 42 and figure 30).

Table 42 Mixed ANOVA – Repeated two way – PRO Score

	SS	df	MS	F	p	η^2
Intervention (Control and Experimental Group)	.364	1	.364	.623	.435	17
Time (Pre and Post)	.063	1	.063	.153	.698	004
Intervention/Time	.493	1	.96	1.201	.281	.033
Error	14.450	35	.413			

**Figure 30 Con Scores by Time and Group**

The findings show that Pro Decisional Balance scores are not significantly different pre and post intervention and that the interventions caused little or no positive movement with the Experimental group (see figure 30). Why? The current intervention may not have been appropriate for this population's level of readiness to change. To recap, the focus of decisional balance is to help resolve ambivalence about changing travel behaviour. However, there is certainty with the respondents about the use of the car to get to the stadium. Indeed 85% of the experimental group took the car to get to the stadium. Thus the marketing interventions used in this study may have been less effective and better placed in more ambivalent contexts. Brug et al. (2005) is

supportive of this, suggesting short-term interventions and are mostly restricted to educational strategies (information raising). They argue that physical traditions have been acquired over a long period of time and more comprehensive and integrated interventions are required such as education, facilitation and legislation to break such long-lasting traditions. Given this, it may have been naïve to consider that change might have happened from marketing interventions in this context.

Consequently, there are some importantly practical implications to consider. First, stand-alone interventions that focus on Decisional Balance techniques for people who have higher readiness to change, and who are ready to resolve discrepancy by moving towards an active change strategy – may generate more positive results. Second, to shift and place Pros above Cons requires more specific and integrated interventions that explore instrumental and affective values attached to the car. Indeed, to overcome the attachment to the car in this group there is a battle between knowledge of externalities (Driving to the stadium increases traffic pollution in the local area) and social acceptance and norm (I like the idea of driving to the stadium and Driving to the stadium suits my situation). And this commentary can also be applied to the use of the car in a broader social context. Participants are aware of the impact driving has on their health and the environment, yet do little to change their travel behaviour. Thus rejects the hypothesis (H3) and provides underlying evidence to support H4.

8.4.6 Findings and Discussion - Intervention Rating

Whilst it can be argued that interventions have had no effect on the experiment group – pre and post intervention - no direct assessment of the level of influence each intervention has had on the participants has taken place. This section will explore this. Moreover, it will consider the level of engagement generated by the interventions, which may provide further insight into theory led intervention design. The analysis will help the researcher to reflect on theoretical rationale for each intervention and ultimately help test H2 and H3.

As outlined in section 8.2, two additional questions were asked of the Experimental group only. The first focused on an overall ranking of the interventions the participants

received. The ranking is based on how engaging the participants considered the interventions. A preference rating scale was employed with a range of 1 – most engaging to 10 least engaging). Thus, the lower the score the more engaging the intervention. The second question explored the level of influence each intervention had on the way the participants travel to the stadium. A Likert scale was implemented to ascertain the level of influence (1 – Not at all influential to 5 – extremely influential). Thus, the lower the score the less influential the interventions. Overall reliability showed .90 alpha. The interventions used in the experiment are found in appendix 2 and numbered accordingly for this section. Table 43 showed intervention 10 to be the most engaging intervention, followed closely by intervention 2, intervention 5, intervention 7 and intervention 4. Why is this important? Well according to Peattie and Peattie (2009) the success of social marketing depends on the level of persuasion and scrutiny given to the message. In turn this is supported by the level of engagement towards the marketing interventions such as personal relevance and simplicity of message. In exploring the levels of engagement in the participants, it provided an indication as to the relevance of the intervention design. Exploration of the interventions is extended in study 3, but in the meantime this preliminary analysis provides an outline as to the relevance of the intervention designs. The following paragraphs explore possible underlying reasons as to the interventions which were rated most engaging.

Table 43 Most engaging Intervention in ranked order

Intervention	Mean	Std Deviation	Count
Intervention 10	3.37	2.73	64
Intervention 2	4.63	2.03	88
Intervention 5	4.84	2.52	92
Intervention 7	4.95	3.17	94
Intervention 4	4.95	2.87	94
Intervention 6	5.95	2.71	113
Intervention 3	6.11	1.94	116
Intervention 1	6.47	3.51	123
Intervention 9	6.58	2.24	125
Intervention 8	7.16	3.13	136

Intervention 10 was rated the most engaging. The aim of this intervention was to articulate social change and the consideration of how others could change their behaviour, help build trust and acceptance in relationships. In terms of transport, the focus was on the family and how transport and global warming can impact on others and provide cues to change and promote positive behaviour (stop and think before you travel). Thus, the intervention focused on exploiting social and cultural needs and the commitment to others (which is identified in sport fan literature and has been a consistent finding throughout the study). From the outset this intervention was intended to encourage SoC movement from action to maintenance (refer to intervention matrix – section 6.2.1). Yet, it is evident that this intervention fits into the mind-set of Precontemplators and Contemplators. Thus, the level of engagement found here supports the premise that a shared value cognition is being applied by the participants (Snelgrove et al. 2008) irrespective of prescribed stage characteristics. However, as noted in previous sections, this level of awareness has not changed their travel behaviour and supports H4.

Intervention 2 focused on conscious raising and the movement of participants from Precontemplation to Contemplation. The impact on one's health was a constant message across the interventions and whilst this intervention was deemed to be conscious raising, the impact on others was at the forefront of the design. In addition, the negative behaviour of eating at a match whilst reinforcing the rugby terminology (feeding the scrum) offered a familiarity to the message. Once again, the anxiety towards health and others is noted across the results. For example, Decisional Balance findings in chapter seven and eight reported a concern for the environment alongside a concern for health, 'Driving to the stadium can have a negative impact upon my health', 'My friends and family think I should consider other means of getting to the stadium' and 'Driving to the stadium increases traffic pollution in the local area'. The results demonstrated an awareness and concern for health and its impact on others. Yet, once again, awareness and concern did not relate to any action and broadly rejects H3 and more specifically H4.

The importance of others is furthered by the inclusion of intervention 5 '60 Minutes of Rugby'. The purpose of this intervention was to articulate information about what

others thought about the person's behaviour and whether others would approve or disapprove of any proposed behaviour change. It focused on encouraging active lifestyles and in providing an opportunity for the person reading the intervention to set a good example. Theoretically this intervention was designed to use Social Liberation as a mechanism to move participants from Contemplation through to Maintenance (refer to intervention matrix – see section 6.2.1). Yet in this study, Precontemplators and Contemplators ranked this as the third most engaging intervention of the entire suite. Once again, this provides evidence of a drift away from the expected theory of Prochaska and DiClemente (1992) where those in Precontemplation to Contemplation are usually characterised by more individually focused set of processes. This ranking also supports earlier findings in chapter seven and eight whereby the experimental group showed a strong positive association with social liberation. Consequently, it furthers the evidence against the application of the SoC construct within this context (H2).

Whilst preference ratings are quite simplistic it is more beneficial to explore the level of influence each intervention has made upon the experimental group. Given the findings in study one, two and three it is expected that the level of influence to be low. Table 44 confirms that the level of influence was low with the highest rated intervention a mean of 2.95.

Table 44 - Influence of intervention

Intervention	Mean	Std Deviation	Count
Intervention 4	2.95	1.17	56
Intervention 5	2.74	.99	52
Intervention 10	2.68	1.05	51
Intervention 6	2.68	1.25	51
Intervention 9	2.58	1.17	49
Intervention 3	2.53	.96	48
Intervention 2	2.47	1.17	47
Intervention 7	2.32	1.10	44
Intervention 8	2.11	1.24	40
Intervention 1	1.53	.77	29

As noted in section 3.4.4 no matter how important environmental and socially responsible interventions are, they are secondary to attracting, persuading and retaining the interest and enthusiasm of the audience. Noar et al (2007) support this, and suggest that personal connection at the outset will promote and increase the chance of success. This is underlined by Jones and Sloman (2003) who argue that knowing context/environment/audience enables change behaviour interventions that are entertaining and engaging to the targeted population. Given these argument about engagement being an important indicator to the success of social marketing campaign, it was important to determine if the level of engagement in the interventions was associated with the level of influence of the interventions.

To investigate if there was a statistically significant association between level of influence and level of engagement in the experimental group, Kendall's coefficient was used. This helped test H3 and ascertain if engagement and influence were associated or separate components of reflection for the participants in the experiment group. An analysis of the scatter plots revealed many outliers and a nonlinear association between level of influence for each intervention and the level of engagement. Therefore, assumptions of the Pearson correlation were not met. Kendall's coefficient was used instead to determine if there is a monotonic relationship between the two variables. There was a weak, negative association between influence level and engagement level, which was not statistically significant, for intervention 1, $\tau_b = -.171$, $p = .396$. Similar weak negative association was found for intervention 2, 4, 6, 7, 8 and 10. There was a weak positive association between influence level and engagement level, which was not statistically significant, for intervention 3, $\tau_b = -.050$, $p = .793$. Finally, there was a strong, negative association between engagement and influence rating for intervention 9, which was statistically significant, $\tau_b = .600$, $p = .002$. The findings indicate that there was little statistical significance to indicate a positive or negative relationship between levels of engagement and level of influence for each intervention. Thus, it can be argued that engagement in the interventions is separate to level of influence of the intervention.

8.5 Summary

In summary there was evidence that the TTM could be applied to a sport fan and travel context. Yet there was little evidence to support any intervention effect on the travel behaviour of sport fans. For example, the multi directional movement of participants was typical of the stages of change and supports Prochaska and DiClemente (1992) and Prochaska and Norcross (2007). Therefore, the findings can be considered reflective of what is prescribed in theory. Thus, supporting the hypothesis (H2). The findings are only partly supportive. For example, there was no difference in SoC scores between the Experimental and Control groups. Thus suggesting little intervention effect and moving some way to rejecting H3. Once again discussion took place as to the utility of the interventions. Findings suggested that respondents continued to have an attachment to the car. So despite matching interventions to the discernible nature of stages, the behavioural beliefs of the participants did not alter. Similar to Adams and White (2005) and Heath and Gifford's (2002) criticism, stage matched interventions may induce some change in cognition but this is not followed by actual behaviour change. However, the lack of actual behaviour change was underlined by the constraints of the case study. As West (2005) purports application of the TTM often fails to ignore strong contextual determinants of behaviour and this may be seen in the SoC classification. Indeed, sport fans were not characterised as prescribed by the theory and thus, the context, rather than the model may have been the underlying factor here.

Analysis of the PoC partly supported the prescribed theory. For example, in taking the composite scores of Experimental and Behavioural PoC, the findings reported that Experiential PoC items were prevalent in the early stages. This aligns to the theory and helps support the hypothesis (H2). However, when looking at the individual PoC items between the two SoC, the t-test revealed statistical significance and higher engagement in items not usually associated with earlier stages. Thus, these findings deviated from expected constructs whereby those in the higher SoC are more aware and respond to change mechanisms. Discussion did focus on where PoC are used across the SoC construct. Similar to authors such as Rosen (2000), there were difficulties in synchronising SoC and PoC. Given this, it is possible to consider travel cognition as a tandem approach (thinking and doing) using Behavioural and

Experiential processes at the same time, across early SoC. Examination of the combined Experiential and Behavioural scores took place across Time (pre/post intervention) and between groups (Precontemplation and Contemplation) for the Control and Experimental Groups. The mixed ANOVA reported inconsistent interaction between the factors. Thus suggesting little intervention effect and moving some way to rejecting H3. Discussions suggested that the data may have been skewed by the methods used in data collection in both studies. The inclusion of a mid-point test in the experiment may have provided a more accurate reflection of participant responses alongside the post intervention responses.

The difficulty in determining stage based effects was apparent in Self-efficacy results. The level of confidence (Self-efficacy) to abstain from car use when travelling to the stadium was balanced across the groups and between stages. Nonetheless, in practice, few chose to apply this level of confidence to changing their travel behaviour. No differences were found pre and post intervention in the experimental group SCQ scores – thus rejecting H3. Similarly, there was little significance pre and post intervention in the control group. Yet these findings were aligned with the prescribed theory, helping to support H2. For example, Velicer (1990) suggest that self-efficacy is strongly influenced by performing new behaviour, and thus, those in the early stages are not effected by self-efficacy principles of behaviour. But once again, it brought up questions of relevance in the use education based marketing interventions when trying to manipulate Self-efficacy scores at the lower SoC.

Finally, Decisional Balance items reinforced the view that sport fans were adamant about their travel behaviour yet were fully aware of the implications (positive and negative). This was common across the control and experimental group. For example both groups reported “My friends and family think I should consider other means of getting to the stadium” as the lowest ranking decisional balance item. The findings align with the prescribed TTM – partly helping to support H2. For example, the similarity across the groups, pre and post intervention reinforced the concept that change for Decisional Balance is placed higher up the stages. So it could be argued that any stage effect in this study is limited as it only comments upon Precontemplation

and Contemplation. Moreover, it could be argued that the interventions had little effect on DB scores – thus rejecting H3. However, there was a significant change in Con scores pre and post intervention, with a lower Con score post intervention. It was suggested that the underlying variable may have been the case study – where recent travel experiences may have impacted upon the Pro and Con balance.

In reviewing the ratings of the interventions, the findings did present a consistent message. For example the sense of commitment to others, the anxiety towards health and the environment and finally, concern for social approval were all elements of the most engaging interventions received by the Experimental group and reflected across the findings.

8.6 Limitations of study two and three

The obvious limitations relate to the small sample size which has had an impact upon the level of analysis surrounding SoC categories, such as those in Action. Given the fragility of the sample, under and over estimation of the impacts can occur. However, where necessary caution was noted throughout the findings and discussion of the study. Nonetheless, the challenges in data collection has had a direct impact on the sample. For example, responses were collected prior to the start of the rugby matches and at half time. Consequently, there was a very clear time constraint on the participants - most participants were concerned about getting to their seat. Furthermore, it became apparent that some respondents rushed the completion of the questionnaire with some non-completions. Moreover, some participants seemed apprehensive and this progressed to annoyance at the length of the questionnaire prior to the match. This may have had an influence on the response (positive or negatively) and the consideration of each item within the questionnaire. Coupled with the time constraint was the weather conditions. Each time a match was held and data collection was attempted, the weather was cold and wet which may have hastened the respondents to complete the survey. Consequently the data collection and the logistics of the questionnaire should be reviewed to ensure participants have more time completing the questionnaire.

This leads on to the approach to longitudinal data collection. Across SoC scores, some PoC items and some SCQ item scores, there were higher scores before the intervention than after the interventions. Discussions have leaned towards respondent bias due to researcher influence or context (most respondents in the pre interventions survey had just got to the stadium and experienced a range of journeys in length and time). To eliminate questions over respondent bias in the first round of surveys, a mid-point survey should have been undertaken. This would have allowed the researcher to assess TTM scores against the base line scores. Moreover, it would have provided a further indication as to the effect of the intervention on participant scores post intervention.

Whilst the use of a longitudinal approach to this study has been fully justified in chapters four and five, drop out still occurred. Nevertheless, the communications strategy outlined in chapter six and evidenced in appendices 1 and 2 had assisted in maintaining a small dropout rate and a relatively high response rate (58%) for such studies. Equally, the communication plan may have assisted in overcoming the participant fatigue associated with a longitudinal study and indeed, a rather long self-reporting survey. Although self-reporting surveys are common place with transport and are comparable with other studies, this technique may have provided some bias in the findings. Thus, caution should be given to the results.

However, methodologically, a number of concerns were highlighted in the discussions. First, the abstract nature of some of the items and duality of meaning, especially in SCQ items, suggest the need to review some of the measures. The TTM measures used in this study were based on previous studies and have been used in various context – e.g. the URICA readiness to change scale. Moreover, this study showed the items to be internally reliable. Nonetheless, through discussion it was noted that the questionnaire items may not have reflected the context of the participants. Consequently, future studies may look at adopting alternative techniques, such as motivational interviewing to explore items from a participant led approach across PoC, Decisional Balance and Self-efficacy. Alternatively a larger pool of PoC items could

have been used and then reduced to determine the most valid items. Similar approaches have been adopted by Marcus et al. (1992) in their TTM questionnaire development.

Second, the length of items created some animosity during data collection. Using even shorter number of items in the questionnaire might be an option. However, the author remains firm that this could reduce the validity and reliability of the method. In addition, Schmitt (1996) argued that the short length of measure may impact on the level of acceptable alpha. Rather than a review of the length, it may be more appropriate to explore the relevance of the items within the questionnaire.

Third, a more fundamental limitation appeared from discussions. Should all this underlying knowledge of the target sample have been collected prior to the design and piloting of interventions? Yes, of course a greater knowledge of the target group may have assisted in targeting interventions to participants particular SoC and the associated PoC, Decisional Balance and Self-efficacy constructs prior to any intervention design. This approach proposes a complete assessment of individuals rather than trialling theory based interventions on a group (as completed in study one). Moreover, a more targeted approach that is specific to each participant's characteristics may assist change behaviour approaches rather than a suite that covers all eventualities. Nonetheless, this requires a mammoth level of resources if one is to make major changes beyond a specific segmentation and look towards interventions matched to individuals across entire regions. However, caution is noted, because despite an awareness of the impact travel has on the environment, health and the need for social approval across this group of participants, little movement towards action was noted. Indeed there were challenging in identifying discreet SoC and aligning characteristics of PoC to the SoC. Thus, investing large amounts of resources into mass travel behaviour programmes needs to be very carefully assessed.

In terms of future studies, the overarching method used here may need to be reviewed. Applying a suite of interventions that cut across all the SoC and targeted the group rather than individuals may have reduced the impact of the interventions. The original

premise put forward was that many individuals may have been at various stages across the SoC and that a suite of interventions that reflected such variety may have suited the case study. Nevertheless, the concentration of participants at Precontemplation may have reduced the impact of interventions targeted at the latter SoC. However, it must be noted that participants classified at Precontemplation and Contemplation within this study did not fit the prescribed theoretical characteristics of these stages. Thus, an alternative staged matched approach may have generated similar results.

Finally, there was consistent discussion about the appropriateness of the case study. These centred on the constraints that context can put upon a person's ability to change. In this instance those constraints are the timing of the match, location of the venue and relative infrequent nature of the trips. Thus, the underlying cause of participant behaviour may have been the characteristics of the case study and not just the design of the theory led interventions or challenges in operationalising aspects of the TTM. As noted in chapter four a single case design and small sample can provide over estimates and underestimates as noted by Moser and Bamberg (2008). Whilst the author accepts these limitations, it must be noted that caution to these findings have been noted throughout the work. Moreover, it has never been suggested that such a case study approach should not be seen as representative of the entire sector. Nevertheless, this study has provided an insight into a field of research that has little existing research (see the need for study – chapter one) and should be seen as a prelude to further research.

Chapter Nine

Study Four: Post Intervention Interviews

9.1 Introduction

This section explores the more qualitative and idiographic aspects of participant engagement towards the interventions received. More specifically the section tests hypothesis 4 (H4): 'The existence of travel behaviour cognition will not motivate the sport fan to achieve travel change'. This hypothesis was established in recognition that participants sit within a social reality that incorporate individual, group, institutional and societal levels (Guell, 2012 and Lampropoulos, 2000); indeed more than one factor may be involved in a particular situation and influence behaviour. These arguments can also be applied to this study. For example, in study 2 there was reference to the case study context being a variable that might influence the travel behaviour of participants. It was also suggested that the context may have had an impact upon the effectiveness of the marketing interventions used. Given the context of sport fans it was important to consider how respondents reacted to the marketing interventions, their interpretation of the messages, participants' level of awareness of the externalities related to car use and finally, their travel intentions. Indeed, exploring these elements within the sports fan context will provide further insights into sport fans and the factors that influence them. Authors such as Clifton and handy (2001), Kenyon and Lyons (2003) and Mutrie et al. (2001) have utilised qualitative techniques, such as interviews to further understand the factors behind travel behaviour.

9.2 Measure

The questions used for this study were confirmatory in nature and were used to test hypothesis (H4) 'The existence of travel behaviour cognition will not motivate the sport fan to achieve travel change'. The outcome was a series of semi structured interviews based upon theory (see appendix 9 for interview questions). According to May (2011) semi-structured interviews present a compromise of data collection. A structured approach may provide little movement where exploration of personal experiences is needed within this study. On the other hand, an unstructured approach may offer little constructive discussion towards the achievement of the hypothesis. Thus, a semi-structured method allows for a hybrid approach. Equally, it is seen as the dominating

technique in social research and intervention analysis (May, 2011). In support, Harden et al. (2004) exalt the virtues of semi structured interviews suggesting they build a path between opposing structured and unstructured approaches and allow conversation to take place whilst delivering meaning. Once again this methodology harks back to the philosophy of social realism investigation where the individual, social and contextual dimensions of transport are explored (Kane and Mistro, 2003). Indeed they suggest that adopting several methodologies will develop skills beyond technical aspects of transport research. The questions assist in a deductive approach to the coding where there is a certain degree of a priori categorisation. These questions are couched within social cognitive theory (SCT) and are reflected within aspects of the TTM (see figure 4) whereby SCT explains the social nature of experience and perception which is grounded in phenomenology. Whilst Coolican (2014) argues this setting follows a more inductive approach, the confirmatory nature of the questions refer back to a process of deduction – in other words a hybrid approach to coding themes as discussed by Fereday and Muir-Chochrane (2006). The focus of the questions relate to constructs of observational learning and experiences which is governed by 4 functions attention, retention, production and motivation. These are discussed further below.

The first set of questions focused upon attitude, attention and retention. The purpose here was to explore how the participant behaved towards the intervention and their responses after receiving the interventions. For example, what factors increased or decreased the amount of attention paid to the interventions. Moreover, what were their actions and cognition on receiving the interventions? The second phase of questions referred directly to attention and social norm. The author was looking for a connection between the intervention design and how it was perceived by the participant. More specifically, the level of attention given to social norm reflects aspects of the interventions theorised earlier in the thesis (see chapter six and table 9) and level of motivation. The third set of questions focused on production, retention and motivation. Production refers to behaviour into action and self-observation of that action. Additionally, the focus on motivation linked to a positive negative valence as an outcome of being in the experimental group. Finally, the fourth set of questions focused primarily on motivation and retention. Here the questions concentrated upon

participant's mental images, cognitive organisation and memory recall. This fed into aspects of intervention design and motivation where imagery may have increase self-efficacy and enabled cognitive changes.

9.3 Procedure

Invitation letters were sent to those participants in the experimental group who had completed and returned the post intervention survey. Initially only 3 positive responses were received. After two weeks, a further invite was sent to the remaining participants from the experimental group and a further 6 more responded. Despite arranging interviews on a number of dates with all 9 potential participants, only 6 out of the 9 were interviewed. Whilst this is an extremely low response it does reflect similar studies that have evaluated interventions. For example, Dale and Hanbury (2010) interviewed 6 participants to identify which health related interventions were perceived to be more or less effective and to assess the difference between the behaviour change techniques and factors perceived by the participants. Similarly, Boyce and Neale (2006) suggest that individual interviews with a small number of participants is appropriate when participants are asked about their experiences and expectations of a certain programme (intervention).

The 6 interviews took place between the end of September 2014 and October 2014. Unlike Mutrie, who conducted post intervention research after six months focusing on long term change, this research conducted the interviews as close to the completion of the intervention distribution as possible. It was hoped that this approach would allow a reflection of participant decisions and enable a recall of short term memory of the interventions. This reflects the recommendations of Adams and White (2003) and Littell and Girvin (2002) where empirical studies show short term behaviour change from the TTM rather than the long term behaviour change.

The duration of the interviews varied from 10 minutes to 25 minutes depending on the depth of answers. The interviews were conducted over the telephone and all were recorded. Prior to commencement, participants were read a participant information

sheet and asked to agree or not agree with the terms and conditions of the research (see ethics procedure in appendix 10). For confidentiality and anonymity each participant within the transcripts were given a reference number.

9.4 Data analysis rationale

As noted earlier, the questions focused on participant experiences and personal perspectives. This naturally follows an interpretative phenomenological analysis (IPA) (Smith & Osborn, 2003) whereby IPA aims to explore in detail the personal experience of the individual and explore which component of the interventions were perceived to be more and less effective (Dale and Hanbury, 2010). Nonetheless, IPA is dominated by emergent themes and focuses less on a priori categorisation. Moreover, the responses within this study were varied and could have impacted on the depth of personal reflections required for an IPA approach. As an alternative a template analysis was considered. This suits structured analysis across a data set with codes linked to expected and relevant theoretically constructed themes (King and Horrocks, 2010) and assists the achievement of H4. Outlined by Crabtree and Miller (1999) in Fereday and Muir-Cochrane (2006) and applied to Psychology by King, it has been used in many contexts such as tourism (Andriotis, 2012), health care (Goldschmidt et al. 2006) and the workplace (Poppleton et al. 2008). Using a more social realist philosophical position⁶, template analysis seeks to discover the underlying causes of human phenomena – in this case the personal insights into which components of the interventions were more and less effective.

Using King and Horrocks (2010) and Langride (2004) the following process was applied. **Stage one** – descriptive coding required the researcher to read through the transcripts and to note relevant material with brief comments. These comments were not attached to any theory or codes but were seen more as preparatory notes for the preceding stages and initial template. **Stage two** – Initial template application. As noted earlier the earlier stage of analysis consisted of a priori codes – themes

⁶ Robson, (2002:32), refer to philosophic realism as the reality to whatever it is in the universe (i.e., forces, structures, and so on) that causes the phenomena we perceive with our senses.

expected from literature. An advantage of this approach is that these codes can be modified as the process progresses. After a review of the first 2 transcripts, an initial template (see appendix 11) was applied to the whole data set. It can be seen from the appendices that these are broader with less sub level themes. This follows a hierarchical coding system prescribed by King and Horrocks (2010) whereby a set of common themes are placed at level one and the preceding lower levels (level two and three) reflect sub categories. These are more prevalent in stage three. **Stage three** – A review of the initial template provided more in-depth hierarchical coding and shows a furthering of detail in sub categories two and three (appendix 12). These were then applied to the remaining transcripts and also the initial 2 interview transcripts. An example of this process can be seen in appendix 13. **Stage four** – interpretation followed the coding and once again this adheres to King and Horrocks whereby salient themes related to the effectiveness of the interventions experienced by the participants. These salient themes are not solely based on frequency across the data set, but on emphasis and the attachment of value placed on them by the interviewee. This approach is supported by Robson (2008) who suggests that placing emphasis on emotional attachment in realism oriented research supports the underlying philosophical construct of the study. The results of this analysis can be found in the next section.

9.5 Findings and Discussion

Analysis of the interviews provided 4 level one themes that evaluated the effectiveness of the interventions experienced by the participants and its impact on behaviour. These were (1) Initial reaction to interventions, (2) post intervention travel behaviour towards the stadium, (3) post intervention travel behaviour to local venues and (4) engagement with interventions. Under 'initial reaction' 2 level two themes appear – 'positive response to interventions' with 2 associated level three items, and 'negative response to interventions' with 2 associated level three items - refer to figure 31 for the final template analysis mind map. 'Post intervention travel behaviour towards the stadium' posited 2 level two items - no change in travel behaviour due to personal situation and stadium location and match factors determine no change in travel behaviour. 3 level three themes emerged from the second order level, and 2 from the latter. 'Post

intervention feelings towards travel to the stadium' developed 2 level two themes. From the responses categorised in positive attachment (level two) 2 level three themes emerged. The second level two theme – 'continued attachment to the car' – also reported 2 level three themes. 'Engagement with interventions' revealed 2 level two themes – 'intervention attraction' and 'memory recall'. Intervention attraction developed 2 level three themes, whilst memory recall revealed 2 level three themes.

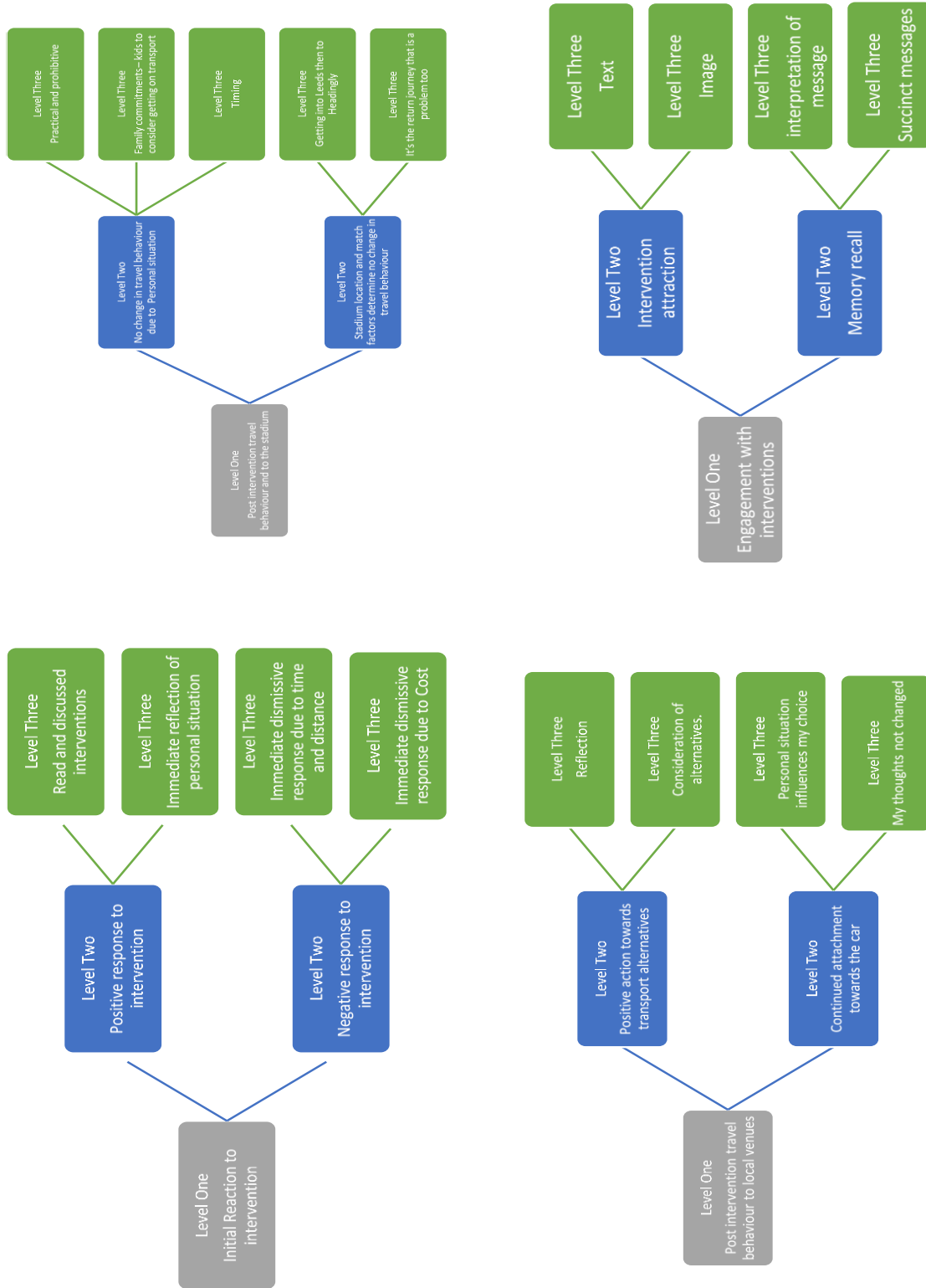


Figure 31 Template Analysis Mind Map

The following section offers a discussion under each theme and sub theme using direct quotes from the participants. These discussions are also framed within the literature and provide linkage to findings from chapter three through to chapter eight. The following discussions will predominantly focus on H4 but also refer to H2.

9.5.1 Initial reaction to intervention

9.5.1.1 Positive response to interventions

Read and discussed content

The purpose here was to explore how the participants behaved towards the intervention and their responses after receiving the interventions. Moreover, what were their actions and cognition on receiving the interventions and were the interventions effective (H2)? Moreover, exploration of how engagement led to possible consideration of travel behaviour was required (H4). Evidently, there was a reasonable level of engagement with the interventions when received through the post. For example, discussion of interventions was noted as a positive reaction and participants were not dismissive. All participants read the flyers and the majority even discussed the interventions with their partners:

“When I first got them I read them and discussed them with my wife, I didn’t ignore them. I was interested in them...reading them and our thoughts were about the distance that we were away from the venue.” P001.

“I read them and looked through them and did discuss these flyers with my husband.” P002.

Looking back at authors such as Biddle and Fuchs (2009) and Markowitz and Doppelt (2009) intervention success is dependent on building awareness through effective communication techniques and to generate dissonance with current behaviour. Whilst the latter cannot be assessed yet, it is evident that these interventions have generated a connection between the participants and induced a reaction that is couched in

cognitive processes (reading and discussion). The results do suggest a high level of engagement. And thus, by engaging the participants in information that communicates the risks of certain behaviours; identifies the impact of environmental problems and clarifies the influence that participants have on the environment, the flyers do offer an opportunity for visualising self-efficacy as noted in chapter six.

Whilst the majority of participants noted this experience a positive response, there were some exceptions where participants took a more critical view of the interventions themselves rather than the actions taken immediately after receiving them:

“I read all the flyers and thought that some of the flyers didn’t make sense....so I left them and went back to them. I made my own opinions on what was asking on some of the flyers.” P55.

These comments highlight the difficulties in the design and promotion of travel behaviour change interventions when individuals cannot see how their actions impact on the environment. This can increase barriers to pro-environmental behaviour, such as the feeling of being overwhelmed and the perception of conflicting information. Nevertheless, this certainly shows an objectivity by the participants but also reaffirms the level of engagement. Whilst De Groot and Steg (2009) proposed that the environment and social importance is secondary to attraction and retention of participants, these findings suggest that the surrounding environment and being personally responsible seems to be an important factor emerging from the interviews. This is discussed further in the next section.

Immediate reflection of personal situation

What was surprising was the immediacy of the impact from certain participants. A number of interviewees presented a deep connection to some of the flyers and were even moved by the design and messages after receiving the flyers.

“I suppose because of the flyers that moved me most were all about children ... I was very interested in the flyers. And, moved by some of them.....So yes I was very interested in them.” P187.

The factors that were important within the participants ranged from family and children, through to the extent of pollution made from cars. These findings are reflective of Guell et al. (2012) whom clarify that modal choice is a complex web of physical, psychological, environmental and social factors. Indeed, these themes support the work of Chisolm-Burns and Spivey (2010) whereby biological/physical, affective/emotional, and cognitive factors combined can influence choice:

“Right, well the emphasis was on pollution for me, and using the car encourages that.” P001.

“The key message is we should encourage our children to be more active. It’s no new information - the concern is always there at the back of your mind, but the flyers reminded me and brought these things forward.” P55.

These factors emphasised by the interviewees somewhat mirror the ‘triadic reciprocal interactions’ of personal factors, behaviour and the environment (Lin, 2010, Bandura, 2002). So these findings are in agreement with a realism stance and propose a melting pot of factors that gain attention, retain interest and encourage some cognitive consideration of transport to and from the stadium and partly help reject H2. Nonetheless, the extent of this consideration and its influence is not assessed here. Further analysis of the interviews will assist in exploring these issues further.

9.6.1.2 Negative response to interventions

Immediate dismissive response due to time and distance

Whilst there was a high level of engagement from the participants this was counter balanced by an immediate disregard of the interventions as ‘irrelevant’ and ‘inappropriate’ by others. Underlying this negative attitude towards the interventions

were physical (distance) and cognitive factors (time and efficacy) summed up well here:

“Irrelevant to be honest...had the information been relevant, so the information, the flyers were quite good, however the flyers were not directly relevant because of the distance and time factor that it takes for me to get to the rugby league stadium.” P55

Respondents exemplified the competing priorities that face people and the way in which they make choices about travel which are couched in a perceived sense of logic and which are deemed to be well-justified. For example, in this study time and distance were factors that provided a rationale for the participants for being dismissive. This rationale and justification of behaviours is reminiscent of study one in chapter seven. These themes are also reminiscent of Fiske (2004) and refer to moral disengagement where individuals plot their behaviour on a continuum between moral engagement and disengagement (Bandura, 2002). According to Fiske (2004) and Seabright (2010) moral disengagement is the process of convincing the self that ethical standards do not apply to particular context by separating moral reactions from inhumane conduct. As noted throughout this study despite concern related to the environmental impact of continued car use, participants remained anchored towards their car. This could be attributed to moral disengagement and drift away from findings of Chen and Wu (2014) whereby a stronger environmental base has a mediating effect on tourism action and behaviour.

Immediate dismissive response due to cost

These factors are furthered by costs and the perception that car travel is not only convenient in terms of time and distance but it is also the cheaper option. Indeed, Jones and Sloman (2003) suggests that one's cognition is dependent on reality and created by the construct of the mind which is selective in encoding information, and imposes learned structure. These structures are reflective in the quotes below:

“... I am in a fortunate position that I don't have to save money and don't think of finances, I think I am at an age where comfort is important too” P187

“The flyers are not inclusive because for me the timings and costs make alternatives prohibitive” P55

Whilst supportive and engaged in the messages, a number of participants were equally dismissive and suggested that price was a dominating factor in their immediate decision to dismiss the information. This is reflective of Handy, (2005) and Krizek et al. (2009) who found that perceptions of walking can be centred around an economic concern for the poor and a middle-class practice centred on concerns for health, aesthetics and the environment – exemplified well in these statements where participant 187 refers to comfort and participant 55 suggests cost makes it prohibitive to think of alternatives. This furthers Green (2008) in that modal choice is a bodily, social and political practice and linked to spaces, ethnicity and class.

What is emerging from these interviews is a strong moral justification for the car which originates from a number of personal factors that reinforce the continuation of the car to get to the stadium. Thus the interest taken from the interventions and whether or not it started a cognitive process is limited, providing evidence to support the null hypothesis (H4). Certainly it seems that there is a positive and negative attitude attachment to travel within the participants, and this is reinforced by findings from chapter six, whereby attitude shows limited mediating effect on behaviour (travel) intention across the theory led interventions. Indeed, whilst positive attitude is seen in many studies to be integral to intention (Biddle and Fuchs, 2009) it is displaced when applied to travel and travel choices in this context. Moreover, the concept of attitude may only be applicable to certain aspects of lives that are seen as a problem behaviour – such as health and addiction.

Thus, to move individuals from a positive attachment and justification in the use of the car to a negative perception and detachment from the car may require wider and longer term social engineering rather than smarter nudge interventions as suggested

by the DFT (2011). Without a doubt modal choice has deep rooted social, economic and personal constraints. Bramwell and Lane (2013) go further and suggest that many industries, including mainstream Tourism is far from sustainable and that changes beyond the minimal impact of corporate social responsibility may rest on significant changes in 'the wider environment and across society'. Whilst Cairns (2004) argues that smarter choices will dominate a short and long term shift in transport behaviour (Sloman et al. 2010), the findings in this study suggest this change will not occur within short term leisure trips.

9.5.2 Post intervention travel behaviour to the stadium

9.5.2.1 No change due to personal situation

Practical and prohibitive

The purpose of these questions was to explore the behaviour in action and report on the self-observation of that action after receiving all the interventions. The interviews were quite open at this stage and generally the interviewees explored motivational factors and how they were linked to a positive or negative valance as an outcome of being in the experimental group.

Across the board, the interviewees report no change in their travel behaviour despite concern for the environment and concern for others found in chapters seven and eight. There were three dominating factors for no change after receiving all the interventions – cost prohibitive, family commitments and timing. Similar to earlier sections these factors were perceived to be the most salient by the participants and superseded the concern towards the environment. Nevertheless, the concern for others remain and is exemplified by family commitment and timing. It seems to be a matter of practical utility - exemplified well here:

“....that’s really difficult because I know at the back of my mind there isn’t an alternative – in my current employment position”. P55.

“Ok, it made me think, but I think I am probably too set in my ways to change but it did make me think.” P187

“Obviously I know the ideas behind the flyers but in this instance it doesn't affect the way I travel to the stadium. It has altered my thinking, but not altered the way I get there.” P97.

“...from the answers I gave I think you will see that I felt guilty but feel that I have no other option. If I was younger and if I was given the information that I have now then, I think I would make it more of an effort....” P002

This battle between practicalities, awareness of impacts and concern for others is reflective of Sparks et al. (1997) and Trafimow et al. (2002) and Anable's (2005) 'malcontented motorists' where individuals present a number of well-reasoned barriers to the use of travel alternatives. Respondents are clearly capable of finding alternative ways to get to the stadium, yet find it difficult to carry out the action given constraints in the context. As a result, alternative behaviours are less likely to occur, as there is a lack of access, availability and perceived control:

“Because I am selfish and the distance I have to travel....I thought I was a little selfish before but being part of this has increased this feeling and I know more but still think I am selfish and will continue to use the car”. P002.

Whilst in Anable's study there is a suggestion that 'malcontented motorists' are held back by a weakness of PBC, self-efficacy items within chapters seven and eight report strong confidence levels in all participants. Thus, the confidence to apply their knowledge is evident within this study. Nevertheless, the participants choose not to apply it in their travel decisions to the stadium. Thus, they may use decisional balance and list the Pro and Cons, as in these interviews, and use this as the dominant cognitive process in their decision to travel to a home match.

Family commitments – kids to consider getting on transport

The consideration of pro and con factors (decisional balance) is furthered by the inclusion of family commitments and its consideration in the decision to continue to use the car to get to the stadium. This is articulated well by participant 115. Here it can be seen that there is a positive attachment to the car as it simplifies life and enables all activities to be fitted in. Moreover, the positive attachment to the car is furthered by suggesting that taking the car makes it far easier for families:

“... and other things I have got in my life – fitting everything in. My priorities influence me more than anything else. I did used to take the bus before I had family responsibility but it’s just for easier to take the car.”

In the context of travel to the stadium, it might be seen that the car is seen as the solution to satisfy a problem – getting to the match on time - rather than travel by car being perceived as a problem. At the same time, it may appear to the participants that imposing additional barriers and complications such as travel alternatives increases the uncertainty of getting to the match on time – which is paramount. This is exemplified well here:

“My thoughts do change when you talk about children and the environment but I still use the car.” P187.

The suggestion that the car is the solution to family problems is furthered by participant 113:

“I feel rushed what with everything and everyone and predominantly think this impacts on me. So I will always use the car. “

The recognition that the car solves the problem can be taken further. For example, despite agreement that a range of interventions can generate cognitive dissonance (Campbell et al. 2007; Abraham and Michie 2008; Verplanken et al., 1997; Boswell, et al. 2010; Schwanen, et al. 2012; Unsworth et al. 2013) and later travel behaviour, the

context of the study may be more influential than subject or content of interventions – as noted throughout this thesis. Take these results – in spite of participant engagement in the interventions and in spite of awareness of environmental concerns there is no change in behaviour. Indeed, all interviewees have purported that it is down to what is the most effective and efficient way to get to the stadium and the car seems to suit most personal situations in this context. Thus the determining factors are external of cognitive functions such as social values and attitudes towards environmental concerns. Simply put, participants don't consider there to be viable transport alternative to get to and from the stadium. Indeed the concept of time and location is further discussed in the next section.

Timing

What is interesting is that it is still about the group – the family – and the participants in this study perceive the car as a tool to achieving group priorities which reflects work of Fairley (2009) and Gibson et al. (2003) where travel decisions fit into the motives and activities before attending the sport venue. Moreover, understanding what works in what context before the match is demonstrated frequently by past behaviour. If successful, the performance of past behaviour strengthens feelings of self-efficacy and attaches positive decisional balance to the behaviour (Verplanken and Wood, 2006). Whilst Fairley (2010) suggests that the influence of habit has not been proven in a transport and sport event setting it appears that past behaviour is a key determinant of future behaviour given the pressure on participant time:

“It's all about time for me, I don't seem to have the time...as it is I don't seem to have the time so wouldn't change how I get there.” P115.

“I did take note of these but given circumstance as they are, such as pressure on time, I can act on them up to a point but not wholly...it hasn't changed how I get there” P97.

“If I lived in <City>, I could jump on a bus to the centre, get the bus service to the stadium I might think of doing it that way – but I can't. Again this is all time permitting.” P55.

Whilst Anable (2005) proposed that stronger short term intentions may offer a more favorable response towards the promotion of travel behaviour change due to the greater perceived control and the convenience of change in the near future, findings suggest otherwise. Findings align themselves to that of Verplanken et al. (1997) whom purport as people repeat actions, their decision making recedes. Moreover, here it is found that normative choices and confidence in that behaviour as a solution to their own personal problems (getting to the stadium on time) supersedes any other concern:

“Usually the games we follow are on a Friday night. A quick bite to eat, grab the kids, get changed and out the door to <City> for 8pm.” P97.

This is supported further by Bamberg (2007) who suggests that people develop activity patterns and a lifestyle that is tuned toward the use of a car. Indeed Bamberg suggests that it is these lifestyles and behaviour that become the main barriers for taking into account alternative means of transport. As noted earlier in spite of participant engagement in the interventions and in spite of awareness of environmental concerns there is no change in behaviour . Whilst participants are not ignorant of the impact their behaviour causes, lifestyle choices such as family, time and convenience are extremely strong. These findings further support H4.

9.5.2.2 Stadium location determines travel behaviour

Getting into the city then to the stadium

The displacement of responsibility is also applied to the stadium and rugby club as the participants blamed location of the stadium within <City> as a determinant factor not to engage with alternatives to the car.

Getting to the city and then getting to the stadium via public transport seems to be a barrier. There is a mix of barriers here that resort to blaming infrastructure support and location. For example, spectator sport typically involves travel during off-peak hours on evenings and weekends. Whilst Grotenhuis et al. (2007) propose that these factors

can enhance the yield of off peak capacity, in reality the 'off-peak' services that support public transport alternatives provide an additional barrier to change. This is demonstrated well below where participant 001 considers the indirect travel and change of buses as an additional barrier to change:

"It would be nice to use public transport to get the stadium but it is just impossible from where we are. The timescale, the number of buses we would need and the changes. It would be 3 buses for us to get there...it is a lot easier to travel by car. Yes, if we were going to <name> city – it is just two buses and closer so it's probably worth doing than taking the car...".

Nonetheless participants did welcome the bus service that professional rugby league clubs put on but showed equal frustration towards the journey to get to the city:

"<City> have a bus service from the city centre to the stadium but for me it's about getting to the city in the first place..."P55.

"I'd be interested if I moved closer to the stadium or got a job in <City> and then I would consider it – but I don't – so I can't change." P97

The context of this study and findings are reflective of Rydin et al. (2011) whereby the Stadium is located in an urban space which heightens intercity travel – seen by the large number of aggregate miles travelled by fans (refer to chapter seven and eight). Moreover, due to sport played during off-peak hours on evenings and weekends, public transport options are more limited than during the working day. Consequently, the opportunity and suitability of alternatives perceived by the participants is limited. This supports previous discussion and findings where confidence in alternatives is low, further supporting H4.

As a solution within this context Grotenhuis et al. (2007) propose travel management systems that are integrated and cognisant of the logistical implications and to simplify public transport routes to a venue during match day. This is echoed by Kenyon and Lyon (2002) who suggest the use of integrated multi-mode traveller information could produce a modal shift, but the awareness and use of information, types of information available and of sources of information may continue to affect consideration of information. Indeed, what they both suggest may overcome the issue of direct services to the venue from surrounding communities and support the travelling fan who see the location of the stadium and match timing as a barrier to change. Whilst this might assist confidence level, it is complicated further by the issue of returning home after the match.

It's the return journey that is a problem too

Similar to Rydin et al. (2011) participants are interested in activities that minimise their travel and increase their confidence in their decision. For example:

“It's not just about getting to the stadium, it's about getting back too..... If I could get there by public transport – currently it takes me over an hour to get the stadium. if I could get there even in double that time in public transport and get back too – this is a key factor because if the game finishes near 10pm especially with work in the morning I can be in bed by 1130pm if I use the car. If I use public transport I could be in by 1230am...it's just not feasible.” P55.

“There again it is the distance we would have to travel and the number of buses we would not get to the stadium. To be honest it hasn't influence me.”

P001

Similar to Anable (2005) there seems to be an acceptance within the interviewees that public transport alternatives are morally right. Nonetheless, the lack of infrastructure support clearly frustrates the participants as noted by participant 55 'it's just not feasible' and thus, reduces their acceptance of alternatives. Rydin et al. (2011)

proposes the development of integrated travel interventions that cut across hard infrastructure changes and softer behaviour led methods. For example, rather than just broad initiatives at the mass population, pick one segment such as the travelling sport fan and consider the introduction of services that fit the return journey during off peak hours across a suitable radius to the stadium – thus increasing the feasibility and attractiveness of alternatives.

9.5.3 Post intervention travel behaviour to other venues

9.5.3.1 Positive action towards transport alternatives

Consideration of alternatives

This set of questions explored the extent to which the interventions may have influenced participants outside the confines of the journey to the stadium. In other words, has the experience indirectly affected travel decisions and consider of travel in other context. This approach is supported by Anable (2005) and Thogerson and Crompton (2009) where smarter choice travel interventions may assist in short term changes and greater perceived control due to the convenience of more local leisure pursuits and possibly less habit formation in the behaviour of the participants. Many participants have suggested that as a result of the interventions, they have considered alternatives:

“What it did do was help me consider other aspects of my life, for example, whether or not I could cut down on car journeys elsewhere.... The flyers have reminded me to think about using alternatives to get to other leisure venues – closer to me. The flyers certainly bring the issues to the forefront of my mind ...” P55.

Possible reasons behind this new consideration may lay in the reinforcement of negative impacts caused by the use of cars and the positive imagery towards using alternatives. For example, the most engaging intervention found in chapter eight was

intervention 10 (children worry). The focus was on the family and how transport and global warming can impact on others and provide cues to change and promote positive behaviour (stop and think before you travel). Moreover, the impact on one's health was a constant message across the interventions alongside the impact on (see chapter eight discussion). The anxiety towards health and others is noted across the results and may feed into the moral dilemma already articulated by the participants within this study, and a dilemma which is seen in other segments of the population (Anable, 2005). Certainly there is movement to thinking differently:

“The flyers make me think about sharing the car and sharing car journeys, we went to Wembley for instance. Rather than drive down separately he came across to me and we drove down together. This was a better decision for me.” P187.

“It has got me thinking, not so much the home matches, but when travelling away – to use public transport as opposed to the car. Perhaps this year it has spurred me on a bit more...Having said that, I think they flyers have helped me think about alternatives on a weekend game.....but certainly I would look to use more coaches for the away games now.” P97.

Reflection on my current situation

Whilst there wasn't a unanimous call for action between the participants, they all felt that the interventions forced a reflection towards their current travel behaviour, helping to reject H4.

Notwithstanding the lack of action noted earlier and in chapter eight, these findings support the work of Dudleston et al. (2005) who conclude that, although travel behaviour did not change between their three survey periods, there was a continuing increase in levels of travel awareness - consistent with prescribed movement from pre-contemplation to contemplation. These findings also echo the work of Bamberg et al. (2011) who concluded that driver's willingness to reduce their car was a stage

change effect. Moreover, Prochaska and Norcross (2007) notes that stage change occurs due to either developmental changes or environmental changes that occur in people's lives and that intention is only one type of change (DiNoia and Prochaska, 2010 and Castonguay, et al., 2003). Indeed some of these results offer positive reflections rather than intentions:

“I would definitely consider alternatives if everything was a bit closer”. P001.

“The flyers have changed me – I suppose I would check now about the options rather than just using the car – so it has changed the way I think about it, yes. So I wouldn't just jump into the car”. P97.

“Obviously some of the subjects, the matter on there certainly made me think to, you know. If you can put planning into it – there may be cheaper and greener options. I think reading all these flyers has heightened my awareness of these things.” P187.

Some responses were a more honest negative reflection of personality – referring to selfishness and guilt:

“.... The flyers did make me realise about pollution and everything else that goes along in the air... because I am selfish and don't think of the future, it didn't make me want to change my mind. I think it is selfish of me, but it is still a matter for me – the distance. If the venues are more local I would walk to the venues but it's only because it is walkable. If in other situations where I would need to use the car then I would.” P002.

Interestingly, Prochaska and Norcross (2007) concede as individuals become increasingly conscious about themselves and the nature of their problems and move progressively through the SoC, they are free to re-evaluate. Certainly self-revaluation

seems to have taken place here within all participants. From a realisation of selfishness, to an appreciation of the environmental impact driving causes. Prochaska and Norcross go on to propose that considerable opportunities for experiencing, guilt, failure, and the limits of personal freedom are found within Action stage. Yet findings in chapter eight show no participants from the experimental group in Action stage.

9.5.3.2 Continued attachment towards the car

Personal situation influences my choice

The findings suggest that the interventions have made the participants think about alternative methods of transport to venues other than the rugby league stadium. Nevertheless, they have also confessed that this consideration will not change the way they get to other venues. Indeed these malcontented motorists as put by Anable (2005) frequently drift from feelings of guilt by using the car, to feelings of unavoidability and frustration by using the car. Thus, there continues to be an attachment towards the car for these journeys:

“I would still use the car to other more local venues...it wouldn't change.”

P002.

“The transport... and where I work the car is the priority form of transport for me - to get the kids here and there and for us to move around.” P97.

“These flyers remind me of convenience and doesn't change my thoughts on using the car.” P115.

Findings corroborate earlier discussion and support the work of Chisolm-Burns and Spivey (2010) and reflect the triadic reciprocal interactions of personal factors, behaviour and the environment. The factors here such as convenience and family replicate earlier findings where participants justified their attachment to the car in order to solve problems and meet priorities in their personal situations. These themes also refer to the moral engagement continuum as described by Fiske (2004) whereby interviewees convince themselves that their moral and ethical standards do not apply

in this context. Undeniably, interviewees feel that personal priorities and pressure negate the known negative impacts of car use to and from venues and support H4.

My thoughts and behaviour have not changed.....

It seems as though in some participant's observation and learned behaviour derived from individual past actions generates a disregard of alternatives. Indeed there may be a total disregard towards considerations of alternatives where participants recognise these journeys as part of their routine. Once again, it is Bamberg (2007) who suggests that people develop activity patterns and a lifestyle that is tuned toward the use of a car:

"These flyers have not influenced me at all to be honest." P187

"It hasn't influenced because it's my own time.... not for normal journeys."

P115

"No – I don't think it has changed my thoughts..." P001

These findings provide further support for H4, whereby understanding the impacts of travel and being aware of their own travel behaviour has not influenced the thoughts and individual behaviour of the participants.

9.5.4 Engagement with interventions

9.5.4.1 Intervention Attraction

Text

The final set of questions reflected upon participant's mental images, cognitive organisation and remembering what they paid attention to. In essence it assesses the effectiveness of the interventions as a messaging tool and ultimately helps test H2 – theory led interventions have no impact on travel behaviour of sport fans. At the same time it considers the message design itself and if the message helped support any cognitive dissonance within the respondents – helping to test H4. This framing reflects

work of Goffman cited in Luhtakallio (2012) and the purpose was to make sense of speech, images or printed words and to structure the experience of these collectively. This applies well to the reflection and evaluation of interventions received and the experiences of individuals within the control group and reporting their collective experiences. Furthermore, using a template analysis allowed the analysis to be aligned to aspects of attention, retention and self-efficacy.

From the interviews, 3 lower order themes emerged – text, image and personal situation as dominating intervention attraction and ultimately engagement with the interventions. The following quotes reflect a strong association with the text:

“... Because of the pollution and the information... it really got to me...that’s why it was most engaging for me.” P001.

“I think the wording of the flyer connected with me more. To be honest the other flyers and messages were not particularly good – a little bit difficult to see what was being said. Clearer and shorter points would make the information better.” P55.

“the slogan and the wording...That’s all to do with the team and team effect, involving everyone including supporters, backroom staff, supporters – one for all and all that sort of thing....I get that. It did remind me of volunteering – could have been a coincidence -and feel a link to <City>. I feel it reminds me of being all inclusive and think the team and club are.....”P97.

These statements reflect aspects of explanation theory and intervention theory as noted in chapter three. For example, Markowitz and Doppelt (2009) conclude that the most helpful interventions include distributing pros/con information that builds awareness of existing behaviours. Participant 001 clearly presents an affiliation with environmental information. Participant 97 reflects an attachment to the club and offers an explanation as to why the flyers are motivating – the club, the volunteering and the ‘one for all’ mentality. This feeds into explanation theory which can assist in explaining why people do or do not practice certain positive behaviours. As Abraham and Michie.

(2008) notes a combination of explanation and intervention methodology is needed to guide the population through the relationships among knowledge, awareness of the need to change, intention to change, and an actual change in behaviour. So whilst actual change is limited within this study, there is a movement towards consideration of alternatives and this is supportive of existing intervention studies.

Image

In social marketing attracting and retaining the interest and enthusiasm of the audience is, according to De Groot and Steg (2009), integral to success and supersedes the underlying environmental and social importance. The findings supported this and as can be seen from the quotes here, image is extremely emotive.

“Seeing children worry on the flyers...I thought the picture it-self was very poignant to the message you were trying to portray. The story between the word and the picture together got me.” P002.

“Children are worried – a picture of a boy looking at of the car window. I suppose I am thinking of my own grandchildren and the youth and young of the country. And the fact that they can’t do anything about it and go along with what the parents can do so I can understand the concern and it moved me.” P187.

These statements reinforce findings from chapter eight where intervention 10 (children worry) was seen as the most influential. Whilst there is a broad message in the intervention it is also applied to the context of travel to the stadium. The approach taken in this study also reflects Thøgersen (2007) in Garling and Steg (2007). In order to maximise the chances of success, social marketing interventions should be designed towards targeted behaviour rather than just context. These are the involvement of the actor; whether it is a one time or continuing behaviour; and whether it is performed by individuals or groups. These thoughts are reflected in the themes from the interviews whereby strong image, coupled with a social and group responsibility creates engagement and influence:

“What attracted to the flyer was the picture and images and not the writing. Think outside the car – most engaging and most influential. It provides images similar to a holiday brochure...and add that to my favourite sport – it looked lovely.” P115.

“I think it was the visual aspects at first as I said before, being a rugby fan I noticed the rugby ball, and the text was less appealing.... Think outside the car - most engaging and influential. Probably because it got my attention being the rugby fan – connection between the sports that I follow and what the flyers was saying.” P97.

Thus it can be suggested that individual behavioural change is seen as being more effective as a member of a social group than in isolation. As Thogersen (2007) concludes, it is a collective thing and the collective is strongly represented by images that are important to the collective. Indeed, these comments support the justification of intervention design noted in study 1 and the placement of rugby images to attract participants to the message.

9.5.4.2 Memory Recall

Succinct Message

Whilst image is seen as indicator that may raise attention, maintaining interest may rest upon the message itself and the level of memory recall. Retention of message and placing that message in the decision making process is a key to decoding behaviour within a social setting (Chisolm-Burns and Spivey, 2010). Evidently, the participants noted a combination of text and image in the creation of a succinct message:

“Combined [Picture and Text] they are important and it was a strong message.” P002.

“The words and information was important – key phrases and what the message is saying rather than how it looks is so important”. P001.

Andreasen (2002) also noted sub text and cultural reflection alongside strong imagery. Furthermore, a strong image supports the sub text and through strong imagery offers a wider application to the message. This is reflected here where the images used in the study are broad yet the message is very specific to the context of the study:

“Parents and grandparents have to take responsibility because the children can’t so it is up to us. The image was very evocative but the words were high impact....probably 50:50 because of what I said earlier”. P187.

Killoran et al. (2005) supports the work of Andreasen (2002) by suggesting that there is no one single technique or theory that dominates the design of change behaviour interventions. Variations between population both within and between countries, such as attitude towards public transport or the private car diminish the potential of comparative studies. Nonetheless, there does seem to be clarity between best practice of intervention design and theory and participant reaction. Whilst this is an important point, it does not clarify the extent of influence the interventions have on the participant. Indeed, earlier discussion has noted a distinct lack of influence the interventions have on actual behaviour.

Interpretation and understanding of message

Finally, when considering engagement with the interventions, the interpretation and understanding of the message is seen as a dominant theme. It could be argued that these two factors link closely to the level of scrutiny each participant gives to the interventions. This is exemplified in the quotes below which are the participant’s reflection on the key messages of their most engaging and influential intervention received:

“I think the message is that the world, if we are talking world and country, would be a better place if we all looked at the bigger picture.... regarding pollution.” P002.

“I understood the message....it’s a way of cutting pollution ... to change the way you get to the stadium but for closer journeys within two miles. Looking at

the information received.... Like $\frac{3}{4}$ only travel 2 miles....it is quite worrying.” P001.

“If you walk and get a bit of exercise as well as seeing outdoor sport you are going to get more out of life rather than the television...key message.” P115.

“It’s the parenting aspect...I mean the message. I have a thing about parents not providing their kids with enough exercise. When my children were young we took them to rugby, football, karate you name it. Today I just don’t think parents do enough and don’t encourage the children.” P55.

This level of scrutiny is also linked to persuasion and can be mapped against a continuum from close scrutiny (central processing) to peripheral processing whereby participants don’t reflect nor recall the messages received (Choi and Salmon, 2003 and Kaptein et al. 2010). Whilst the level of recall is not measured within the interviews the principles remain. For example, engaging people by addressing factors of personal relevance are likely to be more effective than those aiming simply to raise awareness or impose changes in the physical and economic environments (Philp and Taylor, 2010).

9.6 Summary

This chapter tested hypothesis 4 (H4): ‘The existence of travel behaviour cognition will not motivate the sport fan to achieve travel change’. The underlying assumption was that as result of participation, the respondent’s awareness of the externalities from car use would increase yet their behaviour would not change. Once again these assumptions came from a premise that context may be the underlying factor in changing the behaviour towards alternatives travel modes. So in other words, despite receiving marketing interventions that were targeted to context and change behaviour concepts, change behaviour would not take place. Indeed, despite engagement and interest, the interviewees expressed a strong moral justification for the car. For most the car was seen as the solution to satisfy a problem – getting to the match on time -

rather than the car being perceived as a problem. Indeed, imposing additional barriers and complications such as travel alternatives increased the uncertainty of getting to the match on time – which was paramount to the fans. Thus, confidence in the ability to get to the stadium on time was the underlying factor in all this. Yet the interventions did force a reflection towards their current travel behaviour - a realisation of selfishness, to an appreciation of the environmental impact driving causes. In spite of participant engagement in the interventions and in spite of awareness of environmental concerns there was no change in behaviour to the stadium or other venues more locally. Participants referred to environmental cues as a barrier to change and provided strong justification for their current behaviours. The participants perceived alternative travel such as public transport as complicating a scenario that doesn't require solving. Interestingly the word habit was not mentioned in the interviews. Most were content with their current travel behaviour. If alternative travel solutions could satisfy participant concerns such as getting to the match on time, with friends and family, this may influence change in travel behaviour in the long term.

Across study one, two and three there were discussions about the relevance of the message (content) and the mode (flyers) and whether or not they were effective (H2). The results suggest a high level of engagement with the interventions and thus, offer an opportunity for participants to visualise self-efficacy. However, participants did comment on the difficulties in interpreting some of the interventions. Nonetheless, a number of interviewees presented a deep connection to some of the flyers and were even moved by the design and messages. Strong social imagery, coupled with a social and group responsibility created engagement and influence. These findings are reflective of Guell et al. (2012) and Kaptein et al. (2010) whom clarify that modal choice is a complex web of physical, psychological, environmental and social factors. Indeed, these findings support the due consideration of the context, the message and the target group prior to implementation of the interventions.

9.7 Limitations of the study

Once more the sample size had direct impact on the generalisability across the sample. Whilst an increase in sample size would provide an increase in reliability of

findings, the case study context would not allow for transposition across contexts. Indeed sport fans may differ because of different sports, location of sport venues and regional transport infrastructure.

On a methodological basis the varied length of interviews generated variance in the depth of answers. In future studies it may be more appropriate to send out interview questions prior to the interview. Future research may also benefit from face to face interviews because at times it was difficult for participants to recall their specific rating and indeed, to recall the reasons behind such ratings. Showing the marketing interventions once again could be an aide memoire. Nonetheless, caution is noted here. Whilst showing the interventions may provide a reminder, it may also provide a visual cue and influence the responses at the time of the interview rather than at the time of participation in the experiment. Finally, further guidance to participants should be provided above and beyond participant information to enable participants to fully connect between the experience and questions being asked.

Section IV
CONCLUSIONS AND RESEARCH IMPLICATIONS

Chapter Ten

Conclusions and Research Implications

10.1 Introduction

This last chapter summarises and integrates the numerous findings obtained across all three studies conducted during this research. Second this chapter indicates possible areas for methodological improvements. Generally this part of the chapter reflects on the research methods and implications of field research, sample size and resulting implications including an exploration of future comparative studies. The chapter reviews in detail the aforementioned points, whilst offering solutions to unresolved issues such as the applicability of the TTM in different context. It is hoped that throughout this chapter key guidance and insights can be drawn for policy makers and practitioners to implement effective travel behaviour interventions aimed at sport fans and other events including meetings, incentive travel and corporate events.

Given the lack of travel behaviour studies within sport tourism the principle aim of this thesis was to apply the TTM to a suite of marketing interventions targeted to and influence sport fan travel behaviour. The objectives of this research were:

1. The first objective was to apply TTM constructs to social marketing interventions targeted at sport fans. The purpose of this objective was to design a range of marketing interventions, mapped to the constructs of the TTM in order for these to be ranked against measures of intent.

2. By adapting measures from the TPB that explore attitudinal and behavioural items the purpose of the second objective was to establish the level of individual intent against theoretically designed marketing interventions. This would assist the study in two ways. First, it would establish the cognitions that underpin change in travel behaviour intention of sport fans and second, it would ascertain the most salient marketing interventions. The utility of the marketing interventions would then be empirically tested in further studies.

3. The third objective was to ascertain the extent of travel behaviour change in individuals using the TTM. By adapting measures that were used to test SoC and the relationship with the PoC, self-efficacy and decisional balance, this objective would be able to examine how effective the model was when applied to a sports fan context. It would also assist in determining which aspects of the TTM may facilitate travel behaviour change within sport fans.
4. Finally, the fourth objective was to explore the cognitive and behavioural effects of the theoretically developed marketing intervention. By using a more qualitative approach to data collection the purpose of this objective was to discuss cognitive and behavioural pathways implied by TTM and TPB theory.

The following section explores the findings against the hypothesis and the articulation and achievement of each hypothesis.

10.2 Hypothesis One

“There is a positive relationship between subjective norm, attitude and perceived behavioural control and intentions to change the travel behaviour of sports fans attending home matches in response to a range of information interventions”.

This hypothesis emerged from a lack of research targeted towards sport fans and their travel behaviour (see chapter one and two). Moreover, literature also revealed that that it was imperative to grasp an understanding of the underlying cognitions in the target group in order to encourage change. Changes in attitude, perceived control and changes in intentions and actual behaviour were seen as dominating factors in behaviour change and travel behaviour research (see chapter three). The literature also suggested the TPB had a stronger predictive utility through the Attitude, PBC and SN classification above and beyond other constructs. Therefore it was considered more effective to combine aspects of the TTM in the intervention design and use the TPB to measure intent and help predict behaviour. Thus, the researcher set out to

explore the intention to change future travel behaviour and to test this intent (dependent variable) against transparent and theory led interventions.

In order to assess the hypothesis a questionnaire based on transport related statements were used. These directly measured Attitude, PBC and SN within a travel and sport fan context. Level of influence in changing travel behaviour based on the marketing interventions were included in the questionnaire alongside decision difficulty (although not part of the TPB).

From a practitioner's perspective, the findings provided a glimpse into sport fan travel and the underlying behaviours that may influence a change in future travel behaviour. For example, descriptive analysis of SN scores found that friends and family were supportive of current travel patterns – the use of the car. Indeed, the car was seen as being socially acceptable. This reflected existing research (Bottril et al., 2009, Harvey, 2009 and Colins et al. 2007) where the car is seen as the prevalent form of transport to events. Discussion progressed to Attitude measures. There was an overwhelming positive attitude towards driving to the stadium. Respondents attached high value to the act of driving to the stadium. This is reflective of published work (Barff et al. 1982 and Innocenti et al., 2013) where comfort, cost and convenience are seen as dominating factors of travel choice. Descriptive analysis of PBC scores established that respondents felt confident about car use and when travelling to the stadium. By the same token, the findings reported confidence in finding alternatives to get to the stadium but this confidence diminished when asked if they were confident in using alternative ways to the get the stadium. Clearly respondents were confident in their ability but chose not to employ it. There were various suggestions as to why. First, their confidence levels may have been influenced by the social acceptance of the car. Second, the participants may have been wedded to past behaviours, reinforced by the routine of meeting friends and family. Finally, their confidence levels may have been influenced by locus of control and contextual challenges – travel time, location of parking, walking time, ritual meet up before and after the match and pressure of getting to the match on time. Combined, these factors may have helped disregard alternative travel modes. Notwithstanding, these findings are limited by the methodological

approach taken in study 1 and articulated in detail in section 6.4. Therefore, these should be seen as indicative rather than conclusive.

A Kendall's tau-b correlation was used to determine the relationship between TPB scores and level of influence of each intervention. Although the results were not consistent across the study, the indication was that SN had a mediating impact on the level of influence above and beyond other TPB components. The results helped reject hypothesis one in two ways. (1) There appeared to be an attachment to others within a leisure context. More specifically, respondents suggested that friends and family were supportive of respondent's current position – driving to the stadium was seen as a normative behavior. This builds on existing published work and furthers an understanding of sport fans and the differing factors that influence leisure and social travel. For example, this finding exemplified the concept of *communitas* noted by Burke and Woolcock (2009). In this sense, the community shares experiences related to the sport and this forms the normative behaviour within the sport fan (Funk et al., 2007). And in this case – travelling to the stadium. (2) The results did further the understanding of the instrumental acts that were important in the travel behaviour of sport fans. For example, the lack of mediating effect found in PBC was in contrast to other travel studies such as Darker (2009), where behaviour was perceived to be easier if individuals were confident in their own ability, resources and context. Chapter nine reinforced the limiting effect that context had on participants confidence in changing behavior. Indeed, travelling to the stadium was constrained by time, public transport access, cost or tradition/habit and thus the inclination to undertake behavioural change by the participants was overlooked. This certainly had an impact on Attitude. Looking at the results in chapter six, the indication was that Attitude did not have a mediating impact on the level of influence associated with the interventions. Likewise, it was suggested that respondent's Attitude to travel by car was nonchalant because of what Bohte and van Wee (2009) refers to as 'realm of concern'. In other words, it *is how it has always been* and therefore there was no consideration of change. In other words, participants were cognisant of their behaviour and its impact on others and the surrounding environment. Yet, because of the context in which travel decisions took place, there was a nonchalant attitude, reinforced by a positive social acceptance of car use. Consequently, the findings reject H1 "There is a positive

relationship between subjective norm, attitude and perceived behavioural control and intentions to change the travel behaviour of sports fans attending home matches in response to a range of information interventions". Yet the application of methods used in this study (see section 6.4) limit the strength of the findings.

Whilst the analysis of the theory led interventions did not directly achieve H1 – it did provide the basis for the other 2 studies in this thesis and it was central to testing multiple hypothesis. According to the respondents in study one, the marketing interventions were not influential in changing their immediate travel plans. The findings reflected the attitude of the respondents, whereby travel decisions were not a concern. There were a number of suggestions to explain low scores. First, it was suggested that the marketing interventions were seen as gimmicks. Yet they adhered to standards of good practice such as generating cognitive dissonance and increasing pro and con information through the message (Markowitz and Doppelt, 2009 and Jones and Sloman, 2003). Second, there was a concern that marketing campaigns alone were not sufficient techniques to change behaviours. Indeed, Anable et al. (2006) and Ratchford and Parker (2011) have argued that marketing campaigns are a singular strategy for a multi-faceted problem such as travel decisions. In defence, Kotler et al. (2002) and Firman et al. (2012) have claimed that social marketing campaigns have the ability to persuade and create social support for viable travel alternatives. Third, it was argued that the lack of influence found in the marketing interventions may have been caused by incorporating constructs of the TTM (namely SoC and PoC) to each intervention without clarifying first the readiness to change in the participants.

Clearly further work is needed to explore the use of marketing campaigns as a tool for travel behaviour change in sport fans. Notwithstanding, the transparent approach to the intervention designs has provided a basis for further comparative analysis and discussion above and beyond existing published work.

In conclusion, these findings suggest that unraveling and manipulating social norm antecedents may be the most direct way to changing travel behavior of sport fans. But given the limitations in the methods used to apply the TPB in this study (see section

6.4), it is premature to suggest that the other TPB components were irrelevant. Notwithstanding, the findings helped reduce uncertainty regarding how differences in content and context influenced travel behaviour intervention design. Indeed, the articulation of each intervention design has furthered application of the TTM in a new context and enabled future discussion of the theoretical constructs that underpin each intervention.

10.3 Hypothesis Two

“Sport Fans in different stages of change vary in their processes of change, self - efficacy and decisional balance ratings in line with the TTM theory”

From the outset the literature showed an incomplete application of the TTM within travel behaviour studies – often using a single construct of the model or superficial measures to test the four related constructs of stages of change, process of change, self-efficacy and decisional balance. Furthermore, an analysis of literature revealed no studies that focused on the travel behaviour of sport fans to a home match. Thus this study was the first to apply and test the TTM model to changing the travel behaviour of sport fans (see chapters one, two and three). To achieve the hypothesis an analysis of the results against the theorised model was undertaken. The interdependent relationship of each construct was commented on in turn. For example, the expected relationship between the SoC and PoC; the pattern of Self-efficacy items against each stage and the exploration of the Decisional Balance layers across each SoC. In profiling the sport fans travel behaviour and applying this profile to the constructs of the TTM this study helped ascertain the level of readiness to change travel behaviour in a sport and leisure context. Moreover, it provided an exploration of the antecedents of behaviour change indicators relevant to sport fans and it provided information for policy makers in relation to travel behaviour change at a local level of intervention.

Demographic variables such as gender, having dependents and being a season ticket holder presented little influence between SoC responses. These findings reaffirmed

existing work that suggested no systematic relationship with sport spectatorship attendance and demographics variables. This also reflected studies in transportation (see chapter eight). Consequently, it can be suggested that transport behaviour interventions within a sport event context that focus on demographic variables of gender, dependents and main driver are misplaced. In support, findings implied the PoC mechanisms within this study had no gender bias and as a consequence change behaviour interventions should be gender neutral to gain a broad and optimum effect. Nonetheless, there was a difference in main drivers to non-main drivers within PoC items. Main drivers showed a strong attachment to the car and presented less engagement with the mechanisms that, in theory, developed a shift in behaviour change. These findings were reminiscent of moral disengagement and a commitment to the car as the car solved their individual problems – in this case getting the stadium on time. Whilst at the same time they seemed to ignore the known and accepted impacts of their current travel behaviour. These insights were also reminiscent of work by Verplanken and Wood (2006) and Anable (2005) and provided further support that sport fans were not interested in changing their travel behaviours. Similarities remained between season ticket and non-season ticket holders across the findings and this suggests that interventions may sit equally well within the two groups. Thus, future interventions aimed at sport fans within this type of context may feel confident in focusing on season and non-season ticket holders

Overall the findings from study 2 and 3 are inconclusive as they provide conflicting results which both support and reject the null hypotheses. The indicative nature of these conclusions are reflective of the limitations noted in section 8.6 and should be read as such.

Pre intervention, 92% were classified in Precontemplation and given the SoC classification; it was assumed they did not recognise travel by car to the stadium as a problem behaviour. This supports conclusions in section 10.3 and 10.2 where respondents had a positive attitude towards the car and accepted it as a social norm. Post intervention, SoC classification suggested some relapse in the Experimental group and some progression through the stages in the Control group from Precontemplation to Action. A mixed ANOVA reported main effect of Time (pre and

post intervention) on SoC scores, whereby post intervention scores ($M = 6.89$) were lower than pre intervention scores ($M = 8.03$). It was argued that these results could reflect three things. (1) A relapse typically found in SoC which reveals an iterative process. (2) Experimenter effect and respondent bias where participant response may have been artificially high during the first phase of data collection. (3) Finally, context was viewed as the ultimate variable that constrained choices and ultimately, the response of the participants. Similar to Karg and McDonald (2011) these constraints are purported to be timing of the match, location of the venue and relative infrequent nature of the trips. West's (2005) suggestion that the TTM often fails to ignore strong contextual determinant supported further discussion. It furthered the suggestion that whilst the TTM has been applied to a variety of context, this is the first study in sports fan travel and due to the challenges in data collection and limitations outlined in chapter seven and eight, it is difficult to determine with certainty how the model behaves in this context.

Notwithstanding, the discussions did reflect on the accuracy of the URICA method employed in this study and the challenges in using self-reporting behaviour questionnaires. First, it was argued that the length of the questionnaire caused some animosity during the first phase of data collection and this may have skewed responses. Second, it was suggested that the abstract nature, duality and phrasing of some of the questions may have confused the participants. Whilst the items were internally reliable, methods such as motivational interviewing should be considered as an alternative method to generate future items in such a specific context as this. Ultimately, a larger pool of items could have been used and then reduced to determine the most valid items. Given these challenges questions remain over the accuracy of the SoC as a measurement and method that characterises participant's behaviour. Notwithstanding, there was a consensus (DiClemente et al. 2004, Migneault, et al., 2005) in the literature that individuals differ between early change behaviour and latter stages. However, the findings both supported and rejected this assertion.

Each PoC item was analysed against SoC groups in order to establish if the theorised relationship between the SoC and PoC existed in this context. To recap, the Prochaska and Norcross (2007) theorise that Experiential processes are predominant

in the earlier SoC. Behavioural items are traditionally associated with those in Action and Maintenance. Descriptive analysis, pre intervention, found that those in Precontemplation reflected a concern for others. For example, high mean scores were reported for Reinforcement Management which focuses upon reward sought after by others; Self-Liberation requires a commitment to oneself and others; and Counter Conditioning which suggests travel alternatives can be sought. Yet according to Prochaska and Norcross (2007) and Petrocelli (2002), these are more common in the latter SoC. Similarly post intervention the most highly rated PoC items reflected a commitment to others as well as an exploration of personal values and personal goals. These were the same for the control and experimental group.

Overall, it was argued that the difficulty in aligning PoC items with the SoC characteristics exemplified the challenge in applying arbitrary scores. Moreover, it was suggested that the findings supported Rosen's view that the use of change processes varies substantially across stages and no sequence of change processes is common to all behaviours. Given this, discussions centred on sport fan psychology and the context of this study. It was proposed that the high Reinforcement and Self Liberation scores were prevalent as participants travelled with others (73% travelled with up to 3 people and 20% travelled with 4-6 people) and this may have been seen as an opportunity for reinforcement and socialisation through travel and sport. In addition, it was argued that travelling with other fans promoted 'self-identification' within the group. Arguably, the difficulty is not with the TTM and the relationship with PoC and SoC, but with the context in which the model has been placed. This has been explored previously in section 8.6.

T-tests were performed to ascertain if there was a statistical difference in the mean PoC scores for those categorised in Precontemplation and Contemplation. However, there is some disagreement between authors as to the extent of the difference between those in Precontemplation and Contemplation. Prochaska and Norcross (2007) and Bernard et al. (2014) argue that Precontemplators do not re-evaluate themselves and experience fewer emotional reactions, Contemplators are most open to consciousness-raising techniques and respond to emotional arousal. More recently

Horiuchi et al. (2012) suggest little significant change between Precontemplation and Contemplation in the use of PoC items.

Pre Intervention, the t-tests reported significant stage differences in 9 PoC items, with a higher mean in Contemplation scores. These findings broadly supported the prescribed linear progression of the stages (DiClemente et al. 2004, Migneault et al. (2005); Bernard et al., 2014 and Bamberg, 2007) and helped, in part, to reject H3. Results from the t-test post intervention showed limited significance between the groups. For example, for the Control group significant difference was only found in 6 PoC items and their scores. Only 3 PoC items were seen as significantly different for the Experimental group. Interestingly, in all cases the mean scores were higher in Precontemplation than in Contemplation. Discussions leaned towards the challenges in measuring behaviour with a self-reporting survey. Even DiClemente et al. (2004) state that TTM measures don't always generate the same findings and classification. Similar to Rhodes and Claudio (2011) who note the strong evidence that outlines the nonlinear distinction between stages, these findings suggest PoC items were not used to move participants in a linear fashion from Precontemplation to Contemplation. These results also supported the work of Riley et al. (2008) who suggest that the use of PoC items are not substantially different across the stages.

As noted in section 10.3, the challenge in establishing discreet stages of change allied with PoC may have caused limited intervention effect. This has implications for practitioners wishing to design interventions to specific stages and processes of change. Given the mixed engagement with Experiential and Behavioural processes within these participants, it was suggested that one mixes these processes within the marketing interventions and moves away from stage based characteristics. But of course this emphasises the difficulties in applying psychological techniques associated with PoC to marketing campaigns as noted in study 1 and section 10.2.

Given the challenges in SoC classification, raw SoC scores were used as an alternative method to test the premise that PoC items move in parallel with higher SoC

scores. Pre intervention results suggested those with a higher SoC score tended to have a higher Behavioural PoC - $r_s(189) = .33, p = .001$, but equally those with higher SoC score tended to have higher Experiential score. This broadly supported the theory in that PoC items moved in parallel with higher SoC scores (DiClemente et al. 2004, Migneault et al. (2005); Bernard et al., 2014 and Bamberg, 2007). Post intervention, Behavioural and Experiential scores reduced as SoC scores increased. There were a number of possibilities for this. First, as noted earlier by DiClemente et al. (2004) the TTM measures don't always generate the same findings and classification. Consequently, these results may reflect the challenge in using these types of self-reporting surveys applied in this study (see section 8.6). Second, it was argued that the application of PoC items in this context may have caused this anomaly. Participants may have required clarification in completing the self-reporting survey. These comments were also reminiscent of work by Marshall and Biddle (2001) who suggest participants may be confused by the abstract nature of items such as Self-Liberation that focuses uses dichotomous points of reference "one's self and others". As such, it was suggested that a larger pool of PoC items could have been designed and then reduced to determine the most valid items for a self-reporting survey in this context.

Descriptively the Experiential and Behavioural scores, post intervention, showed a predominance of Experiential items in both groups (Control and Experimental). For example, Self-Liberation, Dramatic Relief and Social Liberation had the highest mean. These results aligned with theory. For instance, Horiuchi et al. (2012) and Rosen (2002) suggest that the use of experiential items are common in Precontemplation and Contemplation and tend to peak at the Contemplation stage. Of course, it was difficult to ascertain the use of PoC items across the latter stages of change as no participants reached Action. This limits the conclusions gained from this study and limits the discussion surrounding cross over between PoC scores and SoC progression.

The Self-efficacy scores ascribed to theory. Low levels of confidence were found in Precontemplators and a higher level of confidence in abstaining as one progressed through the SoC. Social SCQ items were the most highly ranked items, suggesting

an affinity with others. A common thread appeared whereby the importance of others within the group was defined, supporting earlier findings. So whilst the majority of participants in this study had no interest in changing their behaviour, the influence of the travelling group may provide future opportunities. Indeed, discussions pre-intervention explored the manipulation of social imagery as a tool to visualise goal outcome/settings in the design of social marketing interventions. The notion that sport fans are motivated by the group is furthered by self-efficacy results in study three. The findings reported social items as the most highly ranked items – suggesting once again an affinity with others – which is reflective of earlier conclusions. Indeed this feeds into the concept of a strong and shared sense of belonging towards the group. It goes some way to explaining why or why not sport fans travel behaviour could change. Nonetheless, overall post intervention findings reported an extremely low level of confidence in the sample. Whilst it has been stated by Prochaska and Norcross (2007) that participants do not need to accept they have a problem behaviour it may be a variable that clearly affects the application of the TTM within the decision making process of sport fans and their travel to the stadium. Indeed, it was suggested that the confidence levels reflected the contextual constraints perceived by the sport fans (Karl and Lyon, 2009). Once again, discussions then progressed to the challenges in applying the TTM to specific context (West, 2005) outside of addiction and health related studies.

Finally, t-tests were run to ascertain if there was a stage difference in scores. The tests revealed similarity between those categorised in Precontemplation and Contemplation. It was argued that the lack of stage difference in the lower stages is expected and aligns with work by Henry et al. (2006), Hildebrand et al. (2009) and Velicer (1990). For example, it was argued that Self-efficacy is strongly influenced by performing new behaviour, and thus, those in the early stages (in this case all participants in the analysis were at the lowest SoC) may not be effected by behavioural principles predominately used in self-efficacy techniques. Notwithstanding, this also highlights the challenges in the application of the TTM to this context and the way in which the Self-efficacy items were tested given the predominance of participants in lower SoC.

Decisional Balance results across study two and three partly support the TTM model, thus supporting H2. For example, in study two the similarity in Decisional Balance scores between the two groups (Precontemplation and Contemplation) echoed findings by Ling and Harworth (2001) and DiNoia and Prochaska (2010) whereby crossover between the pros and cons occurs between Contemplation and Action stages. Discussions did progress on to the applicability of testing Decisional Balance given the predominance of participants in early stages of change and expected similarities in scores. However, as the overall experiment was to test the impact theory led interventions had on the behaviour of participants, a base line score was needed. Notwithstanding, the author recognised the limitations of testing Decisional Balance at the lower stages of change in section 8.6. Notwithstanding, the results from the Kendall's correlation in study two, suggested alignment with theory, whereby Pro scores increased in parallel with SoC raw scores. Nonetheless, descriptively, the barriers to change (Con mean scores) were higher than the facilitators of change (Pro mean scores). Whilst this pattern was theorised, exploring each Decisional Balance item gave a clearer indication of the reasons behind the scores. The findings suggested that respondents were fully aware of the externalities caused by driving (negative impact on health and increased pollution) but at the same time were committed to the utility and instrumental value of the car (driving to the stadium is a pleasure). Following this, it was argued that the application of simple dichotomous statements in this context has its limitation. As Green (2008) purports travel behaviour is an individual, political and socially constructed process (as are other behaviours). Indeed, it was argued that in this study the participants were aware of the social and moral complexities that travel behaviour generates but ultimately, it was argued that given the context of the case study, Decisional Balance items might be superseded by perceived levels of control. Study three - post intervention, the mean scores for Pro and Con items reiterated the previous findings whereby a mixture of pro and con items were scored highly. This suggested an individual, political and socially constructed view towards travel decisions. It was suggested that the decisional balance derived from a mixture of conflicts seen within sport fans such as pleasing others; an environmental concern and achieving individual priorities such as getting to the match on time. Thus to influence Decisional Balance policy makers need to articulate to sport fans how and why alternatives can solve competing conflicts mentioned earlier. Indeed findings suggested that reinforcing group relationships, exploring emotional trust and

developing a caring and supportive environment within intervention activities will fit with the concept of 'communitas' witnessed within the sport fans.

The findings purported no difference between the decisional items of Precontemplation and Contemplators in the Control or Experimental group. The similarity across the groups reinforced the concept that change for Decisional Balance is placed higher up the stages and the results mirrored base line scores. It was argued that the similarities across the early stages fit the prescribed relationship between the SoC and DB behaviour (Prochaska et al. 1994, Ling and Harworth, 2001, Di Noia and Prochaska, 2010) and go some way to supporting hypothesis 2. However, this was slightly tempered by the lack of representation across all SoC. So the assertion that TTM does behave as prescribed is limited. Given the contextual constraints, the discussions did reflect upon the Decisional Balance as an accurate indicator of behaviour. It was also suggested that the items used in the study needed to be reviewed. Similar to earlier sections and following recommendations from Foster and Neighbours (2013), it was suggested that participant led items may be a more accurate reflection of Decisional Balance.

In summing up, the findings supported and rejected the null hypotheses. For example, the findings highlighted the continuing debate surrounding the use of SoC categorisation and characteristics of each stage of change. Nonetheless, base line results align with theory as experiential PoC were predominate in Precontemplation and Contemplation. However, post intervention the pattern was not consistent with theory. For instance there was a common thread of 'seeking out others' and a strong sense of relationships in the early stages of change. According to the theory this is usually seen in the latter stages of change. Yet it was suggested that these PoC were reflective of the sport fan and their psychological make up. Evidently there appears to be some justification to review where PoC items sit within the SoC, especially for this context. Decisional Balance behaved as prescribed in theory – with barriers to change predominant within the group. Confidence levels were also low and the scores between those in Precontemplation and Contemplation remained broadly similar.

Nonetheless the findings echoed the social, political and cultural conflict that is apparent in the decision making processes of the travelling sports fan. For example, sport fans were aware of the negative impacts of driving to the stadium on their health and the surrounding environment. Notwithstanding, the majority of participants continued to use the car to get to the stadium. These conflicting and competing factors reflected the social realism in which this study took place and the associated constraints of the case study context.

10.3 Hypothesis Three

“Respondents in the intervention group were more likely to show movement in stages of change, processes of change, self-efficacy and decisional balance scores than respondents in the control group”

First and foremost in describing a suite of theory led marketing interventions (see chapter five) this thesis has moved travel behaviour studies on one step. Indeed, underlying this entire thesis was the premise that the TTM provided guidance for which to plan and design a range of marketing interventions – evidenced in study one and justified in chapter three. Despite other studies such as Michie et al. (2011) that present an overarching set of intervention principles, this study presented a more transparent approach to the design of social marketing campaigns in travel. By articulating and mapping the theoretical constructs to each marketing intervention it has enabled a further discussion of the theoretical constructs that underpin each intervention. It has also helped form a debate surrounding the process that led to the creation of such interventions. This type of discussion is lacking in transport behaviour (see chapter one and chapter three) and furthers the opportunity for comparable studies. It also reduces the risk that ineffective or unproven interventions may be adopted in further research related to this case study or context. In addition it allows for further testing of these interventions or indeed critique of the methods. This is also key in progressing the application of change behaviour models to travel behaviour interventions and more specifically the use of social marketing campaigns as the main type of intervention.

The next step was to test the theory led interventions on participants. In approaching the hypothesis a self-reporting travel questionnaire that used all four constructs of the TTM were used – stage of change, process of change, self-efficacy and decisional balance. All items were contextualised to travel and the context of this study. From an initial sample a control and experimental group were randomly picked and the experimental group receiving marketing interventions (flyers through the post) designed to alter their travel behaviour to the stadium. Upon completion of the distribution of the marketing interventions the control and experimental group were asked to complete an updated yet similar self-reporting travel questionnaire.

First, SoC scores were analysed. Findings indicated no interaction between the Groups (Experimental and Control) and within Time (pre and post intervention). Consequently it was argued that there was little difference in Groups, before and after the interventions were distributed. Thus rejecting hypothesis 3 (see chapter eight). However, there was a main effect of Time on SoC score that pointed towards a significant relapse post intervention. Four possible reasons were discussed. First, it was argued that relapse is a naturally occurring phenomenon with the TTM and SoC should be seen as iterative rather than linear. Second, it was argued that the marketing interventions may not have been effective in inducing actual change. Allied to this was the challenge in aligning SoC characteristics to the suite of marketing interventions (noted in section 10.2 and study 1). Indeed Aveyard et al. (2001) and Velicer et al. (1999) have argued that there is no consensus as to the most effective type of intervention and indeed scale of interventions used to move participants through the SoC. Third, it was suggested that the results could have been an example of experimenter effect, whereby their responses may have been artificially high when face to face with the researcher. As the post intervention questionnaire was completed in the home, without the constraints and pressure of getting to the stadium, the responses could have been more considered. Finally, the results may have been a consequence of context. As Sheeran (2002) suggests a person's ability to change is constrained by the context he/she finds himself in. This is supported by Karg and McDonald (2011) who purports that travel time, parking location, walking time, ritual meet up before the match and pressure of getting to the match on time can constrain

choices. These findings also support those in section 10.2 which referred to a 'realm of concern' and that the underlying context of this study may be the ultimate variable in dictating travel behaviour of sport fans. Given these limitations (which are explored further in section 8.6) the conclusions are tempered and should be seen as indicative.

Second PoC scores were analysed. Once again, the mixed ANOVA reported no interaction between the Groups (Experimental and Control) and within Time (pre and post intervention) on Experiential PoC scores, thus rejecting H3. There was a main effect of Time, whereby post intervention experiential scores ($M = 2.4$) were higher than pre intervention ($M = 2.0$) Experiential scores. It was suggested that given the abstract nature of some experiential items (Sutton, 2009 and Marshal and Biddle, 2001) participants may have struggled to answer the question fully in the first research phase as this was completed at the stadium and participants contended with noise, rain and the pressure of time (pre-match). Nonetheless, there was an interaction between the Groups (experimental and control) and within Time (pre and post intervention) on Behavioural PoC scores. The Control group had a higher Behavioural score pre-intervention ($M = 2.45$) than post intervention ($M = 2.27$). The Experimental group had higher Behavioural scores post intervention ($M = 2.6$) than pre intervention ($M = 2.25$) suggesting a higher engagement with Behavioural PoC items after receiving the intervention. Thus moving some way to support H3.

Nonetheless, this statement is diluted somewhat by the lack of significance in the main effects. For example, there was no main effect between groups (Control and Experimental) for both Experiential and Behavioural PoC scores. There were two possible reasons for this. First, it was argued that the lack of significance between the groups was down to a weakness in the application of social marketing campaigns as an intervention tool. As Luca and Suggs (2013) suggest, combining psychology constructs with a marketing campaign may have resulted in the messages being abstract, too subtle or ambiguous. As will be discussed in section 10.4, the challenge in establishing discreet stages of change allied with PoC may have also caused limited intervention effect. Second, context may have had an impact on the extent of any change in travel to the stadium within both groups. And this is an overarching

commentary on the suitability of this case study and its associated constraints of frequency of journey, location, time, cost and convenience on the sports fans travel choices. This is also reflected upon in section 10.6 and in the limitations section 8.6.

Intervention effect was also analysed for SCQ scores. Overall, the Experimental group exemplified a higher SCQ score than the control group. However, pre and post intervention, the Experimental group reported no significance between the two time periods and their SCQ scores, suggesting no intervention effect. Thus, rejecting H3. Interestingly the Control group reported significance between the two time periods. In Cravings SCQ score there was a higher mean rank pre intervention than post intervention. In Social SCQ scores, there was a higher mean rank post intervention. It was argued that these opposing patterns reflected a limitation in the items and that participants may find it challenging to visualise each scenario and apply it to levels of abstinence (Miller et al., 1989 and Breslin et al., 2000). Notwithstanding, it was suggested that higher Social SCQ scores reinforced the importance of others and the social aspect of celebrating a match with family and friends free from the constraints of car use. Of course, it was suggested that Cravings scores were once again, a result of experimenter effect, compounded further by the abstract nature of the items and that variables outside the experiment (such as the case study context) had an impact on pre and post intervention scores.

Decisional Balance scores reinforced the view that sport fans were ambivalent towards their travel behaviour. Yet they were fully aware of the implications car use (positive and negative) had. This was seen across the Control and Experimental group - post intervention. For example, both groups reported "My friends and family think I should consider other means of getting to the stadium" as the lowest ranking Decisional Balance items. Findings for the Pro and Con scores revealed a diverse picture. A main effect of Time (pre and post intervention) and Group (Experimental and Control) was found for Con scores. For Time, post intervention scores were lower than pre intervention scores. In this instance a lower Con score suggested lower perceived barriers to change. It was proposed that the scores could have been the result of the most recent experience of travelling to the stadium and this could have tainted the

response. Equally, the higher scores pre intervention could have been influenced by their most recent journey to the stadium. Unfortunately the questionnaire didn't provide an exploration of this. The implication of this was discussed in section 8.4 and in the limitations section. A main effect of Group (Experimental and Control) was also found in Con scores. The findings revealed that the Experimental group had more support for the car. This was not a complete surprise given earlier results where there was a social acceptance of the car in the group. Moreover, the higher Con score may have reflected respondent bias whereby those in the Experimental group were explicitly being asked to consider alternatives to the car. Given earlier SCQ results and TPB scores, it was suggested that the interventions may have had the opposite effect to what was intended and pushed respondents to defend their current travel decision. The mixed ANOVA for Pro scores reported no significance between Groups (Experimental and Control), nor within the Time frame (pre and post intervention). And no interaction was found between these factors. Once again the findings reject H3, which suggested that the interventions had no effect on Pro Scores. Once more, there were reflections on the utility of the interventions. It was argued that to move Decisional Balance in this context, where Pros are placed above Cons, may require more integrated interventions than a single social marketing campaign. Indeed, it was purported that an integrated intervention will need to dilute the instrumental and affective values attached to the car by weakening the social norms associated with car use, strengthening the alternatives to the car by placing an emphasis on social interaction and combatting against the contextual constraints of time, convenience, location and frequency of journey. These conclusions echo Higham et al. (2013) and Green (2009) where consumption of transport is seen as a relationship between symbolic, emotional and social factors.

As a concluding remark, the findings revealed that the theory led interventions had no significant impact on sports fans travel to the stadium. However, the challenges in application of the methods (outlined here and in the limitations section 8.6) such as: the lack of mid-point data collection; the abstract nature of some of the items in the TTM questionnaire; the context of the case study and use of a marketing campaign on a multi-dimensional problem, may have limited the accurate measurement and ultimately the effective testing of behaviour change as a result of the interventions.

10.5 Hypothesis Four

“The existence of travel behaviour cognition will not motivate the sport fan to achieve travel change”

To test this hypothesis participants from the experimental group were invited to attend an interview (study four) and explored the factors behind sport fan’s travel behaviour and their reaction to the interventions. The interviews explored the more qualitative and idiographic aspects of the study and recognised that participants exist within a social reality that incorporates individual, group, institutional and societal levels. There were four sets of questions that focused on (1) attitude (2) attention and social norm, (3) production and motivation, and (4) retention.

Findings indicated interviewees had a high level of engagement with the marketing interventions and deep rooted connections with interventions that reflected strong social imagery coupled with group responsibility. The findings supported the assumptions that modal choice was seen by many as a complex web of physical, psychological, environmental and social factors whereby the images created effective recall and provided participants with an opportunity to visualise positive outcomes. It was evident that the interventions generated a connection between the participants and induced a reaction that was couched in cognitive processes (reading and discussion) (see chapter nine). The high level of engagement may also have been due to the principles of the marketing intervention design which followed Jones and Sloman (2003).

Despite engagement with the interventions, there remained a strong moral justification towards the use of the car to get to the stadium. Yet in terms of travel to the stadium, the participants had a positive and negative attitude towards the use of the car – for example in still provided an opportunity for social interaction, but it was also recognised that it had negative impacts on the environment. This furthered the idea

that travel decisions were made within social reality and involved a complex web of factors. This social reality was furthered by group influence. Indeed the sense of group identify was a common thread throughout the three studies and not just the interviews.

Imposing additional barriers and complications such as travel alternatives increased the uncertainty of getting to the match on time – which was paramount to the fans. These barriers and complications were reflective of Pros and Cons in decisional balance and mirrored aspects of SCT found within the TTM. Indeed it was argued that the surrounding environmental factors created the problem and they (the participants) were forced to make a choice in how and when they got to the stadium – thus detached the travel externalities from their decision making. For example, for most the car was seen as the solution to satisfying a problem. The car was seen as a way to get to the match on time during all fixtures. Indeed across the board, the interviewees reported no change in their travel behaviour despite concern for the environment and concern for others (see chapter seven and eight). There were three dominating factors attributed to no change - cost prohibitive, family commitments and timing. Indeed confidence in the ability to get to the stadium on time was the underlying factor in all this. Thus, it was argued that change will not occur within this context if the aforementioned factors are not managed. The work of Cairns (2004) and Sloman et al. (2010) was discussed and it was suggested that within this context smarter choice programmes have to be integrated with the three dominating factors important to sport fans - cost, family and time.

If policy makers are to offer a true alternative that encourage group travel, guarantee punctuality and timeliness to the stadium, it is proposed that travel behaviour change may take place. This moves the argument away from the findings of Chen and Wu (2014) whereby a stronger environmental knowledge base has a mediating effect on tourism behaviour. Moreover, it reaffirms the premise that the concept of ‘attitude’ either positive or negative may only be applicable to certain aspects of lives that are seen as a problem behaviour – such as health and addiction – and not the travel choice of getting to a rugby match on time. On a broader level if transport policy makers are to move sport fans from a positive attachment towards the use of the car to a negative

perception and detachment from the car – it may require wider and longer term social engineering rather than small scale interventions. Without a doubt modal choice has deep rooted social, economic and personal constraints. Indeed these findings are supportive of Bramwell and Lane (2013) who suggest that changes beyond the minimal impact of corporate social responsibility may rest on significant changes in ‘the wider environment and across society’. Thus, imposing ‘hard’ policies such as infrastructure change and taxation targeted to specific populations may be a more effective way to impose travel change to the stadium rather than through volition alone.

Yet there was evidence that reflection and consideration of alternatives took place. Interviewees reflected on their current travel behaviour - a realisation of selfishness and an appreciation of the environmental impact driving causes. Nonetheless, this was offset by the perception of the car as the savior to their problems. Moreover, there was a displacement of responsibility, which culminated in blame on wider public transport access, regional politics and stadium location. These were seen as determining factors by interviewees and reduced consideration of alternatives to the car. Despite these underlying factors, the reflection of current behaviour did promote indirect change within many interviewees. For example interviewees did consider alternatives to more local venues. It was suggested that the use of positive imagery and the reinforcement of externalities caused by the use of cars could have been behind this new consideration. For example, the most engaging intervention found in chapter eight was intervention 10 (children worry). Moreover, the impact on one’s health was a constant message across the interventions alongside the impact on others (see chapter eight). The anxiety towards health and others is noted across the results and could have fed into the moral dilemma already articulated by the participants within this study, and a dilemma which is seen in other segments of the national population (Anable, 2005). Therefore, it was argued that change may be possible but at a localised level – where traveling to venues and leisure facilities could be replaced by alternative travel that is convenient, reliable and as punctual as the car.

In summary, there are nine key implications for policy makers from this study:

1. Future interventions aimed at sport fans fit equally well with season and non-season ticket holders.
2. The awareness of environmental impacts was a feature but the conflict of personal pleasure and pleasing others diluted this concern. Thus, overcoming negative action rather than negative perceptions of alternative travel remains an appropriate strategy.
3. Policy makers need to articulate to sport fans how and why alternatives can solve the mixture of competing conflicts – environmental concern, match day timing, location of venue.
4. An alternative that encourages group travel, guaranteed punctuality and timeliness to the stadium would minimise specific match day concerns.
5. The anxiety towards health is noted across the results and could feed into the moral dilemma already articulated by the participants within this study, and a dilemma which is seen in other segments of the national population.
6. Findings reveal that change may be possible but at a localised level – where traveling to venues and leisure facilities could be replaced by alternative travel that is convenient, reliable and as punctual as the car.
7. Trust, sport fandom and having a sense of belonging towards the group is the key tool to behaviour change.
8. On a broader level travel behaviour change may require wider and longer term social engineering rather than small scale interventions as modal choice has deep rooted social, economic and personal constraints attached to this group of sport fans.
9. Imposing 'hard' policies such as infrastructure change and taxation targeted to specific populations may be a more effective way to force travel change to the stadium rather than through volition alone.

10.6 Recommendations for future research

This section focuses on the applicability of the TTM and its adoption towards travel behaviour of sport fans. From the outset the issue of readiness to change and its impact on the findings is noted throughout this study. Initially one of the reasons to adopt the TTM was that, broadly speaking, the model didn't require an acceptance of the problem at the outset of interventions. However, within this context the lack of acceptance might be the underlying cause of no change in travel behaviour of sport fans. Questions over the applicability of the model to specific populations is furthered by Macnee and McCabe (2004) where discreet SoC and awareness of problem behaviours are not readily presented. This is exemplified well by the findings that proposed a conflict between a self-awareness of the impact private car use had on the environment and others, whilst at the same time, seeing the car as the solution to their problems.

These considerations also bring into focus the difficulty in applying the classification of individuals to a problem that is not seen solely as a personal issue but seen as a political, social and environmental one. Thus, suggesting that travel is not a singular nor an individual problem has a direct impact on the use of SoC as a classification system within this setting. Therefore, it is plausible to suggest more emphasis upon social cognitive theory within the design of interventions and this reflects a broader appreciation of where travel sits within the psychological make-up of sport fans. Indeed using the 5 key components of the SCT - psychological determinants of behaviour; environmental determinants of behaviour; observational learning; self-regulation and moral disengagement – echoes the social reality referred to by Guell (2012) where travel decisions may incorporate individual, group, institutional and societal levels. For example, within social cognitive psychology the subjective norm reflects the influence of the subject's immediate personal network of family, friends, and other sources of peer influence. Given this, a heuristic understanding of the conditions that face this particular group may enhance travel change programs. However, further research into

theory led intervention design will assist in developing interventions that are more suited to the problem at hand.

The issues of stage classification and scale scores is also endorsed by Rhodes et al. (2004) and Sutton's (2001) view that discrete SoC are difficult to establish given the arbitrary self-reporting measurements. The creation of valid stage measurement is furthered by Migneault et al. (2005) who note that stages of change is critical as it is the central construct to which other dimensions are organised. Yet, in this study, the applicability of the TTM stage of change is difficult to determine given the predominance of participants categorised in Precontemplation or Contemplation. As an alternative raw SoC scores were used in this study which yielded more accurate analysis of change. On reflection, and given this new area of study, a continuous motivational score may be more appropriate. Cluster analysis could then be used to find distinct groups (possibly allied to the stages of change). This may reduce the debate surrounding the relationship between the scale scores to the stages of change categorisation.

These questions are furthered by findings that suggest confusion in some of the items and duality of meaning. For example, self-liberation focuses on dichotomous points of reference such as "one's self" and "others". This may create confusion within the PoC items and within the respondents. Thus, the items that reflect the PoC constructs within this study warrant further examination in future use. Moreover, Decisional Balance items were created by the research rather than using participant generated items. Thus, there is an opportunity here to suggest alternative methods of measurement through a co-creation of items at individual or group level. These could be applied across all TTM constructs. Nonetheless, these items would need further field work to test the impact of further contextualisation on the theoretical constructs.

Once again the applicability of the TTM is difficult to determine given the predominance of participants categorised in Precontemplation and Contemplation. Notwithstanding, the findings do suggest that PoC are not aligned to the prescribed stage characteristics. To clarify, this study is not suggesting that the PoC items do not work, it is merely suggesting a re-alignment of PoC against the SoC.

Processes in the Precontemplation stage of change needs to focus more on attitude formation rather than information raising. Attitude formation should focus upon counter conditioning and the non-acceptance of private car use within the travelling group. Indeed focusing on group behaviour and acceptance must be central in this population. This will counter the ingrained attachment to the car as the solution to their travel problems. In Contemplation, the acceptance of the need for change remains. Moreover, the importance and influence of the group in the travel decision needs to be articulated here. Recognising the group influence by rewarding group behaviour will be central in moving contemplators to action. Indeed, findings within this study suggest a heightened awareness of the group and the importance of group in sharing travel time, sharing experiences of the sport and celebration of successes across the very early SoC. Overall, reinforcing relationships, exploring emotional trust and developing a caring and supportive environment comes through strongly in the early SoC (Precontemplation and contemplation) and needs to be reflected in the mechanisms that encourage change from one stage to the other. Nonetheless, more research is needed to see if the SoC are qualitatively different in sport fan travel behaviour than outlined in studies that are dominated by health related activities and addiction. Interviews on a large scale and behavioural segmentation across a wider sample will allow for cluster analysis, which can then be applied further to each stage of change.

It appears that context is an underlying factor that affects the way in which the TTM can be applied. Bespoke research is needed prior to any major study to ascertain the characteristics of the participants and their approach to modal choice. For example, in the meetings, incentive travel and corporate events sector many delegates only make one visit to a particular location. As a result, they may not have the desire or capacity to plan their journeys using public transport. In this context, it may be up to the event planner to impose, restrict and/or inform delegates of the options. Whereas those that go to a multipurpose arena may go more frequently – twice or three times a year. Clearly, they will have an awareness of the limitations of the venue, the infrastructure and take the option that suits their needs such as convenience and comfort. Once again, Arena Managers may need to impose alternatives such as only offering an

integrated ticket with public transport providers and theming public transport as an extension to the music experience.

In isolation, changing the characteristics of the SoC may not alter the utility of TTM based marketing interventions. As noted throughout the findings offering alternatives to the car is essential. The car is seen as a saviour that gets the sport fans to the stadium on time, cheaply and with others. Thus, an integrated strategy is required for two reasons. (1) The psychological/behavioural acceptance of travel change through stage based interventions. These interventions need to go beyond a single marketing campaign and introduce varied intervention techniques such as the introduction of rewards, and institutional/reference group 'buy in' to appeal to the group mentality predominant in this context. (2) Changing the surrounding environment and manipulating the practical/behavioural infrastructure may impose change on sport fans. These may include large-scale park and ride schemes, offer strategic alliances with public transport companies during match days/times, the formation of fan based car share schemes or organised extended walk and talk routes for sharing match day experiences. Rather than punitive measures such as restricted permit parking, these structural changes reflect the underlying psychological antecedents of sport fans and offer alternatives that are as cheap and possibly as convenient as the car. Moreover, the use of technology such as travel plan apps, or 'Uber' style pick up points for sport fans traveling to the stadium may assist a more integrated approach to interventions. Indeed offering an integrated approach similar to Kenyon and Lyons (2003) and Grotenhuis et al. (2007) reinforces the triadic proportions explored within SCT whereby interactions are based on behavioural, personal and environmental factors.

Findings indicated that getting to the match on time, with others and getting home again were the main concerns of participants. Thus, there are contextual constraints. Moreover, the contextual constraints hindered the consideration of alternatives. For instance, participants claimed strong group norms influenced their travel decisions. Moral disengagement was also evident as participants were aware of the environmental and personal health implications associated with car use, but continued to perceive the car as the saviour. Thus, integrating the TTM based interventions into a wider set of conditions that reflect travel behaviour context may further enhance the

prospect of travel change. These conditions, derived from the findings, can be found in figure 32 which represents a synchronous set of common factors that, once aligned, will support travel behaviour change. They are outlined in more detail below:

1. Establishing Group norms – Pre-intervention work is required to ascertain the underlying characteristics of the group. The elicitation of salient beliefs will inform policy makers and practitioners and provide clarity towards how and why participants perform the behaviour to and from a sports venue. Insights may then be drawn and used to inform change behaviour interventions, design contextually specific travel change items and indicators of change.
2. Individual Attitude formation – A vast amount of resources is required to condition sport fans in accepting that the car is seen as the problem and not the solution and cause dissonance. This feeds into the aforementioned changes in the characteristics of the SoC construct whereby behavioural and experiential items were highly rated. Of course marketing campaigns can be classed as an example of cognitive techniques. Affective techniques such as videos, focus groups or one to one exchanges that describe the impact pollution has on individual health can generate a deeper emotional response. Finally, behavioural techniques associated with travel during half time and after the match that highlight the physical benefits of alternative travel may influence attitude formation. For example, simulations, role play techniques, volunteers and informants. Allied to individual Attitude formation is Group Acceptance.
3. Group Acceptance - within sport fans this condition is essential. There requires an acceptance from many sources – formal fan institutions, unofficial fan forums and the professional club including the players, venue management and directors. Indeed these instrumental, affective and symbolic factors are also found within studies by Spears, Houston & Boarnet (2013). Group acceptance requires an alignment to the attitudes, beliefs and values associated with the club and must feed into the reinforcement of loyalty to the subculture for any alternative to be promoted and accepted by individuals.

4. Reducing Moral Disengagement – As with all other conditions, this is essential for any travel change to happen. Sport fans easily incorporate barriers to change and justify the use of the car – such as timeliness, cost and group inseparability. Replicating these conditions within alternatives will reduce the barriers to change and encourage the cross over between Pros and Cons much earlier than theorised.

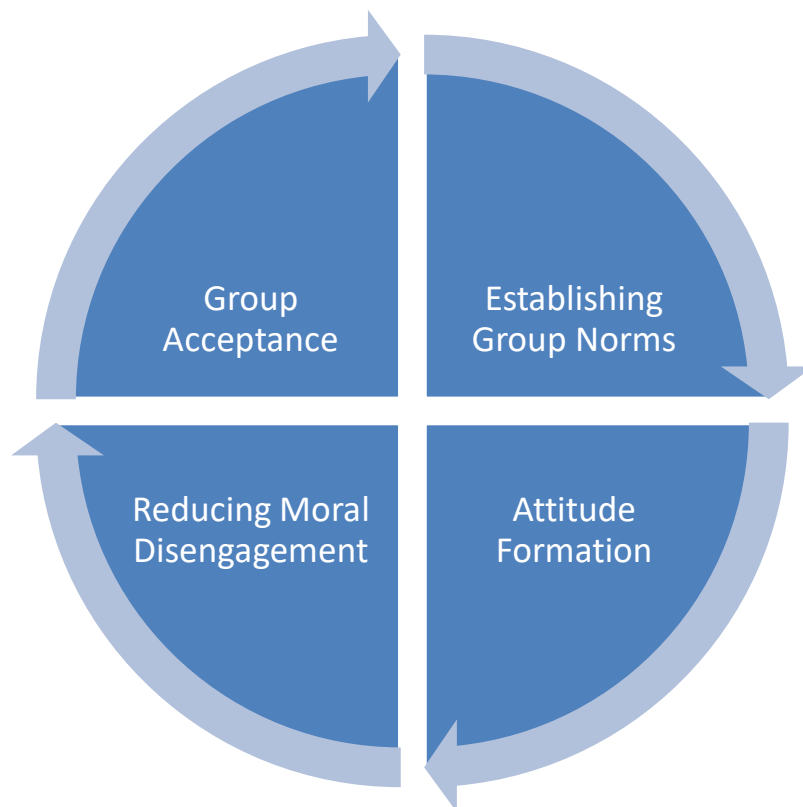


Figure 32 Heuristic circle of travel behaviour change in sport fans

One of the underlying criticisms of the literature was the lack of transparency in smarter choice intervention design. Existing studies offered little guidance on intervention design and theory behind their approaches to intervention design. The transparent approach used in study 1 provided a benchmark for others to design theory led marketing interventions in sports related context. Future comparable studies will allow one to illustrate the most favourable approaches and conditions for travel behaviour change within sport fans. Nonetheless, larger scale studies will provide more robust

and resilient findings than the present study. Notwithstanding questions remain over the use of flyers as the main tool for raising awareness and distributing information (Higham et al., 2013, Hall, 2013, Anable et al., 2006 and Ratchford and Parker, 2011). In support of flyers, visualising anticipatory feelings was a mediating factor and outlined many times within this study. Despite a systematic approach to the design of the interventions, and despite literature suggesting that these interventions may feed into participants cognition, little positive change was encountered. Moreover, interviewees reported confusion towards some of the messages within the flyers. Nonetheless, interviewees also reported that overall the imagery and messages received encouraged reflection of their current travel behaviour. Clearly there are conflicting findings here and equally within the literature. As there is no consensus as to the type and scale of marketing interventions and agreement on which are more effective in transport behaviour studies, further research into the utility of social marketing as a tool to change the cognition of sport fans is required. This may allow for the implementation of comparable intervention studies across a range of conditions. Yet, as noted earlier, an integrated strategy may be better placed to generate actual change in the sport fans.

The findings and discussions suggest that focusing on the group of sport fans travelling to the stadium together (in groups of 3 or 4) rather than the self-reported main driver may engender stronger group orientated pressure and effective travel behaviour change. However, these suggestions are only indications and this premise needs further research. Whilst the literature related to sport fans and the findings suggest a strong group identity the research did not set out to assess the influence of this against drivers. This is an interesting development which may generate further travel change within a sub-group of the sport fans. Testing hypothetical statements related to group pressure within this sub-culture and measuring behavioural intent using TPB measures would allow an exploration of this premise. Moreover, one could also create an experiment and ask participating family members to put pressure on main drivers to change their travel habits and look at the differences between the control and experimental group to ascertain the extent of influence this has.

Finally the context of sport has brought a new field to the study of travel behaviour. However, it has also raised many questions. Sport fans have revealed a shared cognisance that focuses on concern for others and a shared responsibility. This is exemplified in study one whereby social norm was a mediating factor on travel decisions, in study two helping relationships was seen as a dominating process of change in the early stages, in study three, the concern for others was reiterated in highly rated social liberation items. Finally, in study four concern for others was evidence when discussing the most influential interventions. However, further research into travel with groups needs to be undertaken through quasi experimental approaches that offer a qualitative aspect to cluster analysis and segmentation. This will enhance the understanding of travel behaviour within this sub-culture of the population and specifically target the underlying antecedents between individual travel and group travel within sport fans. Despite research opportunities the realisation of group influence also presents research problems. The first problem is the sample frame and gaining access to the participants. Extensive field work is needed to ensure a large sample size and therefore, extensive resources are needed. Second is to determine which institutional bodies are influential at a group and local level. Third, one must consider the most effective group interventions that integrate the heuristic travel conditions referred to earlier. Evidently, knowing context and applying this knowledge to travel behaviour change programs is essential for success at this level. Indeed it can be argued from the evidence in this study that generic travel behaviour marketing interventions have little influence over travel behaviour change. Small scale and more localised programs offer a deeper insight into the conditions and characteristics needed to change sub-cultures. Thus, in starting the application of travel behaviour change in sport fans the study does offer psychology, transportation, venue management and regional and national policy makers the opportunity to develop complimentary and corresponding sustainable transport behaviour strategies.

Below is a summary of the key recommendations from this study:

- Exploring the optimum conditions for travel change might provide stronger utility for interventions. Thus, integrating the TTM into a wider set of conditions that

reflect travel behaviour context and the findings of this study may further enhance travel behaviour change.

- Rather than punitive measures such as restricted permit parking, structural changes should reflect the underlying psychological antecedents of sport fans and offer alternatives that are as cheap and possibly as convenient as the car.
- The use of technology such as travel plan apps, or 'Uber' style pick up points for sport fans traveling to the stadium may assist a more integrated approach to intervention design.
- More emphasis upon SCT within the design of interventions will reflect a broader appreciation of where travel sits within the psychological make-up of sport fans.
- Further research is needed to see if the SoC are qualitatively different in sport fan travel behaviour than outlined in studies that are dominated by health related activities and addiction. Interviews on a large scale and behavioural segmentation across a wider sample will allow for cluster analysis which can then be applied further to each SoC.
- There is an opportunity to test alternative methods of measurement through a co-creation of items at individual or group level – particularly for PoC items. Allied to this, the relationships between the SoC and PoC for sport fans and their travel behaviour needs to be realigned to reflect contextual differences.

In summing up, this thesis has contributed to knowledge in four ways – by profiling the travel behaviour of sport fans; outlining favourable conditions for travel interventions to be successful in changing the sport fans travel; suggesting a realignment of stages of change and processes of change within a sports context; and articulating transparent theory led marketing interventions.

First the results have identified a number of characteristics associated with sport fans and their travel. For instance, subjective norm may have a mediating effect on the travel intentions of sport fans. This is supported by many indicators across all four studies. Nonetheless, the dominance of the group within the sport fan and the importance of sharing of group experiences is tempered by a strong attachment to the car. Building

on this, the thesis has shown that sport fans employ moral disengagement in their travel decisions. In other words – they are aware of environmental externalities caused by car use – but see the car as the saviour to their immediate problem - getting to the match on time with others. Moreover, the thesis clearly articulates the sociality reality in which sport fans make decision about their travel behaviour. The competing priorities reflect the 5 component of the SCT – psychological determinants of behaviour, environmental determinants, observational learning, self-regulation and moral disengagement.

Given the competing priorities, the thesis also proposes favourable conditions for interventions to have any significant success in changing the travel behaviour of sport fans. Identifying group norms, forming and conditioning attitude, reducing moral disengagement and gaining the acceptance of the group are seen as underlying antecedents of change.

Thirdly, if the TTM model is to be successfully applied to sport fans – minor alignments may be needed. For example, the SoC constructs should focus upon attitude formation within Precontemplation – including Counter Conditioning and non-acceptance of car use in the sport fan setting. Rewarding group behaviour and group success should be central in Contemplators. PoC items such as Reinforcing Relationships, exploring emotional trust and developing a caring and supportive environment should be encouraged in the early SoC within sport fans. Nonetheless, further research is needed to clarify the existence of mediating factors on a larger scale given the predominance of participants in the early SoC. Moreover, supports of different sports may react differently and the TTM may well behave differently yet again in this new context. Thus, bespoke research may be needed for every context, including bespoke measures of each TTM construct.

Finally – this thesis has moved intervention design on one step by applying the constructs of a behaviour change model to the design of interventions and at the same time, merging this with an understanding of the behaviour of sport fans. This approach

is systematic and can be built upon in future studies. For example, having updated the TTM to reflect the characteristics of the sports fan context, interventions can then use appropriate PoC techniques allied to SoC. As studies progress, so too can the transparency of the interventions and thus, increase the debate surrounding the type and efficacy of each intervention.

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Appendices

Appendices 1 – Marketing Intervention Schedule

Intervention Number to experiment group	Scheduled Match Date 2014	Intervention posted by date 2014	Control group get a 'thank you for your support' message
Intervention 2 - WYTPN – XXX Stadium	6 th June	W/c 2 nd June	
Intervention 3 – Feeding the Scrum			
Intervention 7 – Postcard Information Sheet C	29 th June	W/c 23 rd June	Thank you letter
Intervention 9 – Live and Breathe Rugby			
Intervention 12 - We get 10 of our 60 minutes playing Rugby	11 th July	W/c 7 th July	
Intervention 13 – Postcard information sheet D			
Intervention 15 - Think outside the Car 1	17 th July	W/c 14 th July	Thank you letter
Intervention 18 - 795 hours a year watching rugby			
Intervention 20 – Playing in Extra Time	9 th August	W/c 4 th August	
Intervention 22 – 1 in 3 children worry			
Issue Post Intervention TTM SURVEY to experimental and control group	W/c 25 th August 2014		
Chase up TTM SURVEY to experimental and control group	W/c 15 th September 2014		

Appendix 2 – All Interventions

Intervention Number : 3

Feeding the scrum....



Walking to the stadium can assist in reducing the risk of cancer, type two diabetes & heart disease (www.greenerjourneys.com)

Think about it next time you travel to Headingley Carnegie Stadium

Win together - travel together
Walk – Bus - Train - Carshare

Intervention Number : 4

Hospital Pass?



Walking to the stadium can assist in reducing the risk of cancer, type two diabetes & heart disease (www.greenerjourneys.com)

Think about it next time you travel to Headingley Carnegie Stadium

Win together - travel together
Walk – Bus - Train - Carshare

Intervention Number : 5 (Postcard)

Hi there <name>,

- Did you know that every minute of walking can extend your life by 1.5 to 2 minutes.
- 15 minutes of daily exercise reduced mortality risk by 14% (www.derby.ac.uk)

Think about it next time you travel to Headingley Carnegie Stadium

Win together - travel together
Walk – Bus - Train - Carshare

Intervention Number : 6 (Offensive Defensive)



Think about your next move...

In the UK, more carbon dioxide (CO2) comes from people's car travel than from any other kind of transport. (www.derby.ac.uk)

Win together - travel together
Walk – Bus - Train - Carshare

Intervention Number : 7



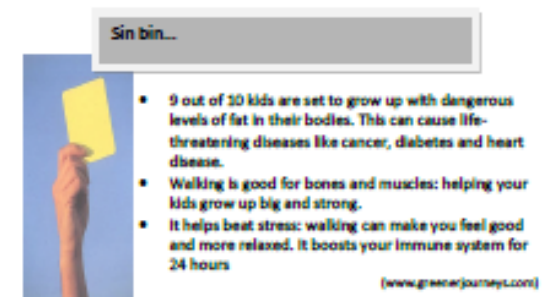
Air pollution:

- short term exposure can cause respiratory problems in asthmatics
- can impair the body's immune system, Increase a person's risk of cancer related death
- Make healthy active children 3 to 4 times more likely to develop asthma

(www.NDRK.org)

Win together - travel together
Walk - Bus - Train - Carshare

Intervention Number : 8



Sin bin...

- 9 out of 10 kids are set to grow up with dangerous levels of fat in their bodies. This can cause life-threatening diseases like cancer, diabetes and heart disease.
- Walking is good for bones and muscles: helping your kids grow up big and strong.
- It helps beat stress: walking can make you feel good and more relaxed. It boosts your immune system for 24 hours

(www.greenerjourneys.com)

Win together - travel together
Walk - Bus - Train - Carshare

Intervention Number : 9

SHARE THE EXPERIENCE TOGETHER & TRAVEL TOGETHER TO THE MATCH



- Extensive pre-match build up
- Uninterrupted full match analysis with the opinions that matter
- Relive your favourite moments
- Create shared glory days
- No travel stress
- No travel pressure

Win together - travel together
Walk - Bus - Train - Carshare

Intervention Number : 10

Kids need at least 60 minutes of physical activity every day.

(www.MHJLJ)

We can get 10 of our 60 minutes Playing Rugby
It all adds up



Win together - travel together
Walk - Bus - Train - Carshare

Intervention Number : 11 (Postcard D)

Hi there (name),

- On average 10,000 miles creates 3 tonnes of CO2 emissions.
- Nearly a quarter of all car trips are less than two miles. Think of a different way to get to the stadium

(www.daily.co.uk)

Think about it next time you travel to Headingley Carnegie Stadium

Win together - travel together
Walk - Bus - Train - Carshare

Intervention Number : 12

Four good reasons to car share:

1. Car sharing reduces congestion on the roads and running one car rather than two saves petrol.
2. Fewer cars on the road means less carbon emissions
3. Reduces driving stress
4. Car sharing gives you the opportunity to be more sociable

(www.10share.com)

Win together - travel together
Walk - Bus - Train - Carshare

Intervention Number : 13



Win together - travel together
Walk - Bus - Train - Carshare

Intervention Number : 14



Win together - travel together
Walk - Bus - Train - Carshare

Intervention Number : 15

STOP AND THINK BEFORE YOU TRAVEL TO THE MATCH
DrivelessCar@Homematch = "It all ADDS UP"



Win together - travel together
Walk - Bus - Train - Carshare

Intervention Number : 16

795 hours a year watching rugby
152 looking for parking



STOP AND THINK BEFORE YOU TRAVEL TO THE MATCH
Win together - travel together
Walk - Bus - Train - Carshare

Intervention Number : 17

SHARE THE EXPERIENCE TOGETHER & TRAVEL TOGETHER TO THE MATCH



- Extensive pre-match build up
- Uninterrupted full match analysis with the opinions that matter
- Relive your favourite moments
- Create shared glory days
- No travel stress
- No travel pressure

Win together - travel together
Walk - Bus - Train - Carshare

Intervention Number : 18



Win together - travel together
Walk - Bus - Train - Carshare

Intervention Number : 19

Hi there <name>,

- 1 in 3 children aged 6 -11 worry the planet will be irrevocably damaged by the time they reach adulthood.
- Motor vehicles are the major source of air pollution and account for 70 per cent of nitrogen emissions.
- High levels of exhaust pollutants are associated with a range of adverse health effects such as asthma and heart disease.

(www.ted@tesco.com)

Show them you care about their future.
think of a different way to get to the stadium.

Win together - travel together
Walk - Bus - Train - Carshare

Intervention Number : 20



STOP AND THINK BEFORE YOU TRAVEL TO THE MATCH
Win together - travel together
Walk - Bus - Train - Carshare

Appendix 3 – Intervention Questionnaire

Individual Intervention Testing

Why am I asking you to complete a questionnaire?

This research is being conducted as part of a PhD thesis at the University of Leeds. By using social psychology models we want to be able to understand your current transport choices when travelling to the XXX Stadium. It is hoped that the information you provide will help plan and manage future access to the XXX Stadium.

Please do complete all the questions as they are needed for the models we are using. Thank you for your time and support.

The focus group will take 30-40 minutes.

What we do with the information we collect

If you agree to participate, the information you give will be combined with all other results and used to form overall conclusions on transport choices to XXXX Stadium.

The researcher and University of Leeds will comply with the Data Protection Act 1998 which means that we ask for some personal details, such as your postcode, but this type of information will be kept anonymous and confidential.

A number of organisations are supporting this projects – XXXX, University of Leeds, Leeds Metropolitan University and West Yorkshire Travel Plan Network. All academic publications by Leeds University or Leeds Metropolitan University will comply with ethical standards and once again, be assured that no identifiable information will be published.

By participating in this questionnaire you are providing your consent. If at any time you wish to withdraw from the research, you are free to do so. Simply inform the lead researcher. Any information you give up to withdrawal may be used.

About You

1. Do you own a car or have regular access to a car? (Please circle) **Yes No**
2. Do you usually travel by car to the stadium? (Please circle) **Yes No**
3. Please state your gender (Please circle) **Male Female**
4. How old are you? (Please circle)
17-24 25-34 35-44 45-54 55-64 65-74 75-84 85+

5. What is your annual household income before tax? (Please tick against one category)

£10,000 or below	
£10,001 to £19,999	
£20,000 to £29,999	
£30,000 to £39,999	
£40,000 to £49,999	
£50,000 to £59,999	
£60,000 to £69,999	
£70,000 or above	

6. What is your employment status? (Please tick against one category)

Full time employment	
part time employment	
casual employment	
unemployed	
student	
retired	
other	

7. Do you have dependents you are responsible for on a regular basis? (Please circle)
Yes No (if no go to question 8)

- a. Do your dependents influence your travel choice to XXXX Stadium? (Please circle)
Yes No

8. How far do you travel to get to XXXX Stadium from home? (Please tick against one category)

2 miles or below	
3-5 miles	
6-8 miles	
9-11 miles	
12-15 miles	
15 miles or above	

9. Please write down your full postcode _____

10. On average, how long does it currently take you to get to the Stadium? (Please tick against one category)

15 minutes or less	
16-25 minutes	
26-35 minutes	
36-45 minutes	
46-60 minutes	
More than an hour	

11. Are you the main driver to the stadium? (Please circle) **Yes No**
12. How many people do you usually travel with to the stadium? (Please circle)
By myself 1-3 people 4-6 people 7 or more people
13. Are you a season ticket holder at XXXX? (Please circle) **Yes No**
14. Do you have a disability that restricts your travel choices to a car? (Please circle) **Yes No**

Instructions – Please ensure you have read all the interventions. Below you will see sets of words against a repeated statement. Thinking about the statement I would like you to indicate which word you feel represents your feelings most accurately against a scale of 1 to 7. There are no correct answers but please don't leave any scales blank.

For example, you may circle number 5 within the following scale as you feel that the word 'good' represents your feelings better than bad.

"Driving to XXX Stadium over the next season would be..." (1=bad and 7=good)

Bad	1	2	3	4	5	6	7	Good
-----	---	---	---	---	---	---	---	------

"Driving to XXX Stadium over the next season would be..." (1=harmful and 7=beneficial)

Harmful	1	2	3	4	5	6	7	Beneficial
---------	---	---	---	---	---	---	---	------------

"Driving to XXX Stadium over the next season would be..." (1=unpleasant and 7=pleasant)

Unpleasant	1	2	3	4	5	6	7	Pleasant
------------	---	---	---	---	---	---	---	----------

"Driving to XXX Stadium over the next season would be..." (1=not enjoyable and 7=enjoyable)

Not enjoyable	1	2	3	4	5	6	7	Enjoyable
---------------	---	---	---	---	---	---	---	-----------

Instructions - The following statements represent different opinions about driving to XXX stadium as a passenger or the main driver. After reviewing all the interventions please tick the option for each row of the table to indicate the degree to which you agree or disagree with each statement. Select one response per question.

Thinking of the forthcoming rugby season at XXX rate the following statements	Strongly disagree	Slightly disagree	Neither disagree nor agree	Slightly agree	Strongly agree
My friends and family think I should drive to XXX Stadium					
My friends and family drive to XXX Stadium					
It is more socially acceptable to use the car to get to XXX Stadium					
Most people I know would not use an alternative to the car to get to XXX stadium					

Instructions - The following statements represent different opinions about driving to XXX stadium as a passenger or the main driver. After reviewing all the interventions please tick the option for each row of the table to indicate the degree to which you agree or disagree with each statement. Select one response per question

Thinking of the forthcoming rugby seasons at XXX please rate the following statements.	Strongly disagree	Slightly disagree	Neither disagree nor agree	Slightly agree	Strongly agree
Whether or not I get to XXX Stadium by other means than the car is entirely up to me					
I am confident that I could use alternative ways to get to XXX Stadium					
If it was up to me, I would find alternative ways to get to XXX Stadium					
I am more than capable of finding alternative ways to get to XXX Stadium					

Thank you for your time.

We need your details if you want enter the Free Prize Draw for an Ipod Classic

To be eligible for entry to the prize draw you must provide the research team with your personal details. These will be kept in a secured location in accordance with the data protection act. Your name or any identifying details will NOT be passed to any third parties.

- What is your first name and surname?

- What is your address (including post code)?

Further information Statement (presented as a drop down button online, separate piece of paper or dictated if face to face)

Closing date of entry is 24th August 2014.

From all eligible entrants, a member of the research team will pick 1 random winner. The prize draw process will be observed by an independent adjudicator not known to the research team to ensure validity in the process. There is no first, second or third prize. One winner will be awarded an iPod Classic. The winner will be announced by the research team and contacted individually. If no communication has been received within a month of the closing date -- you have not won. The prize will be posted to the winners no more than 6 weeks after announcement.

For further information regarding the study please contact:

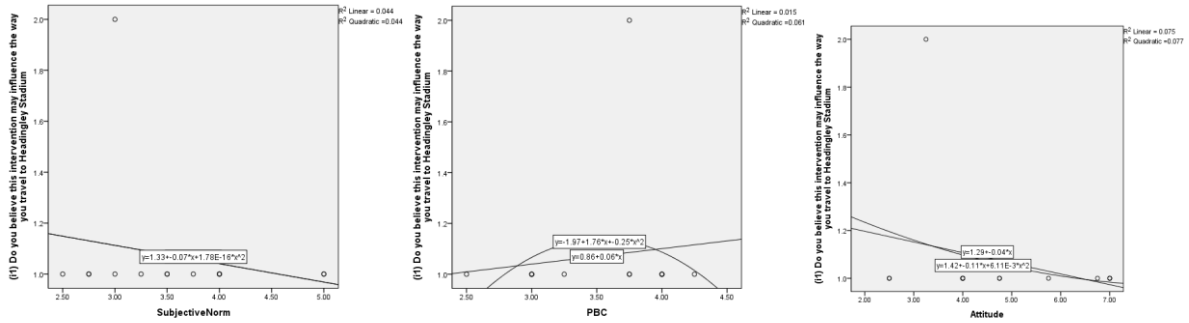
Institution: University of Leeds

Researcher Details: James Musgrave

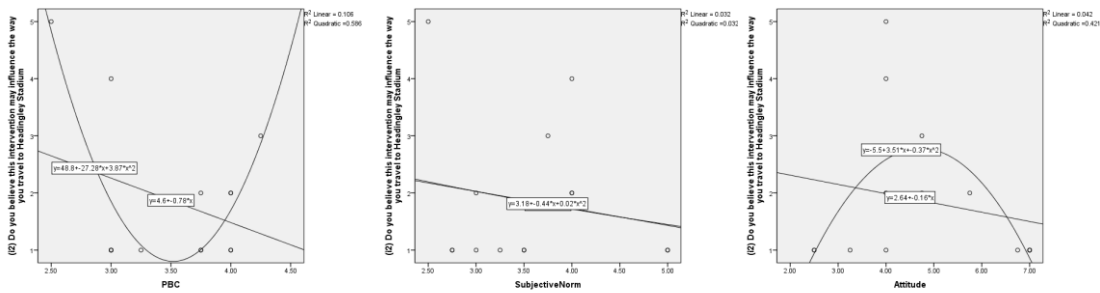
Email: tsjm@leeds.ac.uk

Appendix 4 – Scatter Plots –Influence and TPB Constructs

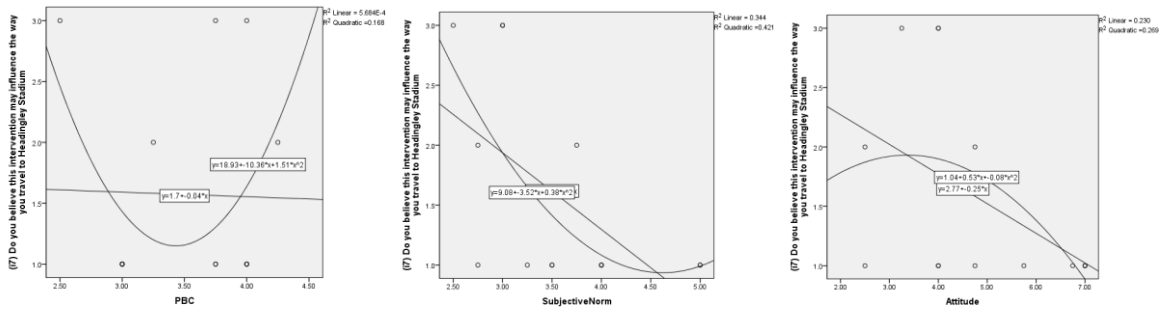
Intervention One – Scatter diagram for TPB against Influence rating



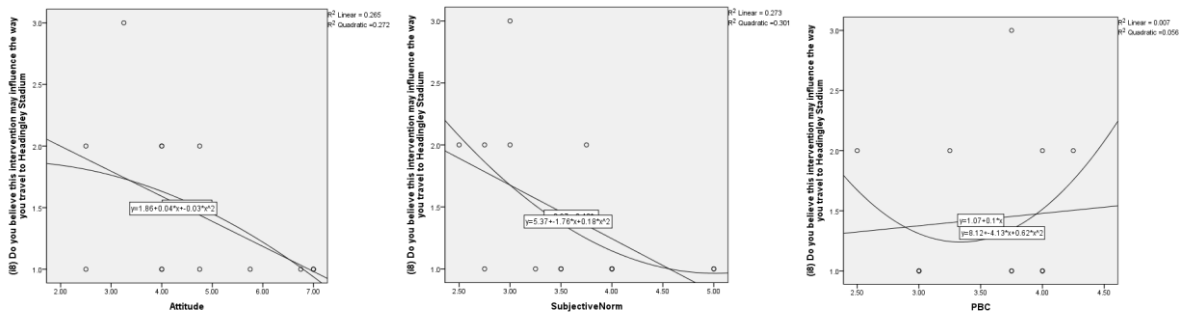
Intervention Two – Scatter diagram for TPB against Influence rating



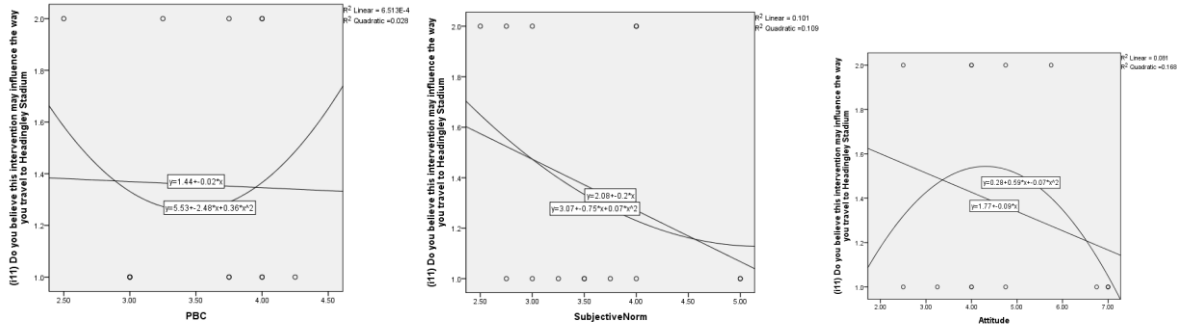
Intervention Five– Scatter diagram for TPB against Influence rating



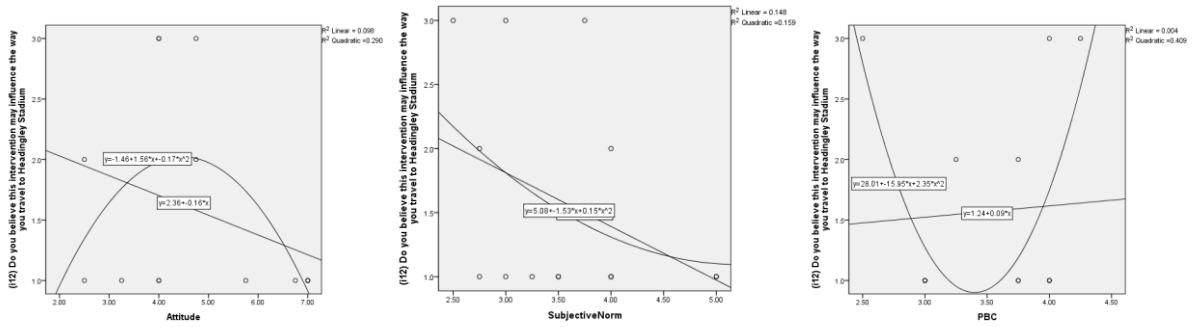
Intervention Six– Scatter diagram for TPB against Influence rating



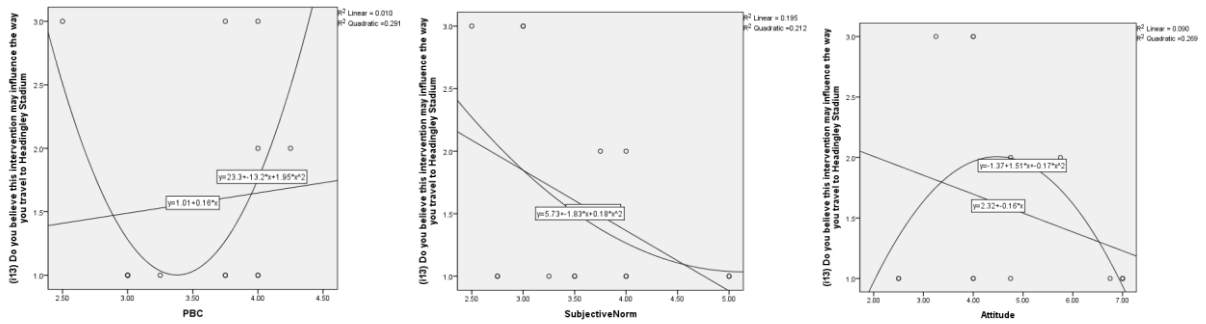
Intervention Nine– Scatter diagram for TPB against Influence rating



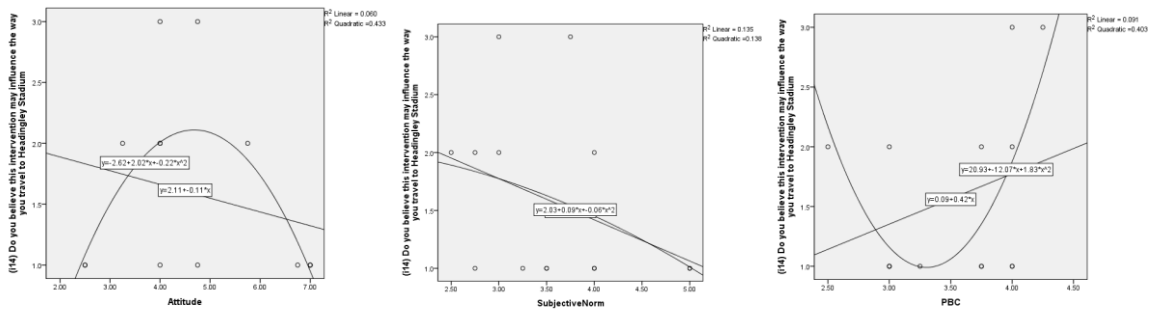
Intervention Ten– Scatter diagram for TPB against Influence rating



Intervention Eleven– Scatter diagram for TPB against Influence rating



Intervention Twelve– Scatter diagram for TPB against Influence rating



Appendix 5 – TTM Questionnaire

***Win an Ipad Classic for your time worth £170 or a meal voucher worth £50!**

1. Do you own a car or have regular access to a car?
(Please circle)

Yes No

2. Do you usually travel by car to the stadium? (Please circle)

Yes No

3. Please state your gender (Please circle)

Male Female

4. How old are you? (Please circle)

18-24 25-34 35-44 45-54 55-64 65-74 75-84 85+

5. What is your annual household income before tax?
(Please tick against one category)

£10,000 or below	
£10,001 to £19, 999	
£20,000 to £29,999	
£30,000 to £39,999	
£40,000 to £49,999	
£50,000 to £59,999	
£60,000 to £69,999	
£70,000 or above	

6. What is your employment status?
(Please tick against one category)

Full time employment	
part time employment	
casual employment	
unemployed	
student	
retired	
other	

7. Do you have dependents you are responsible for on a regular basis? (Please circle)

Yes No (if no go to question 8)

a. Do your dependents influence your travel choice to XXX Stadium? (Please circle) **Yes**

No

8. How far do you travel to get to XXX Stadium from home?
(Please tick against one category)

2 miles or below	
3-5 miles	
6-8 miles	
9-11 miles	
12-15 miles	
16 miles or above	

9. Please write down your full postcode

10. On average, how long does it currently take you to get to the Stadium?
(Please tick against one category)

15 minutes or less	
16-25 minutes	
26-35 minutes	
36-45 minutes	
46-60 minutes	
More than an hour	

11. Are you the main driver to the stadium?
(Please circle)

Yes No

12. How many people do you usually travel with to the stadium? (Please circle)

By myself 1-3 people 4-6 people 7 or more people

13. Are you a season ticket holder at XXXX? (Please circle)

Yes No

14. Do you have a disability that restricts your travel choices to a car? (Please circle)

Yes No

The following statements represent different opinions about driving to XXX stadium as a passenger or the main driver. Thinking about your most recent journey to the stadium **please tick** whether you either strongly agree, agree, undecided, disagree or strongly disagree with each statement below.

		strongly agree	agree	undecided	disagree	strongly disagree
A.	I would like more information about different ways to get to the stadium					
B.	I've been thinking about the benefits of different ways to get to the stadium					
C.	I feel I have no alternative but to use the car to get to the stadium					
D.	As far as I'm concerned, there is nothing wrong with the way I get to the stadium					
E.	Changing the way I get the stadium is a waste of time					
F.	I want to change the way I currently get to the stadium					
G.	I want to use alternative ways to get the stadium but struggle finding alternatives					
H.	I know I should look into alternatives to get to the stadium					
I.	I am looking at other ways to get to the stadium					
J.	I will always use the car to get to the stadium					
K.	I am changing the way I get to the stadium					
L.	I do try and use alternatives but sometimes I just have to drive to get to the stadium					

The following statements represent different opinions about driving to Headingley Carnegie stadium as a passenger or the main driver. Thinking about your most recent journey to the stadium **please tick** whether you either strongly agree, agree, undecided, disagree or strongly disagree with each statement below.

		strongly agree	agree	undecided	disagree	strongly disagree
A.	Driving to the stadium is a pleasure					
B.	Driving to the stadium increases traffic pollution in the local area					
C.	I like the idea of driving to the stadium					
D.	Driving to the stadium can have a negative impact upon my health					
E.	Driving to the stadium suits my situation					
F.	My friends and family think I should consider other means of getting to the stadium					
G.	Driving to the stadium helps me keep in control					
H.	I would be healthier if I walked to the stadium					
I.	My friends and family like me driving to the stadium					
J.	I shouldn't ignore the warnings about climate change					

The following statements represent different opinions about driving to XXX stadium as a passenger or the main driver. Thinking about your most recent journey to the stadium **please tick** either never, rarely, sometimes, often or always with each statement below.

		Never	Rarely	Sometimes	Often	Always
A.	I am pleased when I don't use the car to travel to the stadium					
B.	I am able to get advice on different ways to travel to the stadium					
C.	I get upset when I think about illnesses caused by traffic pollution					
D.	My friends and family would benefit if I found alternative ways to get to the stadium					
E.	I use reminders and/or information to help me plan the way I get to the stadium					
F.	I think about how traffic pollution can affect friends and family					
G.	I feel a social pressure to use alternatives to the car					
H.	I feel happy when I don't use the car to travel to the stadium					
I.	I find that planning helps me use alternatives to get to the stadium					
J.	I have to remind myself not to use the car to get to the stadium					
K.	I look for advice on alternative ways to get to the stadium					
L.	I notice news stories about pollution					
M.	If I try hard I can find alternatives to the car					
N.	I stop to think about how my car use and traffic pollution can hurt people around me					
O.	I feel proud of myself when I don't use the car to get to the stadium					
P.	I tend to think about my car journey just before I set off to the stadium					
Q.	I find that active alternatives, such as walking or cycling, are a good substitute for the car					
R.	Socialising with family and friends whilst travelling to the stadium is important					
S.	I am committed to reducing my car use for my journey to the stadium					
T.	I recognise the impacts traffic pollution has on me, my friends and family					

The following statements represent different opinions about driving to XXX stadium as a passenger or the main driver. Given the scenarios below, we would like to know how **confident** you may feel in using an alternative to the car. Please tick either not at all, very, moderately, very or extremely confident against each statement.

		Not at all confident	Not Very Confident	Moderately Confident	Very Confident	Extremely Confident
A.	When friends and family pressurise me to drive to the stadium					

B.	When I am concerned about others getting to the stadium					
C.	When I am worried about arriving on time					
D.	When I simply want to use the car to get the stadium					
E.	When it seems convenient to use public transport					
F.	When alternative ways to get to the stadium are readily available					
G.	When I am physically tired					
H.	When I am experiencing some physical pain or injury					
I.	When it is difficult to plan the journey to the stadium					
J.	When I see others driving to the stadium					
K.	When people I know encourage me to drive to the stadium					
L.	When I want to celebrate the match with my friends and family					

THIS IS THE END OF THE SURVEY. THANK YOU FOR YOUR TIME....BUT

We do require just a little bit more help This means being part of a very small experiment where information comes through the post, you read it, you think about it and then carry on with your day. We will also ask you to complete one more survey - similar to the one you have completed today. That is it.

Are you willing to participate further in this study? (Please circle) **Yes** **No**

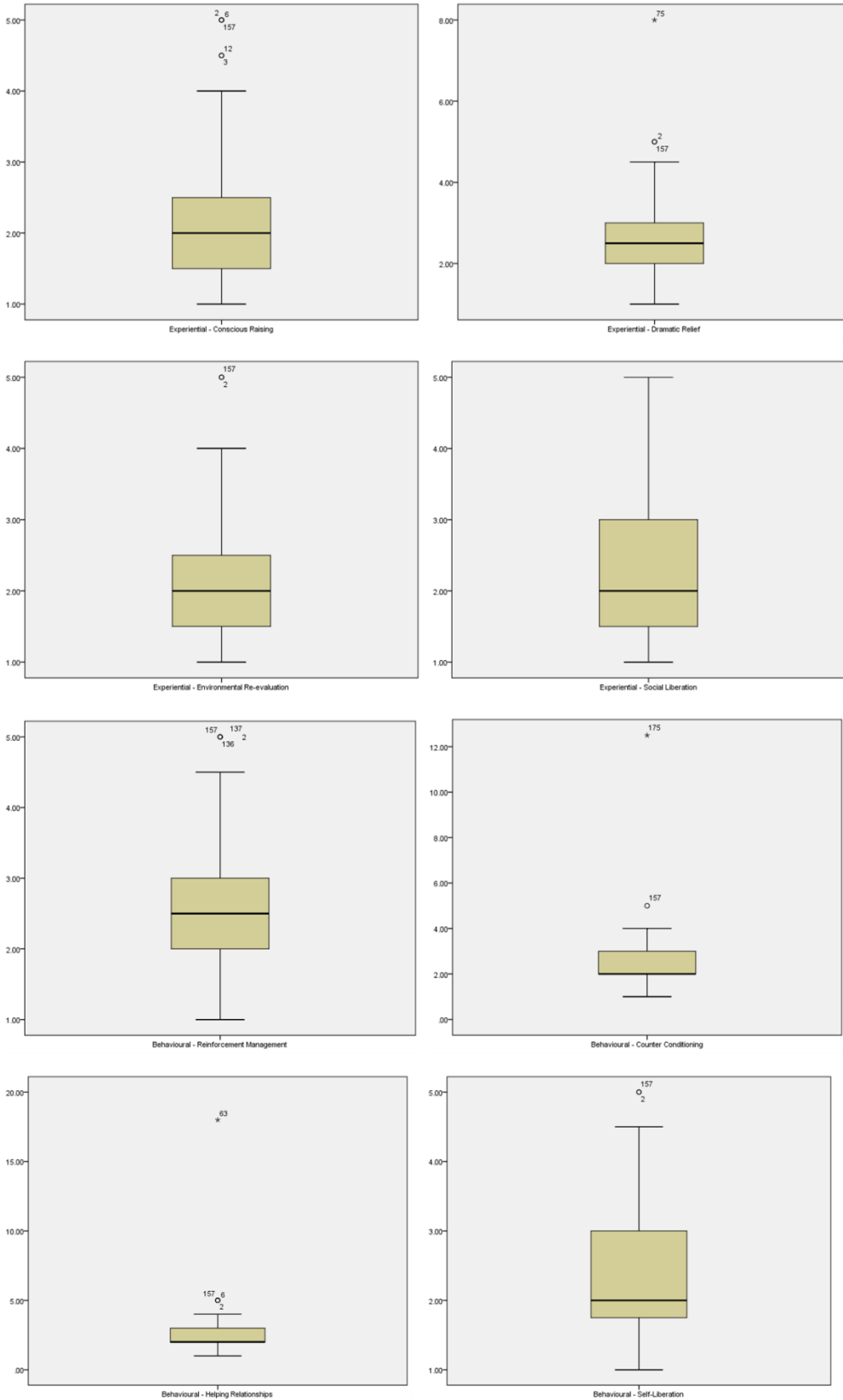
***We need your details if you want to help us further and/or enter the Free Prize Draw** - To be eligible for entry to the prize draw you must provide the research team with your personal details. These will be kept in a secured location in accordance with the data protection act. Your name or any identifying details will NOT be passed to any third parties or linked in any way to your responses in the survey.

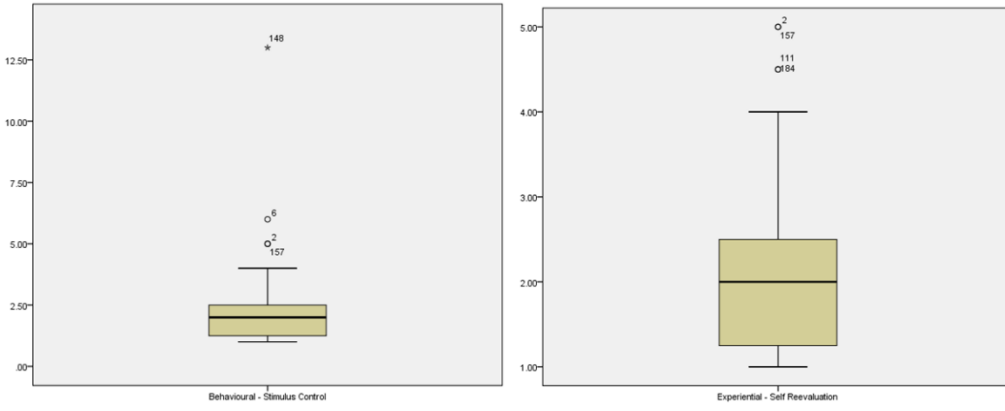
What is your first name and surname?

What is your address (including postcode)?

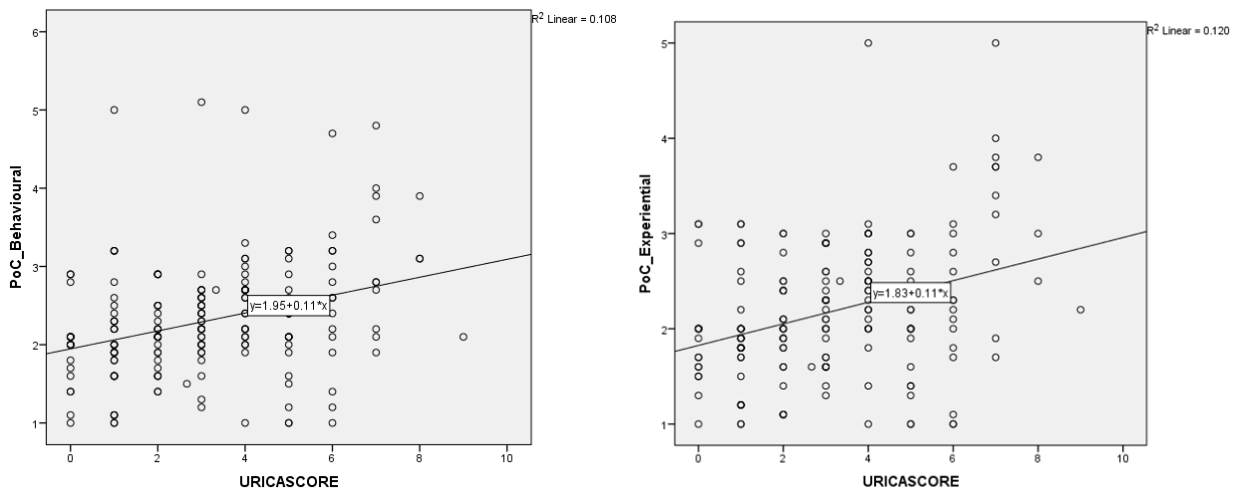
Appendix 6 – Pre Intervention Data

Process of Change – Box Plots

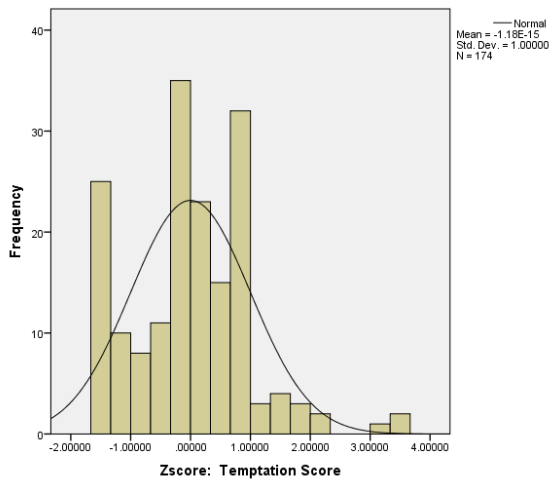




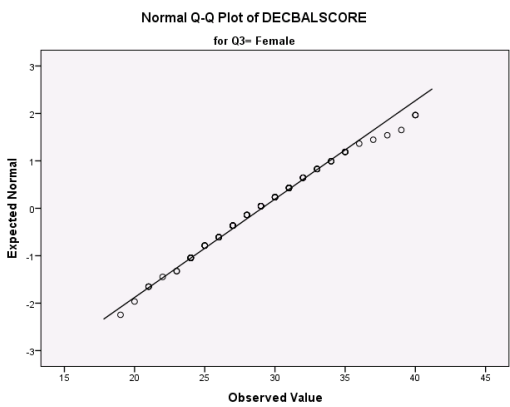
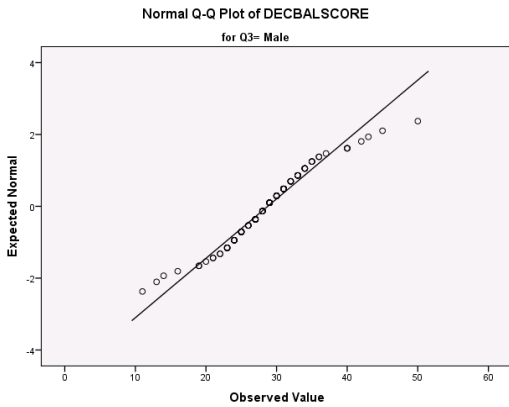
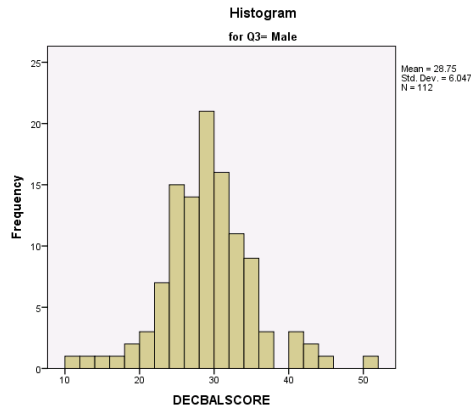
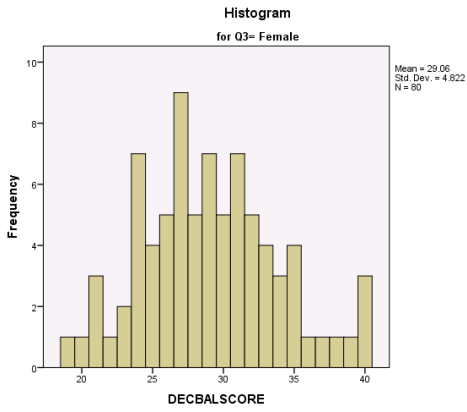
Scatter plots – Behavioural and Experiential and Raw SoC Score



Self-Efficacy - Z Scores



Decisional Balance



Kendall's Tau - Con

Correlations

		Zscore(URICASCORE)	Zscore(DecisionalBlanceCON_Mean)
Kendall's tau_b	Zscore(URICASCORE) Correlation Coefficient	1.000	-.194**
	Sig. (2-tailed)	.	.000
	N	191	191
	Zscore(DecisionalBlanceCON_Mean) Correlation Coefficient	-.194**	1.000
	Sig. (2-tailed)	.000	.

	N	191	191
--	---	-----	-----

Kendall's Tau - Pro

Correlations

		Zscore(URICASCORE)	Zscore(DecisionalBalancePRO_Mean)
Kendall's Zscore(URICASCORE) tau_b	Correlation Coefficient	1.000	.159**
	Sig. (2- tailed)	.	.002
	N	191	191
Zscore(DecisionalBalancePRO_Mean)	Correlation Coefficient	.159**	1.000
	Sig. (2- tailed)	.002	.
	N	191	191

Appendix 7 – Post Intervention Questionnaire - Example

Post Intervention Survey – Experimental Group Only

How engaging were the interventions you received whilst participating in this study? Please rank the interventions in preference order by placing a number between 1 and 10 next to the intervention.

Intervention Ranking

Bus and Train Information
Headingley Carnegie Stadium

Think about it next time you travel to Headingley Carnegie Stadium

Win together - travel together
Walk - Bus - Train - Carshare

Intervention Ranking

Feeding the scrum....

Walking to Headingley Carnegie Stadium can assist in reducing the risk of cancer, type two diabetes & heart disease. [www.nhs.uk](#)

Think about it next time you travel to Headingley Carnegie Stadium

Win together - travel together
Walk - Bus - Train - Carshare

Intervention Ranking

Motor vehicles are the major source of air pollution. High levels of exhaust pollutants are associated with a range of adverse health effects such as asthma and heart disease.

Think about it next time you travel to Headingley Carnegie Stadium

Win together - travel together
Walk - Bus - Train - Carshare

Intervention Ranking

Air pollution:

- short term exposure can cause respiratory problems in asthmatics
- can impair the body's immune system. Increase a person's risk of cancer related death
- Make healthy active children 3 to 4 times more likely to develop asthma

Think about it next time you travel to Headingley Carnegie Stadium

Win together - travel together
Walk - Bus - Train - Carshare

Intervention Ranking

Kids need at least 60 minutes of physical activity every day. [www.nhs.uk](#)

We can get 10 of our 60 minutes walking to the stadium. It all adds up.

Think about it next time you travel to Headingley Carnegie Stadium

Win together - travel together
Walk - Bus - Train - Carshare

Intervention Ranking

On average 10,000 miles creates 3 tonnes of CO2 emissions. Nearly a quarter of all car trips are less than two miles. Think of a different way to get to the stadium. [www.nhs.uk](#)

Think about it next time you travel to Headingley Carnegie Stadium

Win together - travel together
Walk - Bus - Train - Carshare

Intervention Ranking

THINK OUTSIDE THE CAR

Walking + Train + Together + Moments + 3 = FREEDOM

Think about it next time you travel to Headingley Carnegie Stadium

Win together - travel together
Walk - Bus - Train - Carshare

Intervention Ranking

795 hours a year watching rugby
152 hours looking for parking

PARKING NOTICE ENCLOSED

WARNING
IT IS AN OFFENCE FOR ANY PERSON OTHER THAN THE DRIVER TO REMOVE THIS NOTICE

Think about it next time you travel to Headingley Carnegie Stadium

Win together - travel together
Walk - Bus - Train - Carshare

Intervention Ranking

PLAYING IN EXTRA TIME?

In the UK, more carbon dioxide (CO2) comes from people's car travel than from any other kind of transport.

Reducing your car travel to the match is a key step to reducing climate change effects and food or petrol use.

Think about it next time you travel to Headingley Carnegie Stadium

Win together - travel together
Walk - Bus - Train - Carshare

Intervention Ranking

1 in 3 children aged 6-11 worry the planet will be irrevocably damaged by the time they reach adulthood. [www.nhs.uk](#)

Think about it next time you travel to Headingley Carnegie Stadium

Win together - travel together
Walk - Bus - Train - Carshare

Thinking about each intervention you received whilst participating in this study, please tick whether you thought the interventions were extremely influential, very influential, influential, slightly or not at all influential on the way you travelled to XXX stadium?

Intervention



Not at all influential	Slightly influential	Influential	Very influential	Extremely influential

Intervention



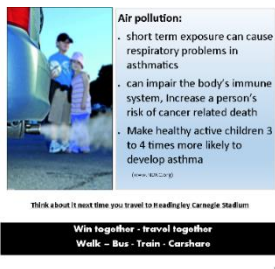
Not at all influential	Slightly influential	Influential	Very influential	Extremely influential

Intervention



Not at all influential	Slightly influential	Influential	Very influential	Extremely influential

Intervention



Not at all influential	Slightly influential	Influential	Very influential	Extremely influential

Intervention



Not at all influential	Slightly influential	Influential	Very influential	Extremely influential

Intervention

On average 10,000 miles creates 3 tonnes of CO2 emissions.
 Nearly a quarter of all car trips are less than two miles.
 Think of a different way to get to the stadium
(www.leeds.ac.uk)



Think about it next time you travel to Headingley Carnegie Stadium


Win together - travel together
 Walk - Bus - Train - Carshare

UNIVERSITY OF LEEDS

Not at all influential	Slightly influential	Influential	Very influential	Extremely influential

Intervention

THINK OUTSIDE THE CAR



Walking - Time Together - HomeMatch - FREE DOOM

Think about it next time you travel to Headingley Carnegie Stadium

Win together - travel together
 Walk - Bus - Train - Carshare

UNIVERSITY OF LEEDS

Not at all influential	Slightly influential	Influential	Very influential	Extremely influential

Intervention

795 hours a year watching rugby
 152 hours looking for parking



Think about it next time you travel to Headingley Carnegie Stadium

Win together - travel together
 Walk - Bus - Train - Carshare

UNIVERSITY OF LEEDS

Not at all influential	Slightly influential	Influential	Very influential	Extremely influential

Intervention

PLAYING IN EXTRA TIME?

In the UK, more carbon dioxide (CO2) comes from people's car travel than from any other kind of UK transport.

Reducing your car travel to the match is a key step to reducing climate change effects and local air pollution.



Think about it next time you travel to Headingley Carnegie Stadium

Win together - travel together
 Walk - Bus - Train - Carshare

UNIVERSITY OF LEEDS

Not at all influential	Slightly influential	Influential	Very influential	Extremely influential

Intervention

1 in 3 children aged 6-11 worry the planet will be irrevocably damaged by the time they reach adulthood
(www.farnham.gov.uk)



Think about it next time you travel to Headingley Carnegie Stadium

Win together - travel together
 Walk - Bus - Train - Carshare

UNIVERSITY OF LEEDS

Not at all influential	Slightly influential	Influential	Very influential	Extremely influential

Questionnaire to both Experimental and Control Group

*Win an Ipod Classic for your time worth £170 or a meal voucher worth £50!

1. Do you own a car or have regular access to a car?

(Please circle)

Yes **No**

2. Do you usually travel by car to the stadium? (Please circle)

Yes **No**

3. Please state your gender (Please circle)

Male **Female**

4. How old are you? (Please circle)

18-24 **25-34** **35-44** **45-54** **55-64** **65-74** **75-84** **85+**

5. What is your annual household income before tax?

(Please tick against one category)

£10,000 or below	
£10,001 to £19,999	
£20,000 to £29,999	
£30,000 to £39,999	
£40,000 to £49,999	
£50,000 to £59,999	
£60,000 to £69,999	
£70,000 or above	

6. What is your employment status?

(Please tick against one category)

Full time employment	
part time employment	
casual employment	
unemployed	
student	
retired	
other	

7. Do you have dependents you are responsible for on a regular basis? (Please circle)

Yes **No** (if no go to question 8)

- a. Do your dependents influence your travel choice to XXX Stadium? (Please circle) **Yes**

No

8. How far do you travel to get to XXX Stadium from home? (Please tick against one category)

2 miles or below	
3-5 miles	
6-8 miles	
9-11 miles	
12-15 miles	
16 miles or above	

9. Please write down your full postcode

10. On average, how long does it currently take you to get to the Stadium?

(Please tick against one category)

15 minutes or less	
16-25 minutes	
26-35 minutes	
36-45 minutes	
46-60 minutes	
More than an hour	

11. Are you the main driver to the stadium? (Please circle)

Yes **No**

12. How many people do you usually travel with to the stadium? (Please circle)

By myself **1-3 people** **4-6 people** **7 or more people**

13. Are you a season ticket holder at XXXXX? (Please circle)

Yes **No**

14. Do you have a disability that restricts your travel choices to a car? (Please circle)

Yes **No**

The following statements represent different opinions about travelling to XXX stadium by car as a passenger or the main driver. We would like to know how **confident** you may feel in using an alternative to the car in the different situations represented by statements A to L. Please tick either not at all, very, moderately, very or extremely confident against each statement.

	Not at all confident	Not Very Confident	Moderately Confident	Very Confident	Extremely Confident
When friends and family pressurise me to drive to the stadium					
When I am concerned about others getting to the stadium					
When I am worried about arriving on time					
When I simply want to use the car to get the stadium					
When it seems convenient to use public transport					
When alternative ways to get to the stadium are readily available					
When I am physically tired					

When I am experiencing some physical pain or injury					
When it is difficult to plan the journey to the stadium					
When I see others driving to the stadium					
When people I know encourage me to drive to the stadium					
When I want to celebrate the match with my friends and family					

The following statements represent different opinions about travelling to XXX stadium by car as a passenger or the main driver. Thinking about your most recent journey to the stadium **please tick** whether you either strongly agree, agree, undecided, disagree or strongly disagree with each statement below.

	strongly agree	agree	undecided	disagree	strongly disagree
I would like more information about different ways to get to the stadium					
I've been thinking about the benefits of different ways to get to the stadium					
I feel I have no alternative but to use the car to get to the stadium					
As far as I'm concerned, there is nothing wrong with the way I get to the stadium					
Changing the way I get the stadium is a waste of time					
I want to change the way I currently get to the stadium					
I want to use alternative ways to get the stadium but struggle finding alternatives					
I know I should look into alternatives to get to the stadium					
I am looking at other ways to get to the stadium					
I will always use the car to get to the stadium					
I am changing the way I get to the stadium					
I do try and use alternatives but sometimes I just have to drive to get to the stadium					

The following statements represent different opinions about travelling to XXX stadium by car as a passenger or the main driver. Thinking about your most recent journey to the stadium **please tick** whether you either strongly agree, agree, undecided, disagree or strongly disagree with each statement below.

	strongly agree	agree	undecided	disagree	strongly disagree
Driving to the stadium is a pleasure					
Driving to the stadium increases traffic pollution in the local area					
I like the idea of driving to the stadium					
Driving to the stadium can have a negative impact upon my health					
Driving to the stadium suits my situation					
My friends and family think I should consider other means of getting to the stadium					
Driving to the stadium helps me keep in control					

I would be healthier if I walked to the stadium					
My friends and family like me driving to the stadium					
I shouldn't ignore the warnings about climate change					

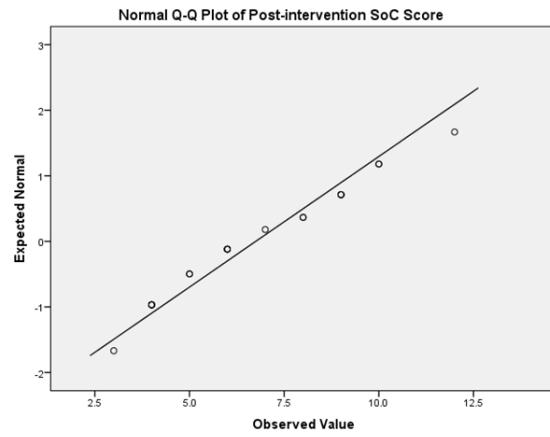
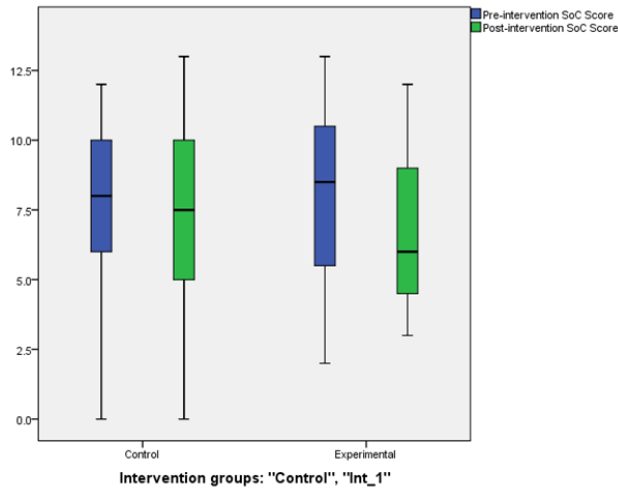
The following statements represent different opinions about travelling to XXX stadium by car as a passenger or the main driver. Thinking about your most recent journey to the stadium **please tick** either never, rarely, sometimes, often or always with each statement below.

	Never	Rarely	Sometimes	Often	Always
I am pleased when I don't use the car to travel to the stadium					
I am able to get advice on different ways to travel to the stadium					
I get upset when I think about illnesses caused by traffic pollution					
My friends and family would benefit if I found alternative ways to get to the stadium					
I use reminders and/or information to help me plan the way I get to the stadium					
I think about how traffic pollution can affect friends and family					
I feel a social pressure to use alternatives to the car					
I feel happy when I don't use the car to travel to the stadium					
I find that planning helps me use alternatives to get to the stadium					
I have to remind myself not to use the car to get to the stadium					
I look for advice on alternative ways to get to the stadium					
I notice news stories about pollution					
If I try hard I can find alternatives to the car					
I stop to think about how my car use and traffic pollution can hurt people around me					
I feel proud of myself when I don't use the car to get to the stadium					
I tend to think about my car journey just before I set off to the stadium					
I find that active alternatives, such as walking or cycling, are a good substitute for the car					
Socialising with family and friends whilst travelling to the stadium is important					
I am committed to reducing my car use for my journey to the stadium					
I recognise the impacts traffic pollution has on me, my friends and family					

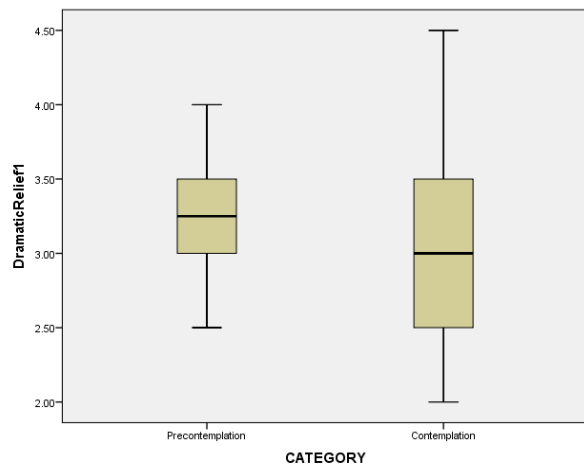
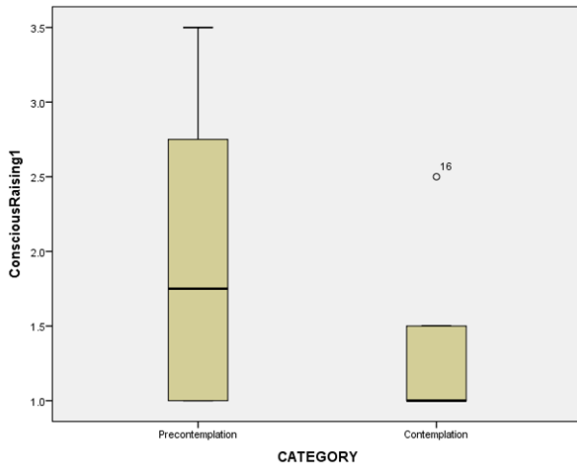
THIS IS THE END OF THE SURVEY

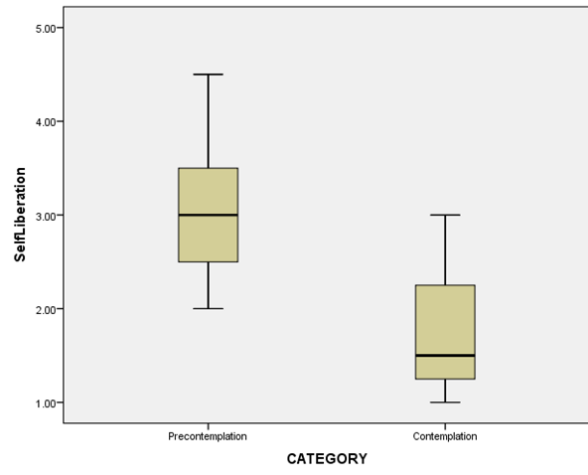
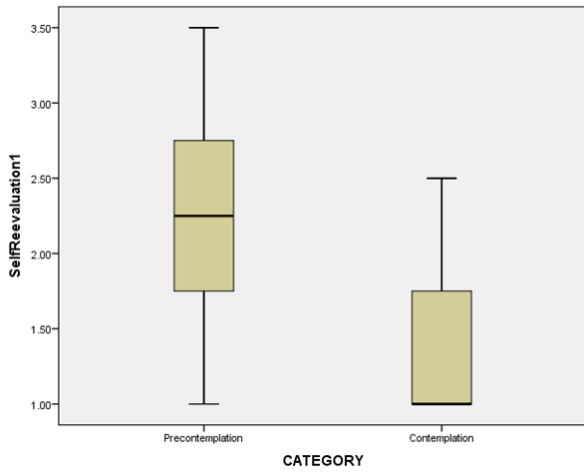
Appendix 8 – Study Two – Post intervention results

Stage of Change ANOVA - Boxplots

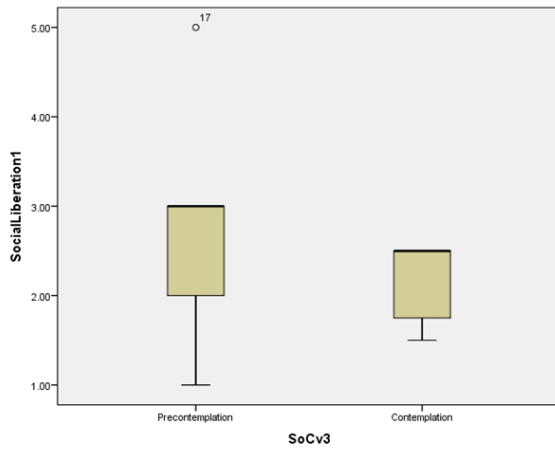
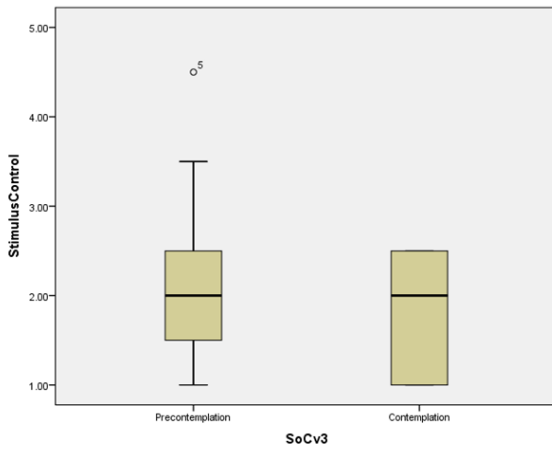
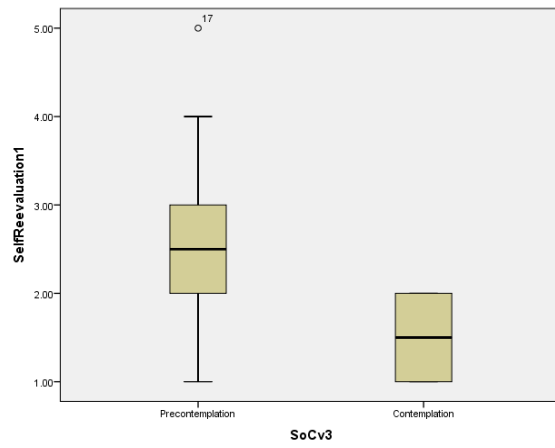
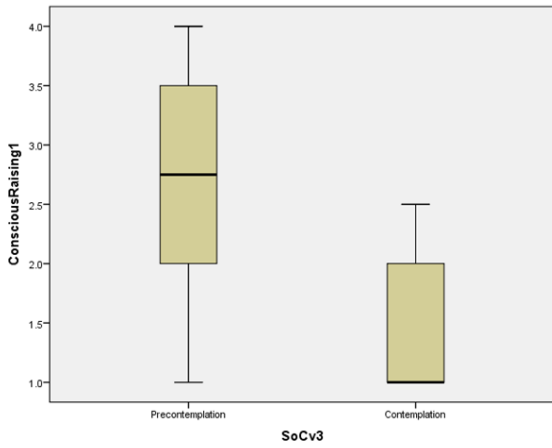


Process of Change t-test – sample of Boxplots – Experimental Group

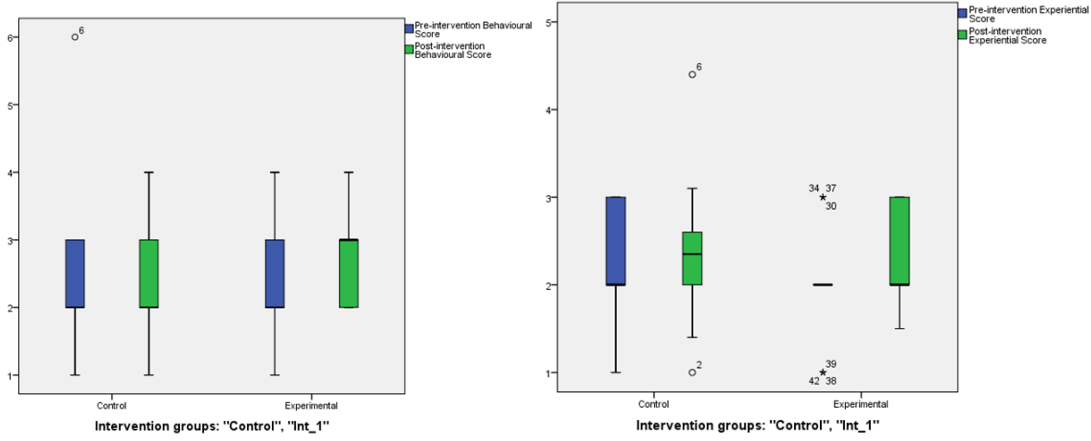




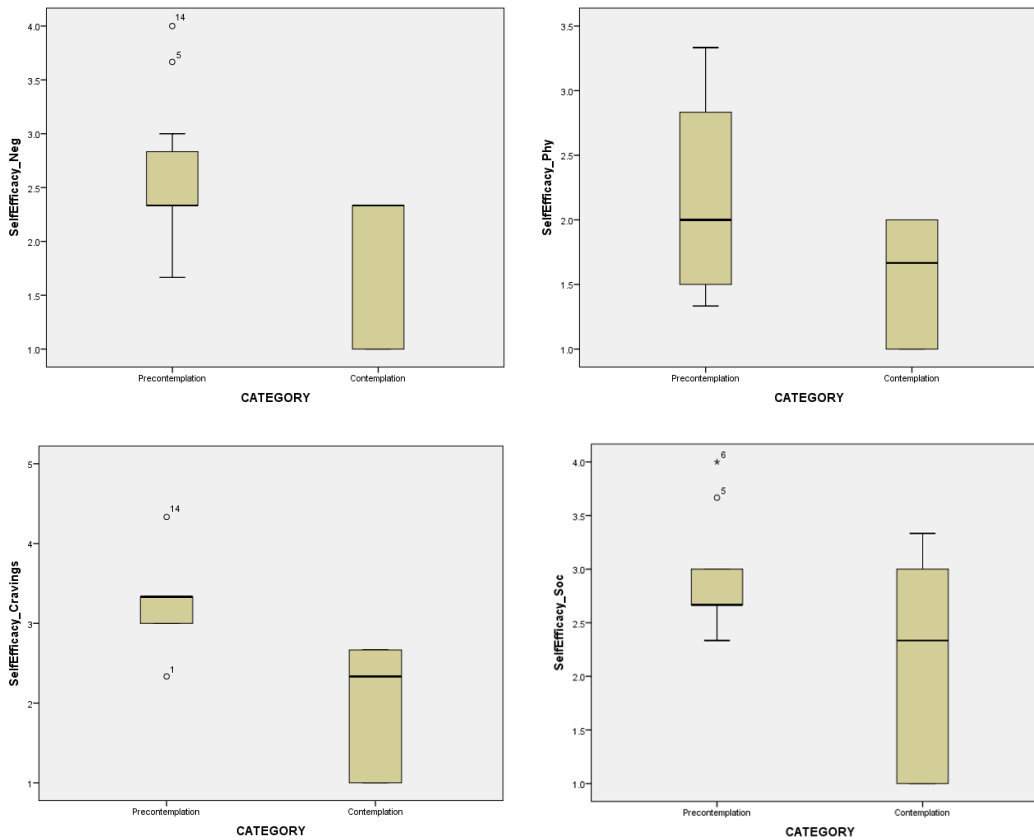
Process of Change t-test – sample of Boxplots – Control Group



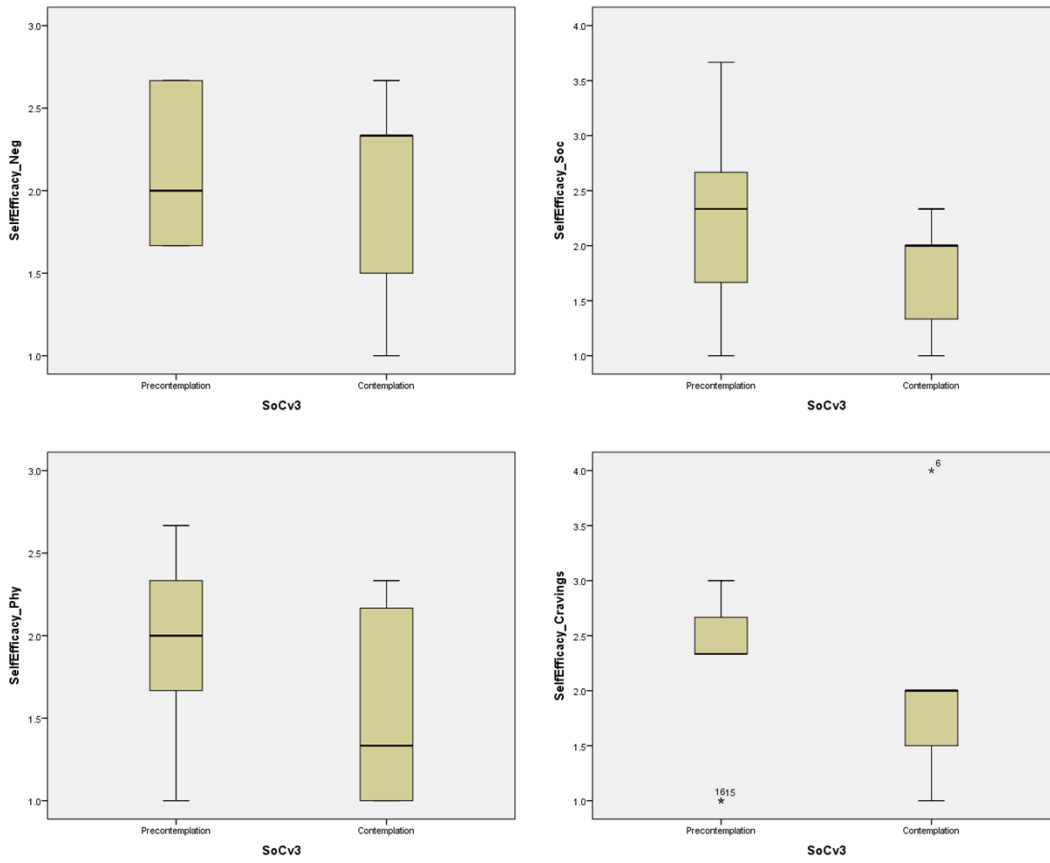
PoC – ANOVA – Experiential and Behavioural Box plots



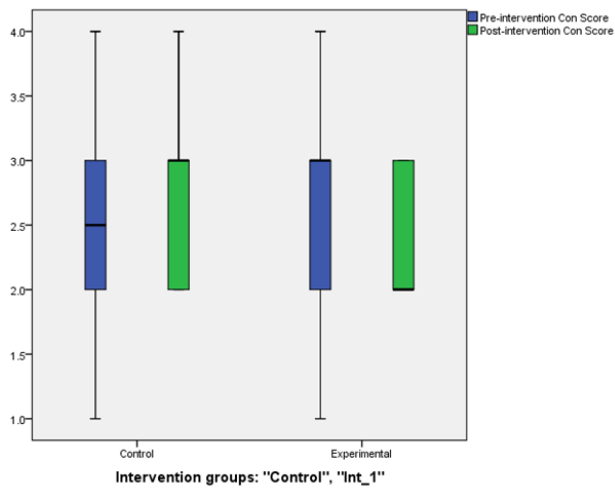
Self - Efficacy t-test – sample of Boxplots – Experimental Group



Self - Efficacy t-test – sample of Boxplots – Control Group



Decisional Balance ANOVA – Pro Item Box plots



Appendix 9 – Interview questions

Social Cognitive theory is couched in phenomenology – grounded in conscious experience and translated using constructs of vicarious learning and observational learning which is governed by 4 functions:

- Attention –attractiveness and observation (cognitive ability) various factors increase or decrease the amount of attention paid. Includes distinctiveness, affective valence, prevalence, complexity, functional value. One’s characteristics (e.g. sensory capacities, arousal level, and perceptual set, past reinforcement) affect attention.
- Retention – behaviours can only be reproduced if retained – symbols, coding, rehearsal and cognitive skills. Remembering what you paid attention to. Includes symbolic coding, mental images, cognitive organization, symbolic rehearsal, motor rehearsal.
- Production – behaviour into action – supported by guidance, capabilities, and corrective adjustments. Reproducing the image. Including physical capabilities, and self-observation of reproduction.
- Motivation- supported by reinforcement and outcome expectancy – linked to positive or negative valence. Having a good reason to imitate. Includes motives such as past (i.e. traditional behaviourism), promised (imagined incentives) and vicarious (seeing and recalling the reinforced model)

Questions	Theory
<ul style="list-style-type: none"> • Please describe what you did when you received the flyers through the post? <ul style="list-style-type: none"> ○ Prompts – read and discuss/ignore • Please describe your thoughts after receiving the flyers through the post? <ul style="list-style-type: none"> ○ Prompts – interested/dismissive 	Attitude (TPB) Attention (SCT) Retention (SCT)
<ul style="list-style-type: none"> • How did the strap line – win together/travel together make you feel? 	Subjective Norm/Group affiliation Motivation (SCT) Production (SCT)
<ul style="list-style-type: none"> • After receiving all the flyers, please describe how you felt towards the way you currently get to XXX stadium? • Please explain why the flyers you received have or have not influenced your thoughts towards using public transport to get to XXX Stadium • After receiving all the flyers, please describe how you felt towards the way you currently get to other leisure venues? • Please describe why the flyers you received have or have not influenced your thoughts towards using public transport to get to other leisure venues? 	Stages of Change/Readiness to change – this can be linked back to their readiness to change score Production (SCT) Retention (SCT) Motivation (SCT) Decisional balance
You stated that XYZ interventions were influential. <ul style="list-style-type: none"> • Could you explain why you rated these flyers as the most influential? • In your own words describe what you think the key messages were from these flyers? • What do you think made you notice these flyers more than the others? <ul style="list-style-type: none"> ○ Prompts – Physical aspects such as colour/picture ○ Words written/key phrases 	Process of Change – Experiential/behavioural components and components of TPB (SN/ATT/PBC) Attention (SCT) Retention (SCT)
<ul style="list-style-type: none"> • Do you believe being part of this study has altered your behaviour towards travelling to XXX Stadium? Yes/No Why? 	Self-Efficacy/Motivation

Appendix 10 – Ethics procedure

University of Leeds light touch ethical review form – guidance

All research carried out by staff or students at the University of Leeds involving any of the following requires ethical approval:

- Human participants, their data or their tissue or
- Significant environmental impact.

Ethical approval must be obtained before research begins and before potential participants are approached.

The light touch ethical review application process is used for research where the ethical issues raised by the research are minimal and which have been adequately addressed by the researcher(s). The form may also be used to determine whether a full application for ethical approval is required.

Instructions
Please complete each section. If a question does not apply please write N/A rather than leaving it blank.
NB: Before completing the form check that your answers to C1 indicate your project is suitable for light touch ethical review.

Section A1 – Application details – to be completed by all applicants

Grant reference #	N/A	Ethics reference #	Unknown
Research title	Promoting Travel Behaviour Change of Attendees at Sport Venues – An Extended Trans-theoretical Approach		
Proposed start date	01/07/2010	Proposed end date	12/12/2015
Is the research externally funded?	Yes		
If yes, please name the funder	Leeds Metropolitan University		

Section A2 – Contact details – to be completed by all applicants

Principal Investigator	James Musgrave
Position	PhD Candidate
Department/ School/ Institute	Institute of Transport Studies
Faculty	Environment
Work address	Pavilion 515, Kirkstall Lane Leeds Metropolitan University, Leeds LS6 3DP
Telephone number	0113 812 3468
Email address	j.musgrave@leedsmet.ac.uk

Last updated 13 November 2013

University of Leeds light touch ethical review form

Section C1 – High Risk Ethical Issues – to be completed by all applicants

	Yes	No
Does the study involve participants who are particularly vulnerable or unable to give informed consent (eg children, people with learning disabilities, your own students)?		<input checked="" type="checkbox"/>
Will the study require the cooperation of a gatekeeper for initial access to groups or individuals who are taking part in the study (eg students at school, members of self-help groups, residents of a nursing home)?		<input checked="" type="checkbox"/>
Will participants be taking part in the research without their knowledge and consent (eg covert observation of people in non-public places)?		<input checked="" type="checkbox"/>
Will the study involve discussion of sensitive topics (eg sexual activity, drug use)?		<input checked="" type="checkbox"/>
Are drugs, placebos or other substances (eg food substances, vitamins) going to be administered to the participants or will the study involve invasive, intrusive or potentially harmful procedures of any kind?		<input checked="" type="checkbox"/>
Will blood or tissue samples be obtained from the participants?		<input checked="" type="checkbox"/>
Is pain or more than mild discomfort likely to result from the study?		<input checked="" type="checkbox"/>
Could the study induce psychological stress or anxiety or cause harm or have negative consequences beyond the risks encountered in normal life?		<input checked="" type="checkbox"/>
Will the study involve prolonged or repetitive testing?		<input checked="" type="checkbox"/>
Will financial inducements (other than reasonable expenses and compensation for time) be offered to participants?		<input checked="" type="checkbox"/>
Will the study involve an international collaborator or research conducted overseas?		<input checked="" type="checkbox"/>
Will the study involve the transfer of data outside the European Economic Area?		<input checked="" type="checkbox"/>
Are there any potential conflicts of interest?		<input checked="" type="checkbox"/>
Does the research involve any risks to the researchers themselves, or individuals not directly involved in the research?		<input checked="" type="checkbox"/>
Will the study require ethical review from the NHS? (Refer to http://researchsupport.leeds.ac.uk/index.php/academic_staff/food_practice/ethical_review_process/nhs_ethics_review for guidance in identifying circumstances which require NHS review)		<input checked="" type="checkbox"/>

If you have answered 'yes' to any of the questions in section C1 you do not need to complete the remainder of this form. Instead you must complete an application for full ethical review either by the University or the NHS.
For University applications please refer to http://researchsupport.leeds.ac.uk/index.php/academic_staff/food_practice/ethical_review_process/universities_ethical_review.
For NHS applications please contact the Ethics Administrator in Medicine and Health for further advice, governance-ethics@leeds.ac.uk.
If you have answered 'no' to all of the questions in section C1, please proceed to section C2.

University of Leeds light touch ethical review form

Section A3 – for students only

Qualification working towards (eg Masters, PhD)	PhD
Supervisor's name	Ann Jopson and Samantha Janson
Department/ School/ Institute	Institute of Transport Studies
Supervisor's telephone number	0113 343 5333
Supervisor's email address	A.F.Jopson@leeds.ac.uk
Module name and number (if applicable)	N/A

Section A4 – to be completed by the student's supervisor

	Yes	No
The topic merits further research		
I believe that the student has the skills to carry out the research		

Section B1 – to be completed by all applicants

Provide a brief summary of the research including aims and objectives and/or research questions and the proposed methodology including the methods and research participants (maximum 200 words).

The aim of this behaviour change study is to ascertain the determinants of behaviour and the process of behaviour change in modal choice within a sports event context (Leeds Rhinos). The development of a hybrid model that extends the Trans-theoretical Model (TTM) of change and incorporates the more cognitive aspects of Theory of Planned Behaviour (TPB) may provide a more robust predictive aspect for intervention testing and behaviour change analysis. In addition, incorporating theory led intervention design and testing into a theoretical framework may capture instrumental acts characterised by the target group and mapped against Stages of Change (SoC) and the Process of Change (PoC) (constructs of the TTM). So theoretically the extension of the TTM will allow the research to:

- Identify cognitions that underpin change in travel behaviour goals
- Delinate the instrumental acts that are important in achieving change in travel behaviour
- Establish the significance of antecedents that facilitate change in travel behaviour goals
- Explore the utility of theory led interventions mapped against SoC and PoC

There are five stages to the primary research excluding a pilot test of all components:

- Leeds Rhinos Fan Forum – December 2014. Method – Pre-intervention interviews that will evaluate a range of theory and context led interventions in order to present the most effective during the intervention stage.
- Leeds Rhinos First Home Match February 2014. Method – Face to face and online questionnaire that will establish base line data which will inform current travel behaviour.
- Implementation of interventions at the case study venue. A random selection of control and experiment group will receive a suite of interventions covering constructs of TTM.
- Post intervention questionnaires that will mirror stage one and enable a before and after analysis of participants transport behaviour.
- Post intervention interviews (experiment group only) that will evaluate the behaviour changes taken or not taken.

University of Leeds light touch ethical review form

D1 Declaration – to be completed by all applicants

Applicants should read and sign the following declaration before submitting the application.
In signing this research ethics declaration I am confirming that:

- The research ethics application form is accurate to the best of my knowledge and belief.
- I have read the University's policies relating to ethics (available at http://researchsupport.leeds.ac.uk/index.php/academic_staff/food_practice/university_ethics_policy)
- I have read and agree to abide by the research ethics protocols (available at http://researchsupport.leeds.ac.uk/index.php/academic_staff/food_practice/ethical_review_process/light_touch_ethical_review) applicable to the project and which are listed in Section C1 of the Research Ethics Application form.
- There is no potential material interest that may, or may appear to, impair the independence and objectivity of researchers conducting this project.
- I have received authorisation from the relevant authorities to carry out the research.
- I undertake to inform the Research Ethics Administrator of any significant changes to the project.
- I understand that the project, including research records and data, may be subject to inspection for audit purposes at any time in the future.
- I understand that personal data about me contained in this form will be held by those involved in the ethics review procedure (e.g. the Research Ethics Administrator and/ or ethics reviewers) and that it will be managed according to Data Protection Act principles.

For supervisors of research students only:

- I have discussed the ethical issues arising from the research with the student and have read the application and agree that it has been completed accurately and fully.

Signature:  Supervisor's signature (where necessary): _____
Print name: JAMES MUSGRAVE Print name: _____
Date: 13/11/2013 (dd/mm/yyyy) Date: _____ (dd/mm/yyyy)

Please submit the completed light touch ethical review to the Research Ethics Administrator, Jennifer Blake, j.m.blake@leeds.ac.uk. A signed application form is required and should be sent either by email or through the post to Jennifer Blake, Research Ethics Administrator, Research & Innovation Services, Charles Thackrah Building, 101 Clarendon Road, University of Leeds, Leeds LS2 9LJ.
Further information on the light touch ethical review pilot is available at http://researchsupport.leeds.ac.uk/index.php/academic_staff/food_practice/ethical_review_process/light_touch_ethics_review.

Appendix 11 – Initial template analysis

First Level	Second level
Initial behaviour to intervention	Attitude Positive - read, Attitude Negative - dismissive and binned
Initial reaction to intervention	Attention - memory recall good, difficult in remembering
Post intervention travel behaviour to the stadium	Actions – change or no change, readiness to change or not?
Post intervention feelings towards travel to the stadium	Positive or negative feelings towards car use,
Post intervention travel behaviour to local venues	Actions – change or no change, readiness to change or not?
Post intervention feelings towards travel to local venue	Positive or negative feelings towards car use,
Engagement with interventions	Factors are imagery or text
Influence of interventions	Actions – change or no change, readiness to change or not?
Group solidarity	Recognises group influence, unrecognised group influence

Appendix 12 Second template analysis – abridged version

First Level - themes	Second level	Third Level
Initial reaction to intervention	Attitude Positive - read and discussed	<ul style="list-style-type: none"> Information focused environment focused cost focus health focus
	Attitude Negative dismissive and binned	<ul style="list-style-type: none"> Relevance – dismissive due to time and distance – ignored Don't like planning Not realistic to think about substitutes time, cost and distance Not inclusive and doesn't consider minorities...
	Attention - memory recall good,	<ul style="list-style-type: none"> Reminded rather than new information – latent positive attitude – always there
	Encouraged reflection of current travel behaviour	<ul style="list-style-type: none"> Think of travel in other aspects of life
Post intervention travel behaviour to the stadium	Action - no change	<ul style="list-style-type: none"> Isn't a realistic alternative Its not just about getting to the stadium but returning too Convenience and cost prohibitive Family commitments – kids to consider Getting To Leeds – the distance
	Not ready to change	<ul style="list-style-type: none"> Timing and time...pressure getting there at 8pm – Fridays no good. Feasibility
Post intervention feelings towards travel to the stadium	Positive towards car use	<ul style="list-style-type: none"> Acceptance as no alternatives... Distance and time It's convenient It's cheaper by car with a family
	Negative feelings towards car use	<ul style="list-style-type: none"> Possibly reflect planning for weekend matches Look at using away game coaches more as a result...
Post intervention travel behaviour to local venues	Actions – change or readiness to change	<ul style="list-style-type: none"> Thinking and planning Not time related issues Sharing costs Changed as now will check alternatives
	No change, no readiness to change or not?	<ul style="list-style-type: none"> I have the kids to consider
Post intervention feelings towards travel to local venue	Positive towards car use,	<ul style="list-style-type: none"> Reminded to think Reflection upon my current situation Gave me new information
	negative feelings towards car use	<ul style="list-style-type: none"> None – no negative feelings towards the use of a car.....
Engagement with interventions	Combination of text and imagery	<ul style="list-style-type: none"> Text and key message Clarify of message Focused upon personal situation Succinct messages Being a rugby fan I noticed rugby items
Group solidarity	Recognises group influence,	<ul style="list-style-type: none"> Did remind me of the good times at Leeds A link towards Leeds
	unrecognised group influence	<ul style="list-style-type: none"> Personal situation means dismissive of travelling with others

Appendix 13 – Interview transcript template analysis example

from summary
Transcript: Participant 55
accountant

Template one

- I: and here we go then, it's just a conversation really RIGHT.....about the flyers that you got through the post. Your reaction and flyers through the post. So the first one is really about what you did when you got these through the post....
- P: My reaction of flyers, well.... erm....I read them and then I replied to themwhere necessary, but normally I just read them.....and what did you think about the information.....I suppose had the information been relevant – the information, the flyers were quite good. *inhib behaviour*
- I: And why for the recording was it not relevant.....
- P: But....well for me, however the flyers were not directly relevant because of the distance and the time factor that it takes for me to get to Headingley Carnegie Stadium. *negative*
- I: And could you tell me your thoughts after receiving the flyers though the post....dismissive, interested...those kind of thoughts...
- P: My thoughts after receiving the flyers? OK, well what it did do was help me consider I mean think of other aspects of my life. So what I mean iserm..... Whether or not I could cut down on car journeys in other aspects of my life. And no it wasn't possible to think about this to Headingley, I have said this before but Er..... other aspects of my life it made me think about that. *reaction - memory read*
- I: was this something new for you then....
- P: I suppose It's no new information..... the concern is always there at the back of your mind, about things like that, you know, but the flyers reminded me and brought these things forward.....so yes, it reminded me. Sure. *Reflection*
- I: What did you think of the strap line – win together and travel together....
- P: I didn't really think of it – what you said about the strap line [reference to win together, travel together]... I think it didn't really affect me either way because I had already made my mind up that I couldn't travel to the stadium....it comes back to the distance thing.....with large groups of others.....difficulty travelling with anyone else..... Given the distance and time it takes me to get to the matches. *realistic ?*

Reduce
Car
Journeys

Group Solidarity
↳ unregional
due to
personal choice

interest +
Positive
attitude

- I: thanks for that....I suppose the next question is about receiving the flyers....and after receiving all the flyers, can you describe how you felt towards the way you currently get to Headingley stadium *Post intervention - no action*
- P: Erm.....That's really difficult because I know at the back of my mind there isn't an alternative - in my current employment position [pause] It's not just about getting to the stadium, it's about getting back too.....you know home *Alternatives*
- I: I suppose so...it is always about timing...so do you prefer the Sunday fixtures then?
- P: Quite right, to be honest, it's a lot easier travelling to a 3pm Sunday kick-off and you can think of alternatives. However, the problem there is that the alternatives are less frequent on a Sunday..... *Convenient - alternative*
- I: Do you know that a lot of stadiums put on park and ride scheme but I suppose do you think it is something to do with the timing of the Friday fixtures? *Should be*
- P: yeah well actually.... I mean Leeds have a bus service from the city centre to the stadium but for me it's about getting to the city in the first place [pause]....I've still got to get to the city centre. Now, listen my final suggestion to you is to look at doing a study, if you remember, when I replied, *line of cost*
- I: yes I remember...
- in how long and the cost and difficulty in getting to Leeds from my postcode...you know....a comparison....
- I: Oh yeah, absolutely atrocious....indeed....you are the furthest away I think...but still very interesting, a lot of those in the study are quite a way, we are talking 15-120 miles away...ok going back onto the questions.... Could explain why the flyers you received have or have not influenced your thoughts towards using public transport to get to Headingley Stadium *negative towards flyers*
- P: Ermm....I think, it's the flyers are not inclusive because for me, I know, the timings and costs make alternatives prohibitive. *not inclusive*
- P: Can I just add to that.....and the difficulty for getting there. Getting to Leeds is the most difficult part of the journey. *alternatives prohibited*
- I: So is it just getting to Leeds?
- P: If I lived in Leeds, I could jump on a bus to the centre, get the bus service to the stadium I might think of doing it that way - but I can't. Again this is all time permitting.

Alternatives

Non Action

There

• I: Yes, mmm, so the next part is looking at other venues....and you have alluded to it earlier....but after receiving all the flyers, please describe how you felt towards the way you currently get to other leisure venues? You've already referred to it in previous answer...but

position - local venues - sharing + truly

• P: Yes I have....I think the flyers have made me think about sharing the car and sharing car journeys, we went to Wembley for instance. My son lives in Leeds...so rather than drive down separately he came across to me and we drove down together. This was a better decision for me....that's not a bad answer is it [laugh]

• I: [laugh] no correct – it works out a lot better doesn't it..... so finally, moving on...can describe why the flyers you received have or have not influenced your thoughts towards using public transport to get to other leisure venues?

*Position Alternatives
Leisure - close*

• P: The flyers have reminded me to think about using alternatives to get to other leisure venues – closer to me. The flyers certainly bring the issues to the forefront of my mind.

• I: Trying not to put words in your mouth....has it brought it to the forefront?

• P: Yes...yes it has...

• I: Ok, so moving on...here...just looking at the level of engagement with the flyers through the post...you stated that the most engagement is...let me just read it, was this one, where kids need at least 60 minutes of physical activity every day and you can get 10 minutes of that walking to the study. I really want to know why you rated this flyer....

• P: probably because I have got a thing about parents not doing enough with their children, it's the parenting aspect – I have a think about parents not providing their kids with enough exercise. When my children were young we took them to rugby, football, karate you name it. Today I just don't think parents do enough and don't encourage the children

text -

• I: so this is about the key message, in your own words, thinking of the flyer, what is the key message here for you?

reflection - key message

*My point said
Personal viewpoint*

• P: Ermm....basically, I think we should encourage our children to be more active.

• I: lovely, thank you...thanks for that, and this is more about the aesthetics....so the next question is about what made you notice this flyer more?

• P Did I notice the flyer – I wouldn't say that I noticed this flyer more than others, I think the wording of the flyer connected with me more.

words reflected

- I: Got ya – so this rang more true....
- P: If I am being totally honest, some of the other flyers and messages were not particularly good – a little bit difficult to see what was being said. *— my shw*
- I: Got ya, so clearer and shorter to the points...
- P: Clearer and shorter points would make the information better – yeah *— text — more clear*
- I: So not putting words into your mouth and our discussions earlier can I ask Do you believe being part of this study has altered your behaviour towards travelling to Headingley Stadium? Yes/No Why?
- P: None whatsoever - because of the distance and the time factor. If I could get there by public transport – currently it takes me over an hour to get the stadium – if I could get there even in double that time in public transport and get back too – this is a key factor because if the game finishes near 10pm especially with work in the morning I can be in bed by 1130pm if I use the car. If I use public transport I could be in by 1230am...it's just not feasible. Especially on a Thursday night if I was working the next day....it just not feasible whatsoever, but again if it was a weekend then may be different. *Techn*
- I: Ok thank you for your.... *Time, Cost, Feasible*
- P: Can I make one more comment – when I queued with my wife for tickets to Wembley –return travel £40, if you had been there and listen to the comments, it was a rip off per person per coach....it's not a dig at the enterprise but anti coach anti public transport - it seems its really is crazy. Even if you think of the national or mega express and think about the cost... and if you take two kids it's crazy. We – me and my wife - can drive down there to Milton Keynes and get the train return at £11.99 per person. Again, it's more cost effective and ecological way of doing it. This is really relevant for your study and should be reported back *no dye*