What makes an adult? An investigation into the psychology of modern adulthood

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Abstract

Adulthood is the longest phase of life, during which individuals often make their most substantial contributions to society. Traditional psychological models of lifespan development define adulthood by the attainment of socio-demographic milestones such as career, marriage, and parenthood. Yet, these milestones – and the models that rely on them – are often out of reach and even irrelevant for adults today. This thesis explores definitions of modern adulthood, proposes a new taxonomy for describing adulthood, and tests when and why people identify as adults, in three publications. A meta-analysis (paper 1) summarised over 30 years of research using the markers of adulthood scale (k studies = 40, N_{total} = 17,465). Findings showed that the socio-demographic milestones of marriage, parenthood, and career were endorsed by meta-analytic proportions of 24%, 23%, and 58% respectively, calling for a re-definition of contemporary adulthood. Using the theory construction model, I developed CARES (paper 2), a descriptive taxonomy consisting of five psychological qualities that describe adulthood: Cognitive maturity (confidence in knowledge); sense of Ageing (realisation that life is finite); self-Reliance (feeling in control of life); Eudaimonia (living in alignment with oneself); and Social convoy (network of social relationships). The CARES taxonomy has conceptual and methodological foundations in the literature, maps cognitive, affective, and behavioural development in adulthood, and forms the basis of adults' psychological well-being. A cross-sectional survey study (paper 3) of UK residents aged 18-77 (M_{age} = 39.20, N = 722) identified psychological characteristics to define adulthood, introduced and validated the psychometric CARES scale, and tested predictors of subjective adult status including age, attainment of socio-demographic milestones, and attitudes towards adulthood. Overall, this thesis introduces a new perspective on adult psychological development, which will inspire future research on the psychology of adulthood and further our understanding of adults' well-being and mental health.

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A note on PhD by publication

This thesis for the degree of Doctor of Philosophy in Psychology in Education is submitted by publication also known as a journal-style thesis, meaning that the thesis comprises of three papers and an integrated chapter. The integrated chapter – comprising an introduction (c. 10,000 words) and a discussion (c.7,000 words) – is intended to provide context for the three papers and to describe the background, methodology, and results which tie the three articles together as one cohesive piece of work.

The structure for this thesis is as follows: (1) an integrated introduction outlining the theoretical background, methodology, and aims of this thesis and describing how the three papers together create a coherent body of work; (2) full manuscripts for all three papers including all supplementary materials, (3) an integrated discussion which brings together findings and implications from the full body of work and introduces future directions for this research; (4) a general conclusion, (5) full reference list. At the time of writing the integrated chapter (September 2023), all three papers had been submitted and were under review at academic journals.

Two caveats need to be addressed about this thesis. First, there will be a degree of repetition across the integrated chapter and each of the three publications, especially when introducing concepts and outlining previous work. This repetition is necessary as each piece – the three papers and this thesis – will be read independently, and so all papers require background information to contextualise the research. Second, the integrative chapter is written in first person while the papers are written in the third person. All papers were the result of collaboration and so they are written in the third person, whereas the integrative chapter is intended to be more reflective in nature, so is written in the first person.

Author's declaration

The three papers contained within this thesis have been submitted for publication in peer-reviewed journals and are under review at the time of submission of this thesis (September 2023). I (Megan Wright) led on the conceptualisation, writing, methodology, and data analysis for all three papers.

I declare that this thesis is a presentation of original work. This work has not previously been presented for an award at this, or any other, university. All sources are acknowledged as references.

Wright, M., Oxley, F.R., & von Stumm, S. (2023). Measuring Adulthood: A meta-analysis of the markers of adulthood scale. *European Journal of Psychological Assessment.* [Under review]

Preprint: https://psyarxiv.com/bj5yv/

Preregistration & Data: https://osf.io/4e79d/

Wright, M., & von Stumm, S. (2023a). The CARES taxonomy: Five psychological qualities of adulthood. *Perspectives on Psychological Science*. [Under review]

Preprint: https://psyarxiv.com/q23mn

Wright, M., & von Stumm, S. (2023b). Perceptions of adulthood: What does it mean to be grown-up? *Journal of Adult Development*. [Under review]

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Statement of Contributions of Co-authors

I (Megan Wright) conceived of the ideas for this thesis and the three papers it includes. I designed the literature searches and the survey, completed data collection and preparation, performed all analyses, and wrote all papers in this thesis. Sophie von Stumm supervised all aspects of the work, advised on the concept for the papers, and provided notes and edits for all manuscripts. Florence Oxley assisted with double-screening and double-coding for the meta-analysis in paper 1 to ensure accuracy. All authors contributed to the editing of the manuscripts that they are credited for, and all authors approved manuscripts ahead of submission.

I hereby confirm that the above statement is correct.

Megan Wright   Signature: Date: 25.09.2023

Sophie von Stumm   Signature: Date: 25.09.2023

Florence Oxley   Signature: Date: 25.09.2023

1. Integrative Introduction

This PhD thesis explores the definition and measurement of contemporary adult status through three papers: (1) Measuring adulthood: A meta-analysis of the markers of adulthood scale; (2) The CARES taxonomy: Five psychological qualities of adult development; and (3) Perceptions of adulthood: What does it mean to be grown-up?

In this integrative introduction, I will contextualise my three papers by (a) discussing the importance of studying adulthood today, (b) reviewing key theoretical perspectives which framed my research, (c) introducing the overarching aims for this thesis, (d) summarising the three papers which make up this thesis; (e) outlining my methodology, and (f) describing the original contribution that this work makes to the field of developmental psychology. Following the integrative introduction I will present the three manuscripts, and discuss common themes, implications of this research, and general limitations in an integrative discussion.

1.1. The importance of studying adulthood

1.1.1. What is Adulthood?

The term 'adult' comes from the Latin *adultus*, meaning grown (Online Etymology Dictionary, 2022). 'Adult' was a term originally used to define any species that had reached full physical maturity, but over time the concept of adulthood in humans has evolved and socio-demographic milestones such as career, marriage, and parenthood have become markers of development in adulthood and proxies for adult status (Hoare, 2020). However, these milestones are increasingly delayed or out of reach for young people today, and entry into adulthood is no longer as clear and straightforward as it once was.

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The path to adulthood was fairly uniform in Western countries in the 1950s and 1960s as most people experienced an economic boom after World War II (Blatterer, 2007). As a result of these favourable economic circumstances, young people typically found stable work, married, and had children in quick succession in their early twenties (Blatterer, 2007). This path to adulthood was achievable and normative in the 1950s and 1960s and became a blueprint for attaining adult status. Classic psychological models of lifespan development – such as Robert Havighurst's (1953) developmental task theory, Erik Erikson's (1963) psychosocial model, and Daniel Levinson's (1978, 1996) seasons of life – described adulthood according to these socio-demographic milestones, suggesting that individuals should obtain a job, marry and have children in consecutive order to achieve adult status – choosing a romantic partner and establishing a family were key stages of adult development in Erikson's, Havighurst's, and Levinson's models of lifespan development. These 'stage models' of development, which emphasised adulthood as a time of hierarchical and linear attainment of socio-demographic milestones, formed the basis for lifespan developmental psychology.

The pattern of events which defined adulthood in the 1950s and 1960s – the sequence of attaining the socio-demographic milestones of career, marriage, and parenthood in the early twenties – is no longer relevant in our current world which is characterised by volatility, uncertainty, complexity, and ambiguity. The experiences of contemporary adults differ greatly from that of previous generations upon which seminal models of adult development were constructed. For example, young people spend more time in education now than ever before: they study a broader range of subjects and obtain higher educational qualifications overall compared with previous generations. In the UK, the rate of young people in higher education increased from 8.4% in 1970 to 37.5% in 2022 (Bolton, 2012, 2023). This trend in extended higher education is observed globally (e.g., Australian Bureau of Statistics, 2017; Duffin,

2022; OECD, 2019; Yoon, 2023). As young people spend more time in education, the socio-demographic milestones that defined adulthood in the past – career, marriage, and parenthood – are delayed. First, young people experience frequent job changes before settling down into stable careers later in adulthood. One study from the US shows that millennials – the generation born between 1980 and 1996 – were twice as likely to change their job within one year compared with generation X, who were born between 1965 and 1979, and millennials were three times as likely to change jobs in a year compared with the baby boomer generation, those born between 1945-1964 (Lyons et al., 2015). Another study found evidence that the average person in the US holds 5.7 different jobs between the ages of 18 to 24 years, which drops to 4.5 jobs from 25 to 34 years, and only 2.9 jobs in the decade from 35 to 44 years of age (Bureau of Labor Statistics, 2023). These statistics suggest that younger adults experience higher levels of 'job-hopping' compared with older individuals, which can lead to income uncertainty and insecurity. Young people today also experience difficulty in achieving financial independence and stability, illustrated by the fact that 50% of US adults aged 18-30 reported living with their parents in early 2020 – the largest proportion of young adults to live in the parental home since the Great Depression (Fry et al., 2020).

Second, the average age of first-time marriage in the UK in 2020 was 35 for men and 33 for women (ONS, 2023a), showing that marriage is typically delayed until the early-to-mid-thirties. Furthermore, the number of marriages occurring in the UK has decreased by 50% since 1972 (ONS, 2022a). An explanation for both the rising age of first marriage and the fall in marriage rate is that cohabitation has become a common precursor – and a replacement in some cases – for marriage. As recently as 1980, only a third of people cohabited before their first marriage, but now over 80% of people live together before marrying (Thompson, 2012). This represents broader changes in attitudes towards marriage as a prerequisite to sex, cohabitation, and childbirth.

Third, birth rates have declined in the UK and worldwide (Cheng et al., 2022; Frejka, 2017; ONS, 2022b; Stone, 2019), and the average age of first-time mothers in the UK has risen from around 24 years of age in the 1960s to 31 in 2021 (Clark, 2023; Thompson, 2012). Average age of first childbirth is now about two years younger than the average age of first-time marriage for women in the UK, pointing to a dramatic cultural change that has taken place over the last six decades. In the 1950s, only around 5% of children were born outside of marriage, whereas today that figure is almost 50% (Thompson, 2012).

These statistics show that the path to adulthood has dramatically changed over the past 60 years. Several factors have contributed to this change, including the sexual revolution of the 1960s and 1970s, the Abortion and Divorce Reform Acts of the late 1960s, and decreasing numbers of young people in the UK holding religious beliefs (Greenwood & Guner, 2010; Sheldon et al., 2022; Thompson, 2012; ONS, 2022c). This has led to a drastically different experience of adulthood for contemporary young people compared with the young adults of the post-WWII era, upon whose experiences traditional models of lifespan development were built.

Pathways to adulthood have become longer and more diverse, and as a result adults have begun to place less emphasis on the socio-demographic milestones of marriage and parenthood to define their adult status. A recent poll found that a third of people aged 16 to 39 in the UK thought that traditional life milestones such as marriage and parenthood were outdated and not relevant for adult status today (Relate, 2022). Instead, people use more individual and subjective psychological characteristics to define adulthood, such as "Taking responsibility for the consequences of my actions" and "Deciding on my beliefs and values independently" (e.g., Arnett, 1994, 1997, 2001, 2003; Beckert et al., 2020; Kuang et al., 2023; Molgat, 2007; Sharon, 2016; Sirsch et al., 2009; Vleioras, 2021). These psychological qualities are more intangible and subjective than socio-demographic milestones and could be

construed as being more under the individual's control compared with milestones such as marriage and parenthood which may feel out of reach (Sharon, 2016). Psychological qualities used to define adulthood also tend to be continuous in nature rather than dichotomous, which marital and parent status are. For example, individuals are either married or unmarried, whereas "Taking responsibility for the consequences of my actions" is not dichotomous and could vary depending on the context (e.g., I take responsibility for my actions at work more than I do when I am at my parents' home), or over time (e.g., I take more responsibility for my actions now than I used to). Defining adulthood using continuous, individual psychological markers substantiates that adulthood is not a fixed social status attained once through the achievement of socio-demographic milestones, instead adulthood is a rich, dynamic, and rewarding time of psychological development.

Another key change in how adulthood is perceived today compared with the 1950s and 1960s is that the word "adult" is used as a verb by the millennial generation – those born between 1980 and 1996. Rather than using adult as a noun and an identifier (e.g., "I am an adult"), millennials coined the term "adulting" (e.g., "I am adulting"). "Adulting" is a denominal verb – a verb which derives from a source noun and has context-dependent meaning rooted in socio-cultural knowledge (Michaelis & Hsiao, 2021). "Adulting" first appeared on social media in 2008 and was popularised in the 2013 book *Adulting: How to become a grown-up in 486 easy(ish) steps* by author Kelly Williams Brown. Today, "adulting" is still used mainly by millennials online to describe the responsibilities, stresses, and mundanities of being grown-up. For example, millennials would refer to paying bills, doing laundry, or preparing meals as "adulting", and phrases such as "I can't adult today", or "Adulting is hard" are common on social media. This shift from using adult as a noun to using adulting as a verb has in a way changed the very definition of adulthood. Instead of being seen as an identity that is attained once and kept as it was in generations past,

adulthood is now perceived as an action, a chore, or even a performative state. This builds a narrative of adulthood as undesirable and difficult. Adulthood has been separated from a person's identity or definition of themselves – instead of being seen as a part of someone's identity, adulthood is now viewed as a temporary action or task that one must undertake. The reason for this shift in perspective could be that the benefits and securities of adulthood, including financial independence, are largely unattainable for young people, and so adulthood has negative connotations. This could mean that young people do not identify as adults, and that adulthood is seen as a negative time of life.

1.1.2. Why should we study the psychology of adulthood?

Adulthood is the longest phase of life, and 65% of the global population are classed as adults (The World Bank, 2022a). Adulthood is a key period for development, during which people's identities are shaped by their choices, responsibilities, and experiences. In turn, adults also shape their communities, countries, and cultures – adults drive innovation, run governments, and nurture the next generation, making adult development a necessary focus for research to improve the lives of individuals, and society as a whole.

However, developmental psychology research has focused mostly on growth in childhood and decline in old age. A focus on adulthood as a life phase in developmental psychology is relatively recent: the first mention of "adult" in a journal title was in 1994 (Hoare, 2020), and a recent literature search reveals that 1,104 journal articles mentioned the term "Adult development" in the past 10 years, compared with over 40,000 articles mentioning "Child development"[1].

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[1]Search details: two searches were conducted using Scopus with article title, abstract, or keywords from date range 2013-present. First with keywords "Adult development" and second with keywords "Child development". Searches carried out on 18th September 2023.

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Research on adulthood has shown that perceiving oneself as an adult is positively correlated with well-being with a medium effect size in a sample of 1,166 cancer survivors aged 18-39 in the US (Kim et al., 2022). Despite this restricted sample in a single study, this preliminary evidence suggests that a better understanding of why and when people perceive themselves as adults could help to improve adults' subjective well-being. There are three distinct pathways by which understanding contemporary adult development could improve well-being.

First, redefining adulthood could improve well-being through reducing social pressures to achieve socio-demographic milestones. Even though society has changed, and the traditional adult milestones of career, financial independence, marriage, and parenthood are largely out of reach for young people today, the social pressure to achieve these milestones is still evident and varies greatly by culture and upbringing. The social pressure to marry, have children, and advance in a career in adulthood results in young people feeling left behind or inadequate as they struggle to keep up with outdated notions of what adulthood should look like. A recent survey found that 77% of millennials (aged 25-39) and 83% of Gen Z (aged 16-24) feel pressure to reach socio-demographic milestones (Relate, 2022). These feelings are exacerbated by social comparisons with peers, a phenomenon which is at an all-time high due to the pervasiveness of social media. The average 27-year-old would likely open Facebook to a stream of announcements of promotions, engagements, and pregnancies from their friends and acquaintances, while they themselves may be living in a house-share or with their parents and struggling to advance in a career or in personal relationships. Comparison to peers can have negative effects on well-being, especially if one finds themselves lacking. For example, research has demonstrated that perceiving peers as more socially active than yourself has negative effects on well-being (Whillans et al., 2017). There is also a level of social judgement when people choose counter-normative life paths, for example not to marry, not to

have children, or not to follow a traditional career, and a societal assumption that these paths are lacking in fulfilment. However, recent research shows that adults who remain childfree and single by choice have high life satisfaction and well-being (Kislev, 2023; Stahnke et al., 2022). In short, the pressure to adhere to normative socio-demographic milestones still exists, even though these milestones are more out-of-reach for young people than ever before. Redefining adulthood for the 21st century could reduce social pressures and lessen the negative effects of social comparisons.

Second, if people perceive themselves as adults, they may feel an increased sense of belonging in society, and in the adult population specifically. Conversely, not identifying as an adult could cause feelings of alienation from the adult population, and a lack a of sense of belonging. Sense of belonging to a community or wider population relating to one's gender or sexuality has been associated with positive well-being and mental health (e.g., Gopalan & Brady, 2020; Rubin et al., 2019; Sargent et al., 2002; Young et al., 2004).

Third, outdated or inaccurate models of adult development could create a dissonance between people's 'ideal' and 'real' adult selves – in other words, people's experience of adulthood (the 'real' self) may be far from their expectations (the 'ideal' self). Having such a discrepancy between expectations and experience of our development and progress can cause psychological distress, impairing well-being (e.g., Carver, 2012). It is critical that models of adult development and their association with well-being are relevant and up to date in order to understand and support the development of young people. Theories of adult development that were conceived of and tested during times of relative economic prosperity need to be readdressed and re-evaluated to assess their applicability to modern adulthood. As an example, a recent study found that age-related linear increases in well-being observed from young to middle adulthood in the 1990s were no longer observed in the 2010s due to

increased stress in adulthood (Almeida et al., 2020). Thus, psychological theories need to reflect current realities.

1.2. A review of the theoretical background and past literature

Below I review three concepts from the psychological literature which informed my thinking throughout my PhD. First, I describe Erik Erikson's (1963) seminal psychosocial theory of lifespan development. Second, I discuss Jeffrey Jenson Arnett's (2000, 2015) concept of emerging adulthood, defining the distinct time period from age 18-29 years. Third, I describe established adulthood, the distinct developmental phase from age 30-45 years, developed by Clare Mehta and colleagues (2020). These concepts were integral to the development and execution of my PhD, and their detailed descriptions below set the foundations for my three papers.

1.2.1. Erikson's Psychosocial Theory

Erik Erikson's theory of psychosocial development (Erikson, 1950, 1963, 1994) is a seminal and influential model of the human lifespan which still inspires research to this day (e.g., Côté, 2018; Darling-Fisher, 2018; Knight, 2017; Zock, 2018). Erikson's model was the first to introduce the idea that people continue to develop and grow after adolescence, making this the first psychological model of the lifespan including adulthood. Erikson's psychosocial theory of development was based on the epigenetic principle, which posits that development is influenced by both ourselves (psycho-) and our environment (-social) (Erikson, 1963). Erikson's theory comprised of eight stages which made up the human life, and each stage of life centred around a psychosocial conflict – a struggle between two opposing polarities. Each polarity was seen as a necessary tension inherent in a particular stage of human development, and the resolution or balance of these polarities resulted in an individual becoming a more

integrated and whole human being (Erikson, 1963). According to Erikson's model, each stage and each corresponding psychosocial conflict should be resolved for an individual to achieve healthy identity development (Erikson, 1963). However, the resolution of these stages could be a lifelong process: resolving a conflict is not a requirement for moving on to a later stage of development, but that conflict will affect an individual's life until it is resolved (Erikson, 1963). Furthermore, stages and their psychosocial conflicts are questioned and reintegrated throughout life depending on the individual's circumstances and environment (Erikson, 1963, 1994; Gilleard et al., 2016; Zock et al., 2018).

The eight stages of Erikson's psychosocial model are split across the lifespan as follows: childhood is made up of four stages, including the psychosocial conflicts of trust versus mistrust, autonomy versus shame, initiative versus guilt, and industry versus inferiority; adolescence concerns the psychosocial conflict of identity versus role confusion; and adulthood consists of three stages, concerning the psychosocial conflicts of intimacy versus isolation, generativity versus stagnation, and integrity versus despair. Erikson did not assign strict age ranges for these stages, and he stated that the corresponding psychosocial conflicts were often readdressed again later in life (Erikson, 1963, 1994). Despite this, scholars have attempted to assign age ranges to Erikson's stages, and create quantitative measures for each stage (Hoare, 2013). Erikson disapproved of his stage model theory becoming too age-bounded and argued that it had been reduced from a holistic view to narrow empirical measures (Erikson, 1994). Researchers have had little success in validating or replicating evidence for Erikson's stages occurring within specific age ranges (Hoare, 2013). Here I describe the three stages of adulthood with rough age ranges which were proposed by Erikson in his seminal psychosocial theory introduced in *Childhood and Society* (1950).

The first crisis of adulthood takes place during "young adulthood", between the early twenties and early forties (Erikson, 1950). The psychosocial conflict for this stage of life is

intimacy versus isolation, with the primary goal of finding love, and establishing a balance between forming intimate relationships and maintaining one's independence (Erikson, 1963). Inability to develop intimacy can lead to feelings of loneliness and social isolation (Erikson, 1963). The second stage of adulthood in Erikson's model is middle adulthood, from the mid-forties to the mid-sixties (Erikson, 1950). The psychosocial crisis for middle adulthood is generativity versus stagnation, and the primary goal is to provide care and service to the community, ultimately creating a legacy to leave behind (Erikson, 1963). Individuals in this stage of life are concerned with finding their life's purpose and contributing to the development of others through caring for others, or engaging in meaningful and productive work which makes a positive contribution to society (Erikson, 1963). Those who do not master generativity may experience the opposing polarity of stagnation, the feeling that they have little connection with others, and they are not leaving a meaningful mark on the world (Erikson, 1963). The third stage of adulthood in Erikson's theory is old age, from the mid-sixties to the end of life (Erikson, 1950). The psychosocial crisis for this stage is integrity versus despair, with the goal of developing wisdom and reflecting on one's life (Erikson, 1963). As older adults reflect on their lives, they may feel a sense of satisfaction or of failure. People who are proud of their accomplishments feel a sense of integrity and can look back on life with few regrets. However, those who are not successful may experience despair and bitterness, reflecting on regrets in life (Erikson, 1963).

A ninth and final stage was added to the psychosocial theory by Erik Erikson's wife, Joan Erikson, over four decades after *Childhood and Society* was first published. The ninth stage of life – and the fourth of adulthood – takes place around age 80-90 years, and addresses the challenges associated with continued ageing (Erikson, 1997). There is no new psychosocial crisis for the ninth stage, instead all previous crises converge at once, as the older person navigates all stages from trust versus mistrust to integrity versus despair (Erikson, 1997). As

people lose their independence in older age, and their mind and body deteriorate, there is a great risk that the negative ends of these crises (i.e., mistrust, shame, guilt, inferiority, role confusion, isolation, stagnation, and despair) come to the fore (Erikson, 1997).

Empirical studies using longitudinal data have confirmed that Erikson's stages take place in the order they were proposed – for example, identity, the goal of adolescence, is established before intimacy, which is associated with young adulthood (Beyers & Sieffge-Krenke, 2010; Whitbourne et al., 1992). However, the exact age ranges assigned to the eight stages of the lifespan have not been validated (Hoare, 2013). Some suggest that Erikson's psychosocial crises of adulthood should be viewed as narratives that run throughout the course of life, not tied to specific ages (Gilleard, 2020; Hoare, 2013).

Erikson's psychosocial model has many strengths, including being the first to show that development is a continuous process across life and extends beyond biological maturity, introducing the idea that development and psychological change is important throughout life (Gilleard, 2020). This model also emphasised the importance of culture and society on an individual's development, and furthered the idea that development does not take place within a vacuum, but we are all shaped by our interactions with our environments. Overall, Erikson's model provides a broad framework encompassing development across the entire lifespan and has been the inspiration and foundation for many advances in psychological science, personality psychology, and psychotherapy.

However, notwithstanding its influence and popularity, Erikson's psychosocial model also has limitations. First, Erikson's model is constructed around the eight psychosocial crises that occur across life, and the development which surrounds these crises. But development and psychological change can occur outside of a life crisis. For example, the theory of personality maturity states that there are normative, continuous changes in personality traits across life as people become more conscientious, emotionally stable, and socially dominant as they grow

older (Roberts & DelVecchio, 2000; Roberts & Mroczek, 2008; Schwaba et al., 2022). Research has shown that personality maturity is not associated with life events or crises such as marriage, divorce, parenthood, or bereavement (Bleidorn et al., 2013; Bleidorn et al., 2022). Thus, development occurs outside of the crises of life, and a model that focuses only on points of crisis may be missing key aspects of continuous psychological change in adulthood.

Second, stage models of the lifespan, including Erikson's, rely too heavily on age bounds to ground the stages of life. Although Erikson's age bounds were large (e.g., young adulthood stretched from the twenties to the forties), and Erikson himself did not support the restriction of his psychosocial crises to specific age groups (Erikson, 1994), this model has been applied using strict age groups in empirical research, despite there being no evidence to support age bounds (e.g., Gilleard, 2020; Hoare, 2013; Vaillant & Milofsky, 1980). For example, studies have found that the psychosocial crisis of middle adulthood, generativity, is unrelated to age (McAdams & de St. Aubin, 1992; McAdams et al., 1998), while other studies showed that generativity was related to midlife, with individuals in their forties and fifties scoring higher on generativity measures than those in their thirties (Keyes & Ryff, 1998; Stewart et al., 2001). This mixed evidence suggests that development in adulthood is not strictly bound to chronological age, and so arbitrary age bounds are not necessary for a model describing adult development.

Third, the hierarchical nature of stage models such as Erikson's psychosocial model imply that once developmental tasks are completed, a certain level of maturity is permanently reached, and if tasks are not completed, an individual is stunted or held back from further development. But psychological development in adulthood does not follow an inherent hierarchical order, nor is it completed at a certain point. For example, the psychosocial crisis of young adulthood – intimacy versus isolation – is not unique to young adulthood, instead it

is experienced at many points across adulthood. For example, the number of adults who marry, divorce, then remarry in the US has tripled since 1960, with four in ten new marriages being a re-marriage for at least one spouse (Livingston, 2014). The increase in divorce rates suggests that people re-assess the crisis of intimacy versus isolation throughout contemporary adulthood more than in previous generations. However, intimacy is not necessarily tied to marriage or divorce, and this crisis could be re-assessed throughout life without an individual experiencing either of these events. Furthermore, the task of finding and maintaining intimacy is not something that can be completed, instead the balance between intimacy and isolation – and the balance between each of the polarities of Erikson's psychosocial crises – is continuous and ongoing throughout life. The idea that one 'completes' each crisis then moves on to the next paints adulthood as a time of linear, tiered development, which fails to capture the complexities and variation present in adult development.

1.2.2. Emerging Adulthood

Emerging adulthood was proposed in 2000 by Jeffrey Jensen Arnett as a "new conception of development" to describe age 18-25, later extended to age 18-29 (Arnett, 2000, 2015). This decade of life was not highlighted by traditional stage models such as Erikson's psychosocial theory, in which young adulthood stretched from the early twenties to the early forties, with the goal of balancing intimacy and isolation (Erikson, 1963, 1994). While finding an intimate relationship is still a key aspect of development in the twenties, changes in society have contributed to the twenties becoming a distinct and unique decade of life which requires further academic attention. Arnett argues that the twenties – emerging adulthood – is a distinct period of the modern lifespan in Western countries (Arnett, 2000; 2015). Emerging adulthood is described using five characteristics: (1) identity exploration;

(2) instability; (3) self-focus; (4) feeling in-between; and (5) possibilities (Arnett, 2015), which I describe briefly here.

First, emerging adulthood is defined as the age of identity exploration, as young people explore different possibilities in work, love, and worldviews (Arnett, 2015). Emerging adults are more independent compared with adolescents, but they are typically yet to enter stable, long-lasting commitments of adult life such as a career, marriage, and parenthood. While identity development is typically associated with adolescence in earlier models of the lifespan such as Erikson's psychosocial theory (Erikson, 1963), explorations of identity continue into adulthood, and can be more focused, serious, and enduring in emerging adulthood than they were in adolescence (Arnett, 2015). For example, with regard to love, romantic relationships in adolescence tend to be transient and tentative, whereas explorations of love in emerging adulthood involve a deeper level of intimacy as individuals begin to question who they are, and what kind of person would be a good fit for them in a romantic partner (Arnett, 2015). The shift to more serious identity exploration is a gradual change, and Arnett emphasises that emerging adulthood is a time for trying things out in the realms of love, work, education, beliefs, and values (Arnett, 2015).

Second, emerging adulthood is a time of instability. As individuals explore opportunities in life, their lives tend to be unpredictable and unstable. An example of the instability of emerging adulthood is the rate at which people in their twenties move from one residence to another: it is common for young people in Western societies to move out of their parents' home and into college or university accommodation, move between residences during their time at university, and then move residence again following the completion of their degree. Data suggest that nearly half of emerging adults will move back to their parents' home following university education, and there are more people in their twenties living with parents than ever before (ONS, 2023b), further characterising this as an age of instability.

Third, emerging adulthood is characterised by self-focus (Arnett, 2015). Emerging adulthood is a unique time point in-between adolescence and adulthood which allows emerging adults to focus on themselves to a greater extent than any other time in life. Emerging adults typically have fewer parental obligations than adolescents, and fewer daily commitments to others compared with older adults (Arnett, 2015). Daily life is more self-focused during emerging adulthood than any other time, as individuals make decisions such as what to eat, what time to return home at night, and when to do household chores independently, with less impact on parents, a spouse, or children compared with people in other life phases.

Fourth, emerging adulthood is a time of feeling in-between. Research shows that up to 60% of emerging adults do not feel like adults, but do not feel like adolescents either, as they respond to the prompt "I feel like an adult" with "In some ways yes, in some ways no" rather than "Yes" or "No" (e.g., Arnett, 1994, 1997, 2001; Badger et al., 2006; Mary, 2014; Obidoa et al., 2018). People aged 18-29 are on the road to adulthood, but do not feel that they have reached adult status yet – emerging adults feel caught in between the restrictions of adolescence and the responsibilities of adulthood.

The final characteristic of emerging adulthood is the age of possibilities. Many different futures are open and possible during emerging adulthood. While people have not yet committed to 'adult' responsibilities, they have the opportunity to transform their lives in a myriad of ways. Eventually, virtually all adults will enter into new, long-term obligations in love and work, and when they do these obligations will set them on paths that are less open to change and may continue for the rest of their lives. But during emerging adulthood, individuals have a chance to change their lives in profound ways. The extent to which people can change themselves and their life course during emerging adulthood is not unlimited, but

emerging adulthood is the life phase when there is the greatest opportunity for drastic self-directed changes in life (Arnett, 2000).

Since its conception in 2000, emerging adulthood has inspired thousands of studies on age 18-29, and led to the development of the Society for the Study of Emerging Adulthood (SSEA), along with a dedicated academic journal (Emerging Adulthood) and annual conference (https://www.ssea.org/), demonstrating the far-reaching influence of this theory. Emerging adulthood represents a psychological theory of adult development which is relevant for modern Western society.

However, the theory of emerging adulthood is not without limitations. First, emerging adulthood is not universal, and only exists under specific conditions that have occurred recently and in certain cultures. For emerging adulthood to exist, normative marriage and parenthood must be postponed until the late twenties or early thirties, allowing the twenties to be a time of identity exploration, instability, self-focus, feeling in-between, and possibility. Thus, emerging adulthood exists today mainly in Western, Educated, Industrialised, Rich, and Democratic countries (WEIRD countries; Henrich et al., 2010) in which marriage and parenthood are typically postponed to the thirties. Variations in socioeconomic status and life circumstances also determine the extent to which emerging adulthood is experienced. For example, opportunities in work, education, and residential mobility may be less widely available for young people from lower income backgrounds. Thus, while emerging adulthood is a distinct life phase for richer people in the US, UK, and other Western countries, it does not apply to everyone. While it is not currently a universal theory, Arnett argues that emerging adulthood is likely to become more pervasive worldwide in the future, with increasing globalisation of the world economy (Arnett, 2015). For example, young people are spending more time in education across the globe (e.g., Australian Bureau of Statistics, 2017; OECD, 2019; Roser & Ortiz-Ospina, 2016; Yoon, 2023), and birth rates are also decreasing

worldwide (Cheng et al., 2022; Stone, 2019). With extended education and the postponement of traditional adult social milestones and responsibilities, emerging adulthood may become a normative period for young people worldwide by the end of the 21st century (Arnett, 2015).

Second, emerging adulthood, like Erikson's psychosocial theory and other early developmental models, places much emphasis on the attainment of socio-demographic milestones for adult status. While emerging adulthood does not require the attainment of these milestones or the ambition toward achieving them, its core theme is the postponement of traditional 'adult' socio-demographic roles and responsibilities. The model suggests that individuals who do not pursue further education and instead enter the workforce, marry, or have children in their twenties are not emerging adults. Yet, these individuals are still exploring their identities, experiencing instability, focusing on themselves, and feeling in-between. The focus on extended education and the postponement of socio-demographic milestones to define this life phase excludes some individuals from emerging adulthood.

Third, emerging adulthood focuses on a distinct age range. Defining emerging adulthood by the ages between 18 and 29 years suggests that an individual experiences emerging adulthood – identity exploration, instability, self-focus, feeling in-between, and a sense of possibility in life – only in their twenties. But the characteristics of emerging adulthood are not restricted to one or two decades of life. Recent research has shown that people in their thirties and forties still believe that they are in a phase of self-focus, identity exploration, and sense of possibility (Arnett & Mitra, 2020). Thus, while emerging adulthood is a seminal concept and has brought much needed attention to adulthood research, it is not a universal or holistic model to describe adult development.

1.2.3. Established Adulthood

'Established adulthood' was coined by Clare Mehta and colleagues in 2020 to define the phase of life following emerging adulthood, from age 30-45 years (Mehta et al., 2020). This time of life is typically intense and demanding, but also greatly rewarding, as the postponement of adult socio-demographic roles of career, marriage, and parenthood characteristic of emerging adulthood culminates in a combination of responsibilities and experiences in the "rush hour of life" (Knecht & Freund, 2016; Mehta et al., 2020). During established adulthood, individuals are juggling the competing demands of work and family life, striving to get ahead in their careers while supporting dependent others and maintaining relationships. The developmental period of established adulthood is defined by this struggle, termed the "career-and-care-crunch" (Mehta et al., 2020).

From previous research, I have extracted four key themes which describe established adulthood: (1) increased stability; (2) responsibility and commitment; (3) evolution; and (4) actualisation (Mehta et al., 2020; Mehta & LaRiviere, 2022).

First, there is a distinct experience of stability in established adulthood. Stability in life tends to increase after the freedom and exploration of emerging adulthood, as people in their thirties and forties begin to settle into traditional adult roles and responsibilities (Mehta et al., 2020). For example, employment is more stable in established adulthood compared with emerging adulthood: in the US, the average person holds 5.7 jobs between the age of 18-24, this drops to 4.5 jobs between 25-34, and 2.9 jobs between 35-44 (Bureau of Labor Statistics, 2023). These statistics could demonstrate that people find fulfilling employment during established adulthood, or that there are more limited options for change as people age, or that established adults end up settling for a career or job due to other responsibilities in life (Mehta & LaRiviere, 2022). Regardless, work becomes more stable overall during established adulthood, as does other aspects of life, as people move house less often (Gov

UK, 2023) and change romantic partners less often (Ueda et al., 2020), adding to the sense of stability in established adulthood.

Second, established adulthood is characterised by responsibility and commitment – in other words, the career-and-care-crunch. Established adults have more external responsibilities in the realms of work and family compared with emerging adults (Mehta et al., 2020). Work demands intensify during established adulthood as people have developed extensive knowledge and skills in a specific field (Chi et al., 2014), enabling them to move up the career ladder, often associated with increased responsibility and commitment. Established adults also assume more responsibility in their personal lives. For example, parenthood represents a unique and significant responsibility, bringing joy and excitement as well as challenges and stressors which can lead to exhaustion and isolation (Mickelson & Biehle, 2017). Research shows that established adults have an increasing number of external obligations, and that the ages of 30-45 years are characterised by the stresses of the career-and-care-crunch (Mehta & LaRiviere, 2022).

Third, established adulthood is a time of evolution. Established adults experience continued growth, profound transitions, and may make multiple "course corrections" in life (Mehta & LaRiviere, 2022) – established adulthood is a time of change and growth. Course corrections may include changing career paths or leaving unhappy relationships (Mehta & LaRiviere, 2022). It could be that exploration – proposed as a distinct feature of emerging adulthood by Arnett (2000, 2015) – is actually a feature of development across the lifespan. Established adults describe feeling as though they are still growing, learning, and exploring their identities and opportunities in life (Arnett & Mitra, 2020; Mehta & LaRiviere, 2022).

Fourth, established adulthood is associated with feelings of actualisation. Established adults report feeling that they have gained wisdom and self-confidence, and that they are satisfied with their life (Mehta & LaRiviere, 2022). This shows that established adulthood has

positive elements and is not wholly defined by the stresses of the career-and-care-crunch. Participants in a survey defined established adulthood as a "prime time" of life and felt "really good" and "solidly happy" during established adulthood (Mehta & LaRiviere, 2022). This is in contrast to the general consensus that subjective happiness represents a U-shaped curve across the lifespan, with a low point at midlife (e.g., Galambos et al., 2017). Instead, research suggests that established adults are generally happy, confident, and satisfied with their lives (Mehta & LaRiviere, 2022).

Established adulthood builds on existing research and highlights a distinct phase of modern adult development. The evidence for this life phase is supported by rich qualitative data, and the experience of established adulthood resonates with people of this age group in the few studies undertaken so far (e.g., Mehta & LaRiviere, 2022). Future research will undoubtedly expand this research area and uncover more about the unique period of established adulthood.

However, there are limitations with the theory of established adulthood. First, established adulthood is not universal. During adulthood, sociocultural processes have a significant influence on development (Baltes, 1987; Hooker, 2015), thus the experience of established adulthood is likely to differ by gender, SES, race, ethnicity, culture, country, developmental contexts, individual choices, and historical context (Mehta et al., 2020). For example, women experience a more severe career-and-care-crunch compared with men. While gender roles are less sharply defined today than they were 50 years ago, and heterosexual couples often share many of the duties that traditionally fell to one gender or the other (Gottman & Gottman, 2017), women still carry most of the load when it comes to childcare and housework in heterosexual relationships (OECD, 2019; Wang, 2019), and they shoulder most of the emotional and cognitive labour involved in planning and organising tasks (Dean et al., 2022). Thus, the career-and-care-crunch – progressing in a career whilst caring for dependent others

– represents a heavier burden for women than for men. There are likely many other sociocultural variations in the experience of the career-and-care-crunch, and established adulthood as a whole.

Second, similarly to emerging adulthood, established adulthood relies too much on the attainment of socio-demographic roles, and applies a strict age range. Depending on circumstances, the career-and-care-crunch of established adulthood may be experienced outside of the 30-45 age bracket. For example, people from lower socioeconomic backgrounds in the US tend to have children earlier than those from higher socioeconomic backgrounds – age at first childbirth for those with less education in the US is in the mid-twenties, compared with the early thirties for those with more education (Caroll et al., 2013). Thus, people from lower SES backgrounds are likely to experience the career-and-care-crunch earlier, and their experience of established adulthood could collide with that of emerging adulthood, as young adults from lower socioeconomic backgrounds are dealing with career and family demands whilst trying to finish their education, explore their opportunities, and develop financial security. Furthermore, if an individual does not marry or have children, whether by choice or due to circumstances, or if they do not pursue a traditional career, they may still experience a 'career-and-care-crunch' in the form of caring for elderly relatives and getting ahead in a job (Mehta et al., 2020). Thus, established adulthood is not defined by age or the attainment of socio-demographic milestones. Instead, the focus should be on the psychological shifts and distinct features of development such as increased stability, evolution, and actualisation which are associated with established adulthood.

1.2.4. The main takeaways from existing research

From the three theories of adult development briefly summarised here, there are three themes which guided my research and informed the papers that makes up my PhD thesis. First, strict age ranges are not always accurate, or necessary, for models of development. Erik Erikson never intended to have strict age ranges in his psychosocial theory (Erikson, 1994) and thought that individuals readdressed the psychosocial crises of different stages repeatedly throughout life. Also, the characteristics associated with emerging adulthood, said to be unique to the age group of 18-29 years (Arnett, 2015), have been observed in individuals in their thirties and forties (Arnett & Mitra, 2020). Thus, chronological age is not necessarily a marker of development nor is it a dependable way to divide development in adulthood. Second, these theories of adult development show that adulthood has become highly individualised, and psychological characteristics such as the self-focus and feeling in-between of emerging adulthood, and the evolution and actualisation of established adulthood, are key for defining adulthood today. Third, previous research demonstrates that adult development is dynamic, not static. Emerging adulthood, from age 18-29, is characterised by exploration, and established adults, aged 30-45, describe this age as a time of evolution. Thus, adulthood is far from the plateau and eventual decline that it was first thought to be – it can be a rich time of development, and a rewarding and enjoyable time of life.

1.3. Thesis aims

This thesis had three main aims. First, to assess whether the traditional socio-demographic milestones of adulthood – marriage, parenthood, and career – are considered to be important for adult status today. Second, this thesis aimed to identify psychological qualities of adulthood which had been neglected from previous models of adult development and compile these to form a taxonomy of the psychology of adulthood. The third and final

aim of this thesis was to conduct an empirical study to investigate (a) whether people consider themselves to be adults; (b) whether people have positive or negative attitudes towards adulthood, (c) what characteristics are associated with adult status, and (d) what predicts subjective adult status. These three aims are reflected in the three articles resulting from this research.

1.4. Summary of publications

Here I will briefly summarise the background, methodology, results, and key takeaways from each of the three papers which make up this thesis. Together, these three papers form a cohesive body of work on the psychology of adulthood, addressing the three overarching research aims.

1.4.1. Measuring adulthood: A meta-analysis of the markers of adulthood scale

The first publication of my PhD thesis was a meta-analysis of the markers of adulthood scale. The markers of adulthood (MoA) scale, developed in the 1990s (Arnett, 1994, 1997, 1998, 2001) and recently revised (Norman et al., 2021) is frequently used in psychological research to assess subjective adult status (whether people feel like adults) and items that participants deem important for reaching adult status. The MoA scale includes items reflecting the traditional socio-demographic markers of adulthood – marriage, parenthood, and career – as well as more individualistic items, such as "Taking responsibility for the consequences of my actions" and "Deciding on my beliefs and values independently" (Arnett, 1994; Norman et al., 2021).

In this study, I ran random-effects proportional meta-analyses in R (R core team, 2019) to derive meta-analytic proportions of (a) subjective adult status and (b) the endorsement of marriage, parenthood, and career as defining characteristics of adulthood. I also ran meta-

regression analyses to assess the influence of participant age at time of assessment and country of origin. Previous research suggested that participants may feel more like adults, and hold more traditional values, if they are older or from non-WEIRD countries (e.g., Badger et al., 2006; Sieter & Nelson, 2011). This meta-analysis included 40 independent studies and an overall sample size of 17,465.

Results indicated that fewer than half of participants felt they had reached adulthood (meta-analytic proportion of 43%), and meta-regression analyses revealed that age at time of assessment predicted subjective adult status, with older participants more likely to report feeling like adults. We found that marriage and parenthood were endorsed by only 24% and 23% of participants as important criteria for adult status. In contrast, career emerged as a relatively important marker of adult status, with a meta-analytic endorsement of 58%. The endorsement of career as important for adult status was predicted by country of origin in our meta-regression analyses, with samples from non-WEIRD countries endorsing career more frequently than those from WEIRD countries. The endorsement of marriage and parenthood were not impacted by participant age, gender, or country of origin.

This article was the first meta-analysis of the MoA scale and synthesised 30 years of research on the markers of adulthood. Results indicated that settling into a career was relatively important for adult status, but the traditional socio-demographic markers of marriage and parenthood were not perceived as important for the majority of adults, and thus may not be the best measures of modern adulthood.

1.4.2. The CARES taxonomy: Five psychological qualities of adulthood

The second publication of this thesis identified psychological qualities of adulthood which have been previously overlooked and collated them into CARES, a descriptive taxonomy of psychological adulthood. The CARES taxonomy comprises of five qualities of

adulthood: *C*ognitive maturity (having confidence in one's knowledge); sense of *Ageing* (realising that one is getting older and time in life is limited); self-*R*eliance (feeling in control of one's own life and relying on one's own inner strength); *E*udaimonia (living in alignment with oneself); and *S*ocial convoy (one's network of social relationships and level of social support in life). All five qualities in the CARES taxonomy have empirical and methodological foundations in the literature and have been associated with mental health and well-being in adulthood. However, they have not previously been brought together to inform a descriptive taxonomy of adult psychological development.

The CARES taxonomy recognises adulthood as a life phase of continuous development, which is dissociated from attaining socio-demographic roles such as career, marriage, and parenthood. The CARES taxonomy reflects all of the key areas of development: emotional (eudaimonia and social convoy), cognitive (cognitive maturity), motivational (self-reliance and sense of ageing), and physical development (sense of ageing). The CARES qualities are developmental, broad, and crucially, they are all integral to the adult experience: all adults make decisions using their prior knowledge, age and perceive time passing, rely on themselves in day-to-day life, know themselves, and feel a sense of community to an extent.

The CARES taxonomy is not exhaustive, there are likely more qualities of adult development that were not identified in this paper. Instead of a complete model of development, this paper intended to be a starting point in furthering our understanding of psychological development in adulthood. The CARES paper provides an alternative perspective on modern adulthood, shifting away from rigid age-bound expectations of development and instead emphasising the continuous, dynamic, and non-linear reality of development in adulthood.

1.4.3. Perceptions of adulthood: What does it mean to be grown-up?

The third publication of my thesis was an empirical survey with a cross-sectional design which aimed to measure (a) whether people feel like adults, (b) how they viewed adulthood, and (c) which characteristics they associated with adult status. I collected data using an online survey created in Qualtrics (https://www.qualtrics.com/uk/) and administered on Prolific (https://www.prolific.com/), with an overall sample size of 722 UK adults aged 18-77 years (M_{age} = 39.20).

The survey consisted of five scales, four of which I developed for this study: (1) the subjective adult status scale, measuring whether people feel like adults; (2) the attitudes towards adulthood scale, measuring whether people felt that adulthood is a positive or negative time of life; (3) the valenced attitudes towards adulthood scale, an alternative measure of attitudes towards adulthood which asked participants to rate whether 30 emotive words describe adults or not; (4) the CARES scale, a psychometric measure of endorsement of the five CARES qualities (cognitive maturity, sense of ageing, self-reliance, eudaimonia, and social convoy) as important criteria for adult status. Participants also completed (5) the markers of adulthood (MoA) scale (Arnett, 1994; Norman et al., 2021).

Our results indicated that most people felt like adults, even those under the age of 30, which contradicts previous research (Arnett, 2001; Sirsch et al., 2009). We also found that people had positive attitudes towards adulthood on average. Participants defined adulthood using psychological characteristics from both the MoA and CARES scales, endorsing items such as "Accepting responsibility for the consequences of my actions", and "Being able to look after myself" as markers of adult status.

Regression analyses revealed that age, the attainment of marriage and parenthood, and having a positive attitude towards adulthood significantly predicted subjective adult status. This points to a disparity between the expectations and the experiences of adulthood, as

marriage and parenthood influenced subjective adult status but were not considered to be important criteria for adult status in earlier analyses. The finding that attitudes towards adulthood predicted subjective adult status and accounted for 10% of the variance – an effect similar in magnitude to the effect of chronological age – suggests that fostering positive attitudes towards adulthood could promote subjective adult status, which in turn could benefit well-being.

1.5. Methodological approach

In this section I will describe and justify the methodological choices I made for this thesis. In my first paper. I chose to perform a proportional meta-analysis to review the existing literature using the markers of adulthood scale. Meta-analysis is a common method to synthesise quantitative data in a systematic review and enables the calculation of a pooled estimate with increased statistical power due to large sample sizes (Card, 2015; Lee, 2019). A meta-analysis was the best approach for my study over alternatives such as a systematic review, which does not include the derivation of a pooled estimate through statistical analysis, or a narrative literature review, which is not systematic and lacks the precision and scope of a meta-analysis. Classic meta-analytic approaches aim to establish the effect of an intervention, or the relation between two constructs, resulting in a pooled effect size. Proportional meta-analysis is a specific meta-analytic approach that aims to generate a single summary estimate from dichotomous data. Proportional meta-analyses are less common than classic meta-analyses in the psychological literature, but they have rich usage in medical research (Barker et al., 2021). The data available for this meta-analysis were dichotomous in nature, as studies assessing the markers of adulthood scale reported results in raw proportions ranging from 0 to 1. Therefore, I followed guidelines for a proportional meta-analysis (Barker et al., 2021). Meta-analyses have many strengths including providing more precise estimate

and increasing the generalisability of the results of individual studies (Card, 2015; Lee, 2019). Additionally, the nature of proportional data means that this meta-analysis was unlikely to suffer from publication bias as there are no "insignificant" findings when reporting raw proportions, even if the proportion is close to zero (Barker et al., 2021).

To develop the CARES taxonomy in my second paper, I followed Borsboom and colleagues' (2021) theory construction model, which has four steps. The first step in developing a theory is to identify relevant phenomena – general and stable features of the observable world – which the theory will explain. Evidence for phenomena should be robust, stable, and well-established in order to build a solid foundation for the theory. Second, formulate a prototheory, or initial hypothesis which generally explains the phenomena. Third, develop the prototheory into a formal model. Fourth, check the adequacy of this formal model to assess its effectiveness at explaining the phenomena. Fifth, evaluate the overall quality of the constructed theory (Borsboom et al., 2021).

I have achieved the first three stages of Borsboom and colleagues' theory construction model during this PhD as I work towards refining the CARES taxonomy. First, I identified the phenomena that the CARES taxonomy will explain by conducting a review of the literature on adult psychological development. Second, I developed a prototheory, an early iteration of the CARES taxonomy, consisting of five broad themes: good judgement, sense of ageing, self-regulation, eudaimonia, and sociality. I shared this early version of CARES with five experts in developmental psychology: Brent Roberts, Alexandra Freund, Clare Mehta, Patrick Hill, and David Lubinski. Following feedback from informal online interviews with these experts, I adapted and refined the five themes of adult development and named them qualities – a term which means "A characteristic or feature of something, be it physical or abstract" (APA Dictionary, 2023). I chose the term quality to emphasise that CARES is intended to describe, not explain, development in adulthood. This resulted in the five qualities

of cognitive maturity, sense of ageing, self-reliance, eudaimonia, and social convoy which make up the formal model of the CARES taxonomy, the third step of Borsboom and colleagues' (2021) theory construction model. Going forward beyond my PhD, I aim to complete the fourth and fifth stages of the theory construction model, specifically to evaluate the adequacy, effectiveness, and quality of the CARES taxonomy through extensive data collection and analysis which was out of scope for the current PhD project.

For my third paper, the perceptions of adulthood study, I conducted primary data collection using an online survey. I chose to collect primary data as there was no secondary dataset available to my knowledge which included the measures I was interested in (subjective adult status, attitudes towards adulthood, and defining characteristics of adulthood). I chose to collect data using a quantitative survey to enable comparison with previous work using the markers of adulthood scale, and to facilitate a large, representative sample. I used a survey instead of alternatives such as qualitative interviews, because I wanted to obtain a sample size large enough for One-Way Analysis of Covariance (ANCOVA) and regression analyses. I wanted to use ANCOVAs to assess the associations between subjective adult status and factors such as age and the attainment of socio-demographic milestones of adulthood while controlling for income and education, and regression analyses to assess the predictive power of age and the attainment of socio-demographic milestones for subjective adult status. Power analyses using G* Power (Faul et al., 2007) suggested a minimum sample of 700 participants to perform these analyses, calling for large-scale online data collection. I recruited 722 participants from age 18-77 on the academic survey site Prolific (https://www.prolific.com/), and the split of age groups, genders, relationship status, parent status, and employment status was satisfactory, reinforcing my choice to perform an online survey to collect this data.

I also needed to develop scales for my third paper, as there were no scales available to measure attitudes towards adulthood or the CARES taxonomy. I developed items for these scales and tested and revised them with a small focus group within the University of York, and a small pilot for the perceptions of adulthood study, in 2022. The attitudes towards adulthood scale measured whether people viewed adulthood as a positive or negative time of life and contained six items including "I enjoy being an adult", and "Adulthood is not a desirable time of life" (reverse-scored). Participants responded on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The CARES scale consisted of 25 items, five for each of the five CARES qualities, and participants responded to the prompt "This defines adulthood for me" on a Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Items included "Being able to solve problems in my life" (cognitive maturity), "Appreciating the time that I have in my life" (sense of ageing), "Having control over my life" (self-reliance) "Living in alignment with who I am" (eudaimonia), and "Being satisfied with my social network" (social convoy). I also developed a scale for subjective adult status, which is typically measured using one item, "I feel like an adult", and three response options: "Yes", "No", and "In some ways yes, in some ways no" (Arnett, 1994). However, using one item to assess subjective adult status was not satisfactory, as single item measures are more susceptible to measurement error and can have lower reliability in cross-sectional samples compared with multiple-item measures (Allen et al., 2022). Also, I wanted to measure other aspects of subjective adult status. I developed a five-point scale for subjective adult status including the items "I feel like an adult", "I no longer feel like a child", "I feel like a grown-up person", "Other people treat me like an adult", and "Other people treat me like a child" to capture a more detailed view of whether a participant feels like an adult.

While these were the best methodological choices to make at the time and with the resources available to me during the PhD, there were certainly limitations to my approaches, and changes that I would make with more time and/or funding. I discuss these in the limitations section of the integrated discussion.

1.6. Original contributions of this thesis

This thesis made several original contributions to the field of developmental psychology. First, the markers of adulthood meta-analysis study was the first meta-analysis of the markers of adulthood scale, statistically synthesising over 30 years' research and providing a meta-analytic estimate for the proportional endorsement of the importance of marriage, parenthood, and career for adult status. These results will likely be utilised in future research on adult development.

Second, the CARES taxonomy is a new perspective on adult development and a considerable contribution to the field of developmental psychology. The CARES taxonomy recognises adulthood as a life phase of continuous psychological development, independent from the attainment of socio-demographic milestones and relevant for contemporary adults. The CARES taxonomy builds on recent research calling for a reconceptualization of adulthood and provides a framework through which we can recognise the value and importance of adulthood as a research focus for developmental psychology.

Third, the perceptions of adulthood study was the first paper to empirically test subjective adult status and defining characteristics of adulthood in a wide age range. Most previous research focused on emerging adulthood (age 18-29), and my sample of participants aged 18-77 represents the widest and oldest sample used in perceptions of adulthood research to date. Samples with wide age ranges are crucial for understanding adulthood, and for

recognising and quantifying the distinct nature of life phases such as emerging and established adulthood.

Fourth, I developed multiple scales throughout my PhD to measure subjective adult status, attitudes towards adulthood, and the CARES taxonomy. These scales have been empirically validated in the perceptions of adulthood study and are all publicly available for future research on the Open Science Framework. These scales will be used in future research investigating subjective adult status, attitudes towards adulthood, and the CARES taxonomy.

Finally, in the perceptions of adulthood study I introduced the concept of attitudes towards adulthood, which represents an untapped aspect of perceptions of adulthood, and was revealed to be a significant predictor of subjective adult status. Attitudes towards adulthood is a fruitful area for future research.

1.7. Conclusion

Adulthood has traditionally been defined as the attainment of socio-demographic milestones of marriage, parenthood, and career, and previous models of lifespan development have based adult status on these milestones. However, these milestones are out of reach or not relevant for young people today. Recent research suggests that adulthood is defined by psychological characteristics such as "Taking responsibility for the consequences of my actions" and "Deciding on my beliefs and values independently" (e.g., Arnett, 1994; Mary, 2014; Obidoa, 2018). Yet a model and psychometric measure of psychological adulthood encompassing cognitive, social, emotional, motivational, and physical development does not exist.

This thesis explored the definition and measurement of contemporary adulthood through three papers: (1) a meta-analysis of the markers of adulthood scale synthesising 30 years of data on the importance of marriage and parenthood to define adult status (N_{total}

=17,465); (2) the CARES taxonomy, which introduced a new perspective on psychological development in adulthood; and (3) the perceptions of adulthood study, a cross-sectional survey assessing subjective adult status, attitudes towards adulthood, and defining characteristics of adulthood in UK adults aged 18-77 ($N = 722$).

      The following sections of this thesis provide the full manuscripts for the three papers, and an integrative discussion of the common themes and implications of this body of research.

2. Paper 1: Markers of adulthood meta-analysis

Measuring Adulthood: A meta-analysis of the markers of adulthood scale

2.1. Abstract

Adulthood is traditionally defined by the socio-demographic markers of marriage, parenthood, and having a stable, long-term career. Yet these markers of adulthood are typically delayed or unattainable for young people today. We conducted a meta-analysis of studies using the Markers of Adulthood scale across the past three decades to assess (a) endorsement rates (%) of marriage, parenthood, and career as markers of adulthood, and (b) whether people think they have reached adulthood. Across 39 samples ($N = 17,465$), marriage and parenthood were endorsed by less than 25% of participants, whereas career was endorsed by 58%, suggesting that in today's society career defines adult status more than marriage and parenthood. Furthermore, half of emerging adults (aged 18-29 years) considered themselves to have reached adulthood despite traditional markers of adulthood occurring less frequently and later in life than ever before. Our findings have three main implications for researchers

measuring adult status: these are to (1) focus less on the socio-demographic milestones of marriage and parenthood; (2) include wider age ranges in research; and (3) explore cultural differences. Reducing focus on socio-demographic markers of adulthood and including more diverse samples will allow us to better understand adulthood and provide support for adults' identity development and psychological well-being.

2.2. Introduction

Adults are the core pillars of society – without adults there would be no labour markets, no governments, and no healthcare and education systems (Hogan & Astone, 1986; Turturean, 2015). However, little is known about when and why people subjectively feel like adults. A first step to understanding the transition into adulthood is knowing how people define adulthood, and when and why they consider themselves to be adults. Understanding what makes an adult can help us to foster a happier, healthier adult population.

Traditionally, adulthood has been defined by reaching the age of majority, which is typically age 18, or certain socio-demographic milestones such as marriage, parenthood, and a stable career (e.g., Erikson, 1950; Havighurst, 1953). Psychological models that define adult status using these traditional socio-demographic milestones were conceived in the 1950s and 1960s, when people took relatively uniform paths to adulthood as they began careers, married, and had children in quick succession in their early twenties (Blatterer, 2007). Today, transitions to adulthood occur in a world that is increasingly characterised by volatility, uncertainty, complexity, and ambiguity; conditions that make young people delay or altogether forgo the traditional markers of adulthood. For example, the average age at first-time marriage in the UK has risen from 25 to 35 years between 1970 and 2019 (ONS, 2012; Stripe, 2019), and marriage rates have fallen by 50% from 1991 to 2019 (Clark, 2023). Career is also delayed in WEIRD (Western, Educated, Industrialised, Rich, and Democratic;

Henrich et al., 2010) societies, as young people experience prolonged periods of education and frequent job changes before settling down into stable jobs later in adulthood. In the US, Millennials – those born between 1980 and 1996 – are twice as likely to change job within a year compared with Generation X (those born between 1965 and 1979), and three times more likely to change job than Baby Boomers (those born between 1945 and 1964; Lyons et al., 2015).

In the context of our changing society, the view that adulthood is a fixed social state that is reached through the attainment of milestones such as marriage, parenthood, and settling into a career could have negative effects on the identity development of young adults. When people's expectations are poorly aligned with their reality, mental health tends to suffer (e.g., Carver, 2012). Thus, defining and measuring adulthood by milestones that are out of reach or undesirable for young people today may be counterproductive for the psychological health of today's emerging adults, and for the study of adult development. This research is key for improving our understanding of modern adulthood, supporting young people during the transition to adulthood, and promoting adults' psychological well-being.

The Markers of Adulthood scale

The Markers of Adulthood scale (MoA; Arnett, 1994; 1997; 1998; 2001) is the most frequently used psychological instrument for assessing whether people consider themselves to be adults, and which characteristics they feel are most important for defining adult status. The MoA scale contains a collection of items representing traditional socio-demographic milestones, for example family capacities such as marriage and parenthood, and items relating to independence such as settling into a long-term career. Participants indicate whether they believe that these characteristics are important for adult status either on a binary (e.g., "Yes" or "No") or Likert scale (e.g., ranging from "Very important" to "Not at all

important"). This results in a proportion or percentage of participants endorsing each item. The MoA scale also contains the item "Do you think you have reached adulthood?" with response options "Yes", "No", and "In some ways yes, in some ways no" (e.g., Arnett, 1994, Badger et al., 2006, Obidoa et al., 2018; Sharon, 2016). This item is referred to herein as subjective adult status.

Since its conception in the 1990s (Arnett, 1994), the MoA scale has been revised and updated, most recently by Norman and colleagues (2021). The MoA scale has been used for 30 years, yet to date there has not been a systematic meta-analysis of the corresponding data. This is important to ensure that the assessments used in research today reflect modern adulthood. Here, we meta-analyse MoA scale data to address this gap and derive a meta-analytic proportion of people who endorse the markers of (a) marriage, (b) parenthood, and (c) career as important for adult status, and the proportion of people who (d) feel like adults.

Previous research using the MoA scale demonstrates age differences in the endorsement of markers of adulthood and the extent to which participants feel adult. Emerging adults – aged 18-29 years (Arnett, 2000. 2015) – show a distinct response pattern to the MoA scale compared with older age groups. First, emerging adults place more emphasis on individualistic criteria such as "Accept responsibility for the consequences of my actions", and less on traditional socio-demographic milestones such as marriage, compared with older adults (e.g., Vleioras, 2021). Second, emerging adults tend to respond to the prompt "Do you think you have reached adulthood?" with "In some ways yes, in some ways no", indicating that they do not feel fully 'adult' (e.g., Arnett, 1994, Badger et al., 2006, Obidoa et al., 2018). This reflects one of the core characteristics of emerging adulthood, the feeling of being 'in-between' adolescence and adulthood (Arnett, 2000; 2015). In contrast, studies assessing participants outside of the emerging adulthood age range find that adolescents (below the age of 18) tend to respond to "Do you think you have reached

adulthood?" with "No", and older adults (above the age of 30) tend to respond with "Yes" (e.g., Arnett, 2001; Sirsch et al., 2009). However, there are few studies which focus on more diverse age ranges, and to date there has been no longitudinal research, so we are unable to determine whether these distinct responses to the MoA across age groups reflect age differences (e.g., those in emerging adulthood feel differently to those in older adulthood), or generational differences (e.g., those born in the 2000s feel differently about adulthood compared with those born in the 1970s).

There are also cultural differences in the endorsement of the markers of adulthood. Previous research using the MoA scale shows that participants from WEIRD countries tend to endorse more individualistic characteristics such as "Accept responsibility for the consequences of my actions" and "Decide on my beliefs and values independently" as being important for adult status, whereas participants from non-WEIRD countries endorse more traditional characteristics such as marriage and parenthood (e.g., Badger et al., 2006; Nelson et al., 2004; Rankin & Kenyon, 2008; Sieter & Nelson, 2011; Zhong & Arnett, 2014). For example, participants from China and India place greater emphasis on family obligations compared with US samples, demonstrating that traditional socio-demographic milestones of adulthood may be considered more important for adult status in more collectivist cultures compared with individualistic Western cultures (Badger et al., 2006; Sieter & Nelson, 2011; Zhong & Arnett, 2014). Country of origin has also been shown to impact subjective adult status, with samples from non-WEIRD countries reporting that they have reached adulthood at earlier ages compared with samples from WEIRD countries (e.g., Badger et al., 2006; Obido et al., 2019; Seiter & Nelson, 2011). For example, in the US, only 28% of those in emerging adulthood – the age group spanning from 18-29 years and typically characterised by self-focus, instability, identity explorations, feeling in-between, and a sense of possibility (Arnett, 2000; 2015) – reported feeling that they had reached adulthood (Badger et al., 2006).

In contrast, around 60% of emerging adults in Ghana, Nigeria, India, and China felt that they had reached adulthood (Badger et al., 2006; Obidoa et al., 2018; Seiter & Nelson, 2011). While previous research suggests that subjective adult status and the endorsement of characteristics to define adulthood vary systematically across age groups and countries, these differences have not been systematically studied to date.

The current study

Here, we searched the literature from the past 30 years to identify studies that administered the MoA scale, using the reported findings to (a) derive meta-analytic estimates of the rates of endorsement of three socio-demographic milestones that traditionally defined adulthood, including marriage, parenthood, and career, (b) estimate the proportion of people across studies who subjectively identified as adults, and (c) examine the extent to which the endorsement of socio-demographic milestones and subjective adult status varied as a function of age and country of origin.

We hypothesised that older samples would endorse marriage, parenthood, and career as defining characteristics of adulthood more often than younger samples (e.g., Sirsch et al., 2009; Vleioras, 2021). We also expected that the endorsement of marriage, parenthood, and career would differ across countries, with WEIRD samples endorsing traditional markers of adulthood less often than non-WEIRD samples (e.g., Badger et al., 2006; Seiter & Nelson, 2011; Zhong & Arnett, 2014).

2.3. Materials and Methods

Search strategy

To review the proportions of endorsement of the characteristics that define adult status, we identified articles that reported original, empirical data collected with the MoA

scale by screening the citations of four papers that introduced the MoA scale (i.e., Arnett, 1994; 1997; 1998; 2001). We screened the citations across two electronic databases, including Web of Science and Scopus, yielding a total of 2,400 hits (1,033 from Web of Science and 1,367 from Scopus; Figure 1). Articles were exported into an Endnote library, and after duplicates were removed 1,116 eligible articles were exported and screened using Rayyan (Ouzzani et al., 2016).

Study eligibility criteria, screening, and exclusions

We included publications that met the following criteria: (1) used the MoA scale; (2) conducted an original empirical study (i.e., systematic reviews and meta-analyses were excluded); (3) reported a proportional estimate or having a proportional estimate available for the items of interest (i.e., "Do you think you have reached adulthood", and the MoA items: "Married", "Have at least one child", and "Settle into a long-term career"); (4) published in a peer-reviewed journal; and (5) written in English.

The first and second authors independently screened 10% of the records (i.e., 112 abstracts from 1,116 hits) to calibrate the screening process. The authors were in 99% agreement in the calibration process. Following our preregistered screening and coding protocol (https://osf.io/8ezqf), the first author screened the remaining 1,004 abstracts. Overall, 42 articles met our eligibility criteria and were retained for data extraction. We added Arnett's (1994) paper, which we used to identify citations, as well as two more articles and one dataset, which were brought to the first author's attention when contacting authors of the identified articles for additional information (see details below).

Figure 1. PRISMA flow diagram for the markers of adulthood scale meta-analysis

Identification	**Records identified from Databases** (n = 2,400) Web of Science (n = 1,033) Scopus (n = 1,367)	→	**Records removed** *before screening*: Duplicate records removed (n = 1,284)

Screening	**Records screened** (n = 1,116)	→	**Records excluded**** (n = 1,074)

Reports sought for retrieval (n = 46)
 42 reports from screening, and four additional reports:
 (1) Arnett, (1994) was used to search the literature.
 (2) Beckert et al. (2020) administered MoA scale but did not cite its original publication paper.
 (3) Roth et al. (2012) and (4) Grahe (2018) sent additional papers when contacted for data details for this study.

→ **Reports not retrieved** (n = 0)

→ **Reports excluded** (n = 20):
 Not applicable (n = 5)
 Data not available (n = 15)

Reports assessed for eligibility (n = 26)

Included	**Studies included in review** (n = 26) Estimates included in meta-analysis (k = 40)

Full texts were downloaded for 46 articles. In cases where relevant data from the MoA scale was not reported in the article, the first author emailed the articles' corresponding authors to retrieve the data. A total of 15 articles were excluded because we could not gain access to the data (Figure 1). The remaining 26 articles, comprising 40 samples, were included in the meta-analysis.

Missing data

Of the 40 independent samples, 39 samples included estimates for the MoA items "Married", "Have at least one child", and "Settle into a long-term career" ($N = 17,465$). Twenty-seven samples included estimates for the item "Do you think you have reached adulthood?" ($N = 11,477$). Missing data were handled using pairwise deletion, and analyses were conducted separately for meta-analytic endorsement of the MoA items ($k = 39$, $N = 17,465$) and for the extent to which participants felt they had reached adulthood ($k = 27$, $N = 11,477$).

Quality control

We applied the population, exposure, outcome model (PEO; Moola et al., 2015). All included studies assessed adult samples, who were exposed to the same measure (i.e., the MoA scale; Arnett, 1994; 1997; 1998; 2001). The outcome statistic – the proportion of participants who reported their endorsement of each MoA item or their adult status – was consistent across studies (i.e., all studies used the same scale and the same outcome statistics). Where proportions were not reported in the original article, for example if mean scores were reported in the place of proportions, we contacted the study authors to acquire proportional data.

One aim of our meta-analysis was to compare the endorsement of MoA scale items across sample age and countries of origin. To this end, we fitted meta-regression models that included samples' average age, country of origin (WERID or non-WEIRD), and the scale response type (binary or Likert scale) as moderators (details below). Thus, we control for heterogeneity resulting from age, culture, and scale response type.

Coding target variables

We extracted a range of target variables from the 26 retained publications, including: (a) sample name; (b) sample size; (c) sample youngest age; (d) sample oldest age; (e) sample mean age; (f) sample age SD; (g) country of origin; (h) the proportion of the sample that responded with "Yes" to the subjective adult status item "Do you think you have reached adulthood?"; (i) the proportion of the sample that responded with "In some ways yes, in some ways no" to the subjective adult status item; (j) the proportion of the sample that responded with "No" to the subjective adult status item; (k) the proportion of the sample that endorsed the item "Married" in the MoA scale; (l) the proportion of the sample that endorsed the item "Have at least one child" in the MoA scale; and (m) the proportion of the sample that endorsed the item "Settle into a long-term career" in the MoA scale.

Scale response type

Data from the MoA scale is typically collected using a binary response, with participants indicating whether each item is considered important for adult status (i.e., "Yes" this is important for determining adult status, or "No", this is not important for determining adult status; Arnett, 1994; 1997; 1998; 2001). Of the 39 independent samples that collected data for the MoA items "Married", "Have at least one child", and "Settle into a long-term career", 25 (63%) recorded binary responses. For these samples, data were extracted as they

appeared in their respective articles they were respectively reported in (i.e., as proportions).

For studies that administered the MoA scale using Likert responses, participants indicated

how important a MoA item was from 1 (not at all important) to 4 (very important, e.g.,

Beckert et al., 2020; Grahe et al., 2018; Vleioras, 2021; Wider et al., 2021). We identified 14

articles that report mean scores from Likert scale ratings, rather than proportions of

endorsement. We converted these mean scores into binary variables by combining the

proportion of participants who responded with "Very important" and "Important" into one

category of 'yes'. We modelled the effects of scale response type (Likert versus binary) in our

meta-regressions.

Classifying WEIRD and non-WEIRD countries

Samples included in this meta-analysis came from 16 countries, of which 7 were

WEIRD (Australia, Austria, Denmark, Italy, Greece, Spain, and the USA), and 9 were non-

WERID (China, Ghana, India, Iran, Malaysia, Nigeria, Poland, Romania, and Taiwan).

Overall, 56% ($n = 22$) of the samples included in this meta-analysis were recruited in WEIRD

countries, accounting for 68% ($N = 11,692$) of all participants in this meta-analysis.

Countries were classified as WEIRD (Western, Educated, Industrialised, Rich, and

Democratic) or non-WEIRD based on the criteria set out by Hendriks et al (2019). Of the 16

countries represented in this meta-analysis, 9 were classified in the 2018 paper by Hendriks

and colleagues, specifically Australia, China, India, Iran, Italy, Malaysia, Spain, Taiwan, and

the USA. The remaining 7 countries were classified by the authors for the present study

according to the criteria set out by Hendriks et al (2019): Austria, Denmark, Ghana, Greece,

Nigeria, Poland, and Romania. For more information on country categorisation, see the

supplementary materials.

2.4. Statistical analysis

Random-effects proportional meta-analysis

The R package metafor (R core team; 2019; Viechtbauer, 2010) was used to conduct a random-effects meta-analysis using the function rma() to derive a pooled proportions for each of the four outcome variables: endorsing (1) "Married", (2) "Have at least one child", and (3) "Settle into a long-term career" in the MoA scale, and (4) responses to the item "Do you think you have reached adulthood?". Proportional estimates were logit transformed prior to running the random-effects meta-analysis.

To investigate heterogeneity, we calculated Q and I^2 statistics. The Q statistic represents the weighted sum of squared differences between studies (Huedo-Medina et al., 2006). However, the Q statistic has relatively low power to detect heterogeneity when a meta-analysis has few estimates (Higgins et al., 2003). An alternative is the I^2 statistic, which is not as influenced by the number of estimates in a meta-analysis. The I^2 statistic represents the percentage of variability in estimates due to true heterogeneity rather than sampling error (Higgins et al., 2003). Guidelines indicate that an I^2 value above 50% indicates substantial heterogeneity (Huedo-Medina et al., 2006). In other words, the Q test informs on the presence or absence of heterogeneity, and the I2 test describes the extent of that heterogeneity which is not attributable to sampling error.

Meta-regression

To test for systematic variability in the endorsement of the four items of interest in the MoA scale, we conducted meta-regressions using three moderators: (1) age group of sample (adolescence aged 11-17, emerging adulthood aged 18-29, or adulthood aged 30 and above), (2) country categorisation (WEIRD or non-WEIRD), and (3) scale response type (Binary or

Likert scale). Scale response type only applies as a moderator for the MoA items (i.e., endorsement of "Married", "Have at least one child", and "Settle into a long-term career").

Publication bias

Tests for publication bias including funnel plots and p-curves are only approximately valid for proportional meta-analyses (Barker et al., 2021; P curve user guide, www.p-curve.com/app4/). Furthermore, it is unlikely that proportional data would suffer from publication bias as there is no "insignificant" finding, even if a proportion is close to zero. Thus, we do not utilise funnel plots or p-curve analysis in this study and instead rely on the quality control of included publications to account for publication bias.

2.5. Results

Studies' description

We identified 26 publications that used the MoA scale to assess (a) the endorsement of marriage, parenthood, and career as defining characteristics for adult status, and (b) subjective adult status – the extent to which participants considered themselves to be adults.

For the endorsement of the traditional socio-demographic milestones of marriage, parenthood, and career, our analysis sample consisted of overall $N = 17,465$ from 39 independent samples, each of which contained an estimate for the endorsement of "Married", "Have at least one child", and "Settle into a long-term career". Of these 39 samples, 33 focused on the age group of emerging adulthood, with a mean age between 18 and 29 years ($N = 16,470$, 94% of total N), two samples had a mean age in adolescence, between age 15 and 18 years ($N = 397$, 2% of total N), and four samples had a mean age above 29 years ($N = 598$, 4% of total N). Twenty-two samples were from WEIRD countries ($N = 11,692$, 67% of total N), and 17 were from non-WEIRD countries ($N = 5,773$, 33% of total N). Twenty-eight

samples used a binary sampling method (N = 9,295, 53% of total N), with the remaining 11

samples using a Likert scale (N = 8,170, 47% of total N).

For subjective adult status, our analysis sample consisted of N = 11,477 from 27

independent samples. Of these 27 samples, 23 were emerging adults aged 18-29 years (N =

10,683, 93% of total N), two samples were adolescents (N = 397, 3.5% of total N), and two

samples were adults aged between 30 and 55 years (N = 397, 3.5% of total N). Eighteen

samples were from WEIRD countries (N = 8,108, 71% of total N), and 9 samples were from

non-WEIRD countries (N = 3369, 29% of total N). All samples administered the item "Do

you feel that you have reached adulthood?" with the response options "Yes", "No", and "In

some ways yes, in some ways no".

Tables 1 – 4 in the supplementary materials show sample details including sample

size, age range, country of origin, and sampling method (binary or Likert) for each sample

included in the meta-analysis.

Random-effects proportional meta-analysis

We conducted random-effects proportional meta-analyses for (a) the endorsement of

marriage, parenthood, and career, and (b) responses to the item "Do you think you have

reached adulthood?".

First, the raw proportions of the three traditional socio-demographic milestones varied

from an endorsement rate of 3% to 83% for marriage, 3% to 81% for parenthood, and 14% to

95% for career. The meta-analytic proportion for the MoA item "Being married" was .24; p <

.001 (95% CI from .17 to .31), reflecting a meta-analytic proportion of 24% of people

endorsing being married as an important marker of adult status. For the MoA item "Have at

least one child", the meta-analytic proportion was .23, p < .001 (95% CI from .17 to .30),

indicating that becoming a parent was considered an important marker of adult status for 23%

of people. Finally, the MoA item representing career, "Settle into a long-term career", had a meta-analytic proportion of .58, $p < .001$ (95% *CI* from .49 to .67), indicating that 58% of people endorse career as an important marker of adult status.

Second, raw proportions for responses to the item "Do you think you have reached adulthood?" varied from 10% to 86% for "Yes", 12% to 72% for "In some ways yes, in some ways no", and 2% to 33% for "No". The meta-analytic proportions for the subjective adult status item were: .43 for "Yes", .45 for "In some ways yes, in some ways no", and .08 for "No". Thus, across 27 samples, an average of 43% of participants felt they had reached adulthood, 8% felt they had not reached adulthood, and 45% felt they had reached adulthood in some respects but not fully.

Forest plots for all meta-analysis models can be found in the supplementary materials (Figure 4-9 in the supplementary materials).

Meta-regression

Meta-regression models were conducted for (a) the endorsement of marriage, parenthood, and career, and (b) responses to the item "Do you think you have reached adulthood?". Three confounders were considered in the meta-regression models: (1) age group (adolescence aged 11-17, emerging adulthood aged 18-29, adulthood aged 30 and above), (2) country type (WEIRD or non-WEIRD countries), and (3) scale response type (Likert or Binary response methods). Figure 2 shows the spread of proportions of endorsement of marriage (Figure 2A), parenthood (Figure 2B), and career (Figure 2C) across estimates by country type (WEIRD or non-WEIRD) and age.

Following meta-regression, the meta-analytic endorsement for marriage rose from .24 to .26, and for parenthood the meta-analytic endorsement rose from .23 to .25. However, the meta-regression models for marriage and parenthood were not significant ($p = .527$ and $p =$

.564, respectively). Thus, the moderators of age group, country type, and scale response type did not account for a meaningful proportion of the heterogeneity across studies in the endorsement of marriage and parenthood as important characteristics for adult status.

The meta-regression model for career was significant ($p = .007$) and explained 47% of the heterogeneity across studies in the endorsement of career as a characteristic of adult status. The corresponding meta-analytic estimate was .57 (95% *CI* from .45 to .67), a slight decrease from the estimate of .58 from the initial meta-analysis. Country type (WEIRD or non-WEIRD) and response method (binary or Likert) emerged as significant predictors. Participants from non-WEIRD countries endorsed career more than those from WEIRD countries ($p = .037$) and using a Likert scale for participant response method resulted in higher endorsement of career ($p < .001$).

Figure 2. *Proportion of people endorsing the items (A) "Married"; (B) "Have at least one child"; and (C) "Settle into a long-term career" to define adult status across mean age and country type (WEIRD or non-WEIRD).*
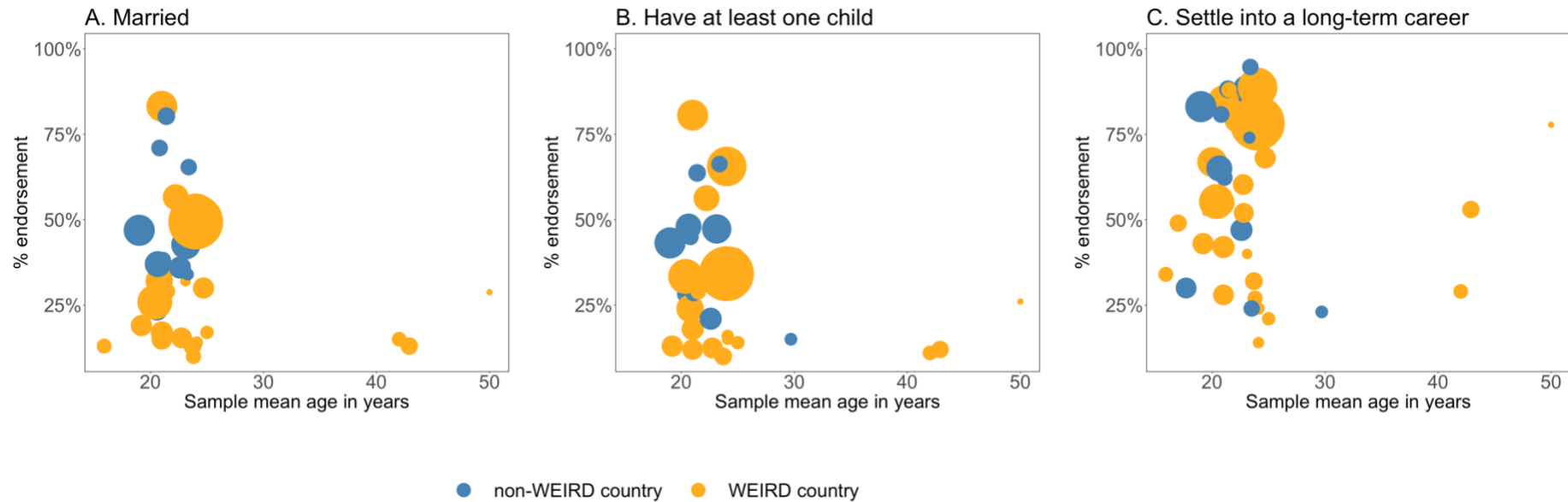
Note. Orange circles represent WEIRD (White, Educated, Industrialized, Rich, Democratic) countries and blue circles represent non-WEIRD countries. The size of the shape denotes sample size (larger shapes represent larger sample sizes, smaller shapes represent smaller sample sizes). Figure 10 in the supplementary materials shows the proportion of endorsement by country for more detail.

Meta-regression models were also conducted for the item "Do you think you have reached adulthood?" with age group (adolescence, emerging adulthood, adulthood) and country type (WEIRD or non-WEIRD countries) as predictors. The meta-regression models for responses "Yes" and "In some ways yes, in some ways no" were significant ($p = .010$ and $p = .002$), explaining 27% and 18% of the heterogeneity between studies, respectively, although the meta-analytic estimates did not change. Age group was significant, with adolescents and emerging adults being significantly less likely to respond to "Do you think you have reached adulthood?" with "Yes" ($p = .001$, $p = .002$).

Figure 3 shows responses to the item "Do you think you have reached adulthood?" by age group, indicating that only 17% of adolescents responded with "Yes", compared with 49% of emerging adults and 82% of adults over the age of 30.

Figure 3. *Responses to the item "Do you think you have reached adulthood?" by age group.*
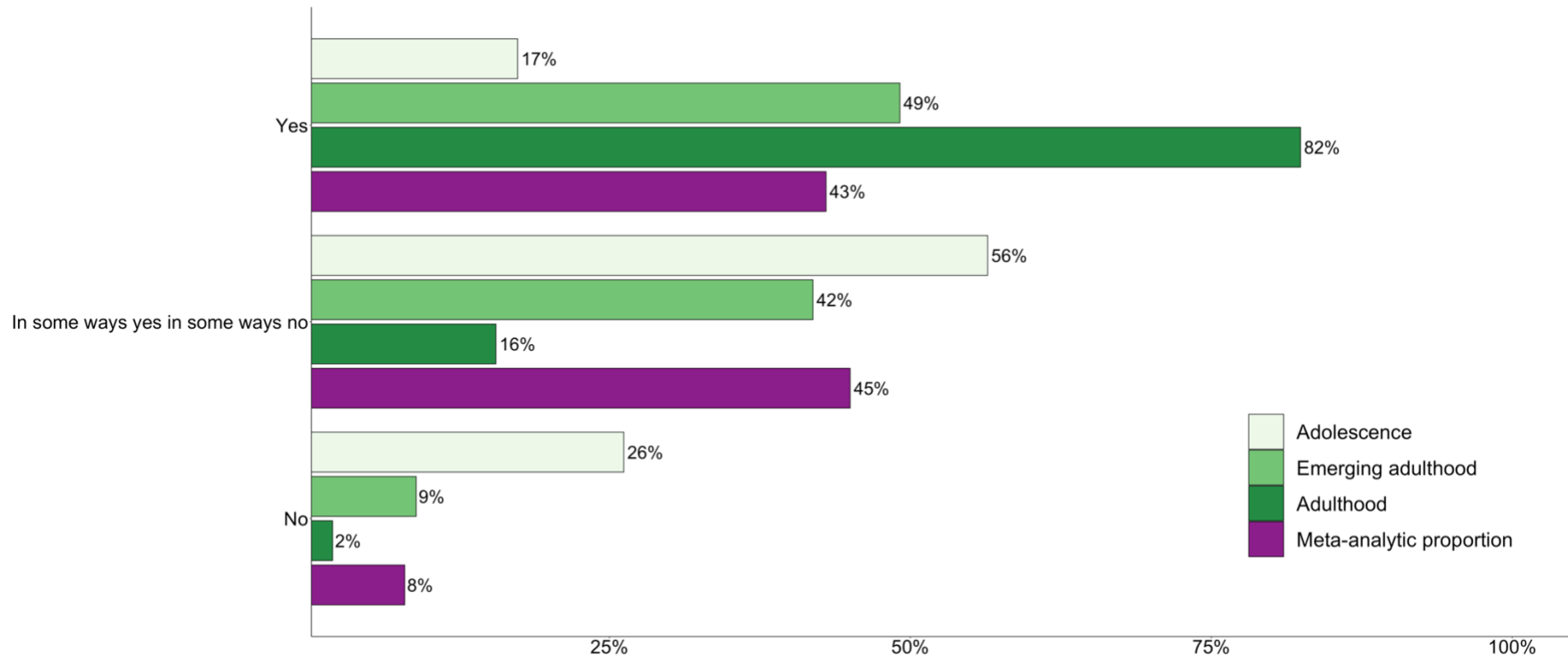
Note: Adolescence refers to samples of age 11-17, emerging adulthood refers to age 18-29, and adulthood refers to age 30+. Proportions plotted in green on the graph represent mean responses to the item "Do you think you have reached adulthood?" across the 27 samples. The proportion plotted in purple represents the meta-analytic proportion for each response.

2.6. Discussion

This meta-analysis investigated whether people of different ages and cultures classify themselves as adults, and the characteristics they consider to be important for adult status. We aimed to (a) derive meta-analytic estimates of the proportion of endorsement of three traditional socio-demographic milestones – marriage, parenthood, and career – as defining characteristics of adulthood, (b) derive a meta-analytic estimate of subjective adult status, and (c) compare the endorsement of traditional socio-demographic milestones of adulthood, and subjective adult status, across age groups and WEIRD or non-WEIRD countries.

Defining characteristics of adulthood

We calculated meta-analytic estimates of the proportion of people who endorsed marriage, parenthood, and career as markers for adult status across a total of 17,465 participants from 39 independent samples spanning the past three decades. Our results indicated that marriage and parenthood were endorsed by less than a quarter of the participants as defining characteristics of adulthood. These meta-analytic endorsement estimates were independent of participants' age, their country of origin, and the scale response type (binary or Likert). This does not align with previous research which suggested that older individuals and those from more collectivist cultures (e.g., non-WEIRD countries) rated the traditional family-oriented milestones of adulthood as important more often than younger individuals or those from individualistic, WEIRD countries (e.g., Badger et al., 2006; Nelson et al., 2004; Rankin & Kenyon, 2008; Sieter & Nelson, 2011; Vleioras, 2021; Zhong & Arnett, 2014). We speculate that we found no effect of country of origin because our results reflect current socio-demographic trends around the world, in particular the decline of marriage and birth rates. In the US, exemplary for a WEIRD country, marriage rates have fallen by 27% and birth rates have declined by 16% in the past 20 years (O'Neill, 2022;

Statista Research Department, 2023a). Furthermore, data suggest that marriage and birth rates are declining not only in WEIRD countries, but globally (Ortiz-Ospina & Roser, 2020; Stone, 2019). It follows that people of all ages and cultures may endorse traditional socio-demographic milestones less frequently as defining characteristics of modern adulthood. Having a stable, long-term career was endorsed by 58% of participants across studies as defining characteristic of adulthood – more than twice as often as marriage and parenthood. This estimate did not change dramatically following meta-regression, but our model revealed that country type (WEIRD or non-WEIRD) was a significant moderator.

The emphasis on having a stable career over marriage and parenthood as marker of adulthood suggests that individuals perceive their work life to be more relevant to their adult identity compared to family life in today's society. The way in which young adults prioritise anticipated future roles, such as marriage, parenthood, and career, is thought to reflect how much they intend to focus on these roles and the extent to which they will inform their adult identity (Hall & Willoughby, 2016). In this light, our results suggest that career is a key aspect of adult identity. Individual accomplishments such as career become a core focus for people in increasingly individualistic and capitalist societies, as people view themselves as somewhat separate from the collective society (e.g., Marginson & Yang, 2022). This may explain why individuals endorse career as being more important for adult status compared with marriage and parenthood.

As attitudes towards marriage and parenthood are shifting, with young people increasingly delaying or forgoing these milestones, attitudes towards careers and work are also shifting, meaning that the importance of career as a marker of adulthood could change in the future. For example, the COVID-19 pandemic caused diverse challenges in different workplaces which are leading to a change in attitudes towards work, careers, and the importance of work-life balance. For front-line workers such as nurses and teachers, the

pandemic highlighted their need for support and vulnerability to burn-out (e.g., Goh et al., 2021; Pressley, 2021). For office-based roles, the importance of flexible work schedules and working from home has increased, shifting people's attitudes about what a traditional career looks like (e.g., Lippens et al., 2021). Future studies of adulthood should track these changing attitudes and assess the impact that career has on individuals' subjective adult status and identity development across sectors.

We found that samples from non-WEIRD countries were significantly more likely to endorse career as an important marker of adult status compared with WEIRD countries. This finding aligns with previous research which suggested that WEIRD samples endorse individualistic and psychological markers of adulthood, such as "Accepting responsibility for the consequences of my actions" and "Deciding on beliefs and values independently", over and above having a stable career (e.g., Arnett, 1994; Wright & von Stumm, 2023b). For example, among 722 participants from the UK, 80% endorsed "Accepting responsibility for the consequences of my actions" as being important for adult status but only 40% endorsed having a career (Wright & von Stumm, 2023b). By comparison, in recent studies from India, Ghana, and China, career was endorsed as a marker of adulthood by 65%, 81%, and 88% of the respective samples (Bao et al., 2023; Obidoa et al., 2018; Seiter & Nelson, 2011).

Subjective adult status

We derived a meta-analytic proportion of .43 for subjective adult status, meaning that 43% of participants of all ages responded "Yes" to the item "Do you think you have reached adulthood?" across 27 independent samples ($N = 11,477$). Subjective adult status varied as a function of age: adolescents and emerging adults (aged 11-17 and 18-29 respectively), were less likely to respond with "Yes" compared to older adults. Participants over the age of 30 were 4.8 times more likely to report they had reached adulthood compared with adolescents,

and 1.7 times more likely than emerging adults. While emerging adults were less likely to report that they had reached adulthood compared with adults over the age of 30, almost half of emerging adults believed they had reached adulthood (49%). Roughly the same proportion of emerging adults responded with "In some ways yes, in some ways no" (42%), indicating that they felt "in-between" adolescence and adulthood. These findings challenge the concept that emerging adults as a group are stuck 'in-between' adolescence and adulthood and do not feel like adults (Arnett, 2000; 2015). Instead, we found that a slightly higher proportion of emerging adults across the studies meta-analysed felt they had reached adulthood compared with those who felt in-between.

Our findings have implications for both the psychological measurement of emerging adulthood, and the support offered to emerging adults to assist with their development and adjustment.

Implications for measuring adulthood

The Markers of Adulthood (MoA) scale is frequently used in the psychological literature to measure adulthood by assessing subjective adult status and the defining characteristics of adulthood. Our meta-analysis aimed to assess the validity of using the MoA scale to assess modern adulthood, and our review highlights three considerations for researchers when using the MoA scale.

First, we found that sample country type was a significant moderator of the endorsement of career as a marker of adulthood, with samples from non-WEIRD countries endorsing career more than those from WEIRD countries. This suggests that the culture in which an individual was raised may influence their perception and expectations of adulthood. This is an area of research that requires more investigation, especially due to the increase in globalisation since the conception of the MoA scale in the 1990s. The MoA scale was

conceptualised by US researchers working from a Western perspective (Arnett, 1994; Norman et al., 2021). Cross-cultural examinations of the defining characteristics of adulthood not addressed by the MoA scale are crucial for gaining a full understanding of the meaning of adulthood across the globe.

Second, our findings indicate that emerging adults do feel like adults, contrary to previous research. Previously, individual studies have found evidence to suggest that emerging adults feel 'in-between' (e.g., Arnett, 2000; 2015). However, in our meta-analysis, half of participants aged 18-29 reported feeling that they have reached adulthood. By collating data from the past 30 years, we show that the picture is more complex than previously thought, and adult identity is not clearly defined by age group. Future research should take this into consideration and investigate individual differences within emerging adulthood to identify variables which affect subjective adult status in this age group.

Third, while emerging adulthood has been the focus of research on subjective adult status and the defining characteristics of adulthood, our meta-analysis provides evidence that assessing wider age groups is key to understanding adulthood. Out of the 27 studies included in this meta-analysis for subjective adult status, only 4 included samples outside of the 18-29 age range of emerging adulthood. Our meta-regression revealed that age was a significant moderator of subjective adult status, with younger participants being more likely to report that they have not yet reached adulthood. We implore future studies to include wider age ranges when assessing the MoA scale in order to identify age effects in measures of adulthood.

Implications for mental health and well-being research

Adulthood has traditionally been defined as a life stage reached when one attains certain socio-demographic milestones including marriage, parenthood, and settling into a

career. However, our meta-analysis showed that adulthood is not defined by marriage and parenthood, and that most people consider themselves to be adults despite these socio-demographic milestones becoming less attainable and occurring later in life. Improving our understanding of the psychology of adulthood may require us to redefine this phase of life as a time of continuous psychological growth and change, rather than focusing on the idea of a fixed adult status that follows from marriage, parenthood, and career. Redefining adulthood in this way could have a positive impact on adults' identity development. Identity development can be impaired when people's reality and their 'ideal' or expected experience are disconnected (e.g., Carver, 2012). That is, if people feel that they must marry or have children in order to become adults, but these milestones are out of reach or undesirable for them, they may face an identity crisis as they transition into and through adulthood. Emphasising the rich and dynamic development that takes place throughout adulthood could also inform how we support young people at the verge of adulthood. These young people may be more likely to identify with the wider social group of adults if they view adulthood as a positive and enjoyable time of life (Wright & von Stumm, 2023b). Redefining adulthood as a time of continuous, positive psychological growth may promote a well-adjusted, happy, and healthy adult population (e.g., Wright & von Stumm, 2023a).

Strengths and Limitations

Our study makes three novel contributions to the psychological measurement of adulthood. First, we synthesised three decades of research using the MoA scale and meta-analysed the proportional endorsement of the traditional socio-demographic milestones of adulthood – marriage, parenthood, and career – and subjective adult status. Second, we examined the relationship between markers of adulthood and participant age group (i.e., adolescence, emerging adulthood, or adulthood) and country of origin (i.e., WEIRD or non-

WEIRD), revealing that the effect of these moderators is more complex and nuanced than previously assumed. Finally, we have provided recommendations for researchers studying and measuring adulthood, in the hope that this meta-analysis will enrich and inform future research into the psychology of adulthood.

However, our study is not without its limitations. First, a key limitation of this work is the cross-sectional nature of the data available, which did not allow us to assess whether differences in age group were caused by time or by generational differences. For example, we found that older participants had higher subjective adult status, as those over the age of 30 were up to 4.8 times more likely to report that they had reached adulthood compared with younger participants. It is possible that these differences reflect a time effect – participants may feel more adult as they age. Alternatively, this may reflect cohort effects pertaining to social values and perceptions of adulthood. That is, participants born in different generations may feel more adult and thus respond differently to this item regardless of their age at time of assessment. Without longitudinal data, we cannot determine which is the case.

Second, another limitation of our analysis is that most samples for whom MoA data were available were emerging adults, and only four estimates were drawn from younger or older samples. Therefore, our estimates for the proportions for the endorsement of markers of adult status are heavily weighted to the ages of 18-29 years, which could skew results.

Third, the distinction of countries as WEIRD or non-WEIRD, while common in psychological studies (e.g., Hendriks et al., 2019), may not be an optimal way to assess cultural differences. For this meta-analysis, countries were grouped based on their status as Western, Educated, Industrialised, Rich and Democratic nations. This meant that countries with distinct social and cultural norms – such as China, Ghana, and Poland – were grouped together, resulting in the loss of clarity and detail of cross-country comparisons (e.g., Anedo, 2012). Classifying countries as WEIRD or non-WEIRD offers a broad cross-cultural

comparison, and a solution that was achievable in the scope of this meta-analysis, but future studies could consider comparing individual countries to achieve a more detailed perspective of the impact of cultural differences on people's attitudes towards adulthood.

Fourth, to compare studies which collected data using binary and Likert scales, we transformed Likert responses to binary by combining responses on a 4-point Likert scale into 2 points. This was necessary to compare all existing evidence, but by compressing the Likert scale data we inevitably lost detail in responses, and the comparison of Likert and binary datasets is not wholly reliable. We found overall that samples who responded on a Likert scale were more likely to endorse all three markers – marriage, parenthood, and career. This is likely due to the fact that participants have more options for endorsement on a Likert scale (e.g., when assessing importance of a characteristic they can choose between "Very important", "Important", "Not very important", and "Not important at all", compared with "Yes" or "No" in a binary scale).

Finally, we chose to assess the markers of marriage, parenthood, and career here to provide meta-analytic proportions for the traditional socio-demographic milestones of adulthood, but the MoA scale includes an additional 19 markers of adulthood which were not the focus of this study. These markers were selected because they represent the three milestones traditionally associated with attaining adult status. The decision to omit the other markers was made in order to focus the scope of this meta-analysis. Future studies investigating the pooled proportional endorsement of other MoA items using meta-analysis would further elucidate our understanding of perceptions of adulthood today. Within the MoA scale, there are items assessing psychological development in adulthood (e.g., "Accept responsibility for the consequences of my actions"). A comparison between the endorsement of traditional milestones and more psychological traits would be an interesting avenue for future research.

2.7. Conclusion

Adulthood is typically defined by reaching the age of majority (i.e., age 18) and attaining traditional socio-demographic milestones such as marriage, parenthood, and a stable career. In this meta-analysis of publications using the Markers of Adulthood scale (Arnett, 1994, 1997, 1998, 2001) across the last three decades, we found that the traditional milestones of marriage and parenthood were endorsed by less than 25% of participants as markers of adulthood. In contrast, settling into a stable career was endorsed by 58% of participants, suggesting that today, people define adulthood by career status more than marriage or parenthood. We also found that fewer than half of participants thought they had reached adulthood (meta-analytic proportion of 43%), and age at time of assessment significantly moderated whether people perceived themselves as adults. Emerging adults (aged 18-29) were 1.7 times less likely to report feeling adult compared with adults over the age of 30. However, 49% of emerging adults did feel they had reached adulthood, indicating marked individual variation in emerging adults' perceptions of adulthood. Our review suggests that the socio-demographic markers included in the MoA scale may not be the best measure of modern adulthood. Our findings have implications for supporting emerging adults with the transition to adulthood and improving adults' mental health and identity development by redefining the markers of modern adulthood.

2.8. Supplementary materials

Details of studies included in the meta-analysis.

Table 1. *Studies included in meta-analysis for MoA item "Married".*

Identifier	Author	Publication year	Sample N	Age range	Age group	Country	Country Group	Gender % male	Sampling method	Married N	Married proportion
Arnett_1994	Arnett	1994	346	18-23	emerging adulthood	USA	WEIRD	46	Binary	52	0.15
Arnett_1997	Arnett	1997	140	21-28	emerging adulthood	USA	WEIRD	53	Binary	24	0.17
Arnett_2001_b	Arnett	2001	179	20-29	emerging adulthood	USA	WEIRD	37	Binary	18	0.10
Arnett_2001_c	Arnett	2001	165	30-55	adulthood	USA	WEIRD	38	Binary	25	0.15
Arnett_2001_a	Arnett	2001	171	13-19	adolescence	USA	WEIRD	40	Binary	22	0.13
Arnett_2003_a	Arnett	2003	122	18-29	emerging adulthood	USA	WEIRD	58	Binary	17	0.14
Arnett_2003_b	Arnett	2003	96	18-29	emerging adulthood	USA	WEIRD	60	Binary	31	0.32

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Identifier	Author	Publication year	Sample N	Age range	Age group	Country	Country Group	Gender % male	Sampling method	Married N	Married proportion
Arnett_2003_c	Arnett	2003	247	18-29	emerging adulthood	USA	WEIRD	50	Binary	32	0.13
Arnett_2003_d	Arnett	2003	109	18-29	emerging adulthood	USA	WEIRD	50	Binary	5	0.05
Arnett_2015	Arnett & Padilla Walker	2015	400	17-29	emerging adulthood	Denmark	WEIRD	43	Binary	68	0.17
Bao_2023_a	Bao et al	2023	763	18-29	emerging adulthood	China	non-WEIRD	45	Likert	326	0.43
Beckert_2020_a	Beckert et al	2020	364	18-29	emerging adulthood	Italy	WEIRD	22	Likert	109	0.30
Beckert_2020_b	Beckert et al	2020	372	18-29	emerging adulthood	Taiwan	non-WEIRD	19	Likert	88	0.24
Beckert_2020_c	Beckert et al	2020	574	18-29	emerging adulthood	USA	WEIRD	44	Likert	325	0.57
Grahe_2018	Grahe et al	2018	3134	18-29	emerging adulthood	USA	WEIRD	25	Likert	1547	0.49
Galanaki_2017	Galanaki &	2017	784	18-28	emerging adulthood	Greece	WEIRD	38	Binary	39	0.05

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Identifier	Author	Publication year	Sample N	Age range	Age group	Country	Country Group	Gender % male	Sampling method	Married N	Married proportion
Hall_2016	Leontopoulou Hall & Walls	2016	651	18-29	emerging adulthood	USA	WEIRD	39	Likert	209	0.32
Nelson_2004	Nelson et al	2005	207	19-25	emerging adulthood	China	non-WEIRD	45	Binary	79	0.38
Norman_2021	Norman et al	2021	861	18-29	emerging adulthood	USA	WEIRD	27	Likert	716	0.83
Obidoa_2018_a	Obidoa et al	2018	215	18-30	emerging adulthood	Ghana	non-WEIRD	40	Likert	153	0.71
Obidoa_2018_b	Obidoa et al	2018	242	16-30	emerging adulthood	Nigeria	non-WEIRD	45	Likert	194	0.80
Oleszkowicz_2015_c	Oleszkowicz & Misztela	2015	128	28-34	adulthood	Poland	non-WEIRD	49	Binary	6	0.05
Oleszkowicz_2015_b	Oleszkowicz & Misztela	2015	207	21-26	emerging adulthood	Poland	non-WEIRD	39	Binary	10	0.05
Oleszkowicz_2015_a	Oleszkowicz & Misztela	2015	349	17-19	emerging adulthood	Poland	non-WEIRD	59	Binary	10	0.03

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Identifier	Author	Publication year	Sample N	Age range	Age group	Country	Country Group	Gender % male	Sampling method	Married N	Married proportion
Petrogiannis_2011	Petrogiannis	2011	183	18-25	emerging adulthood	Greece	WEIRD	27	Binary	53	0.29
Roth_2012	Roth et al	2012	874	18-19	emerging adulthood	Romania	non-WEIRD	47	Binary	410	0.47
Seiter_2011	Seiter & Nelson	2011	576	18-26	emerging adulthood	India	non-WEIRD	50	Binary	213	0.37
Sharon_2016	Sharon	2016	1133	18-25	emerging adulthood	USA	WEIRD	35	Binary	293	0.26
Sheikholeslami_2019	Sheikholeslami et al	2019	400	17-29	emerging adulthood	Iran	non-WEIRD	65	Binary	144	0.36
Sirsch_2009_c	Sirsch et al	2009	232	30-55	adulthood	Austria	WEIRD	41	Binary	30	0.13
Sirsch_2009_b	Sirsch et al	2009	317	20-29	emerging adulthood	Austria	WEIRD	39	Binary	19	0.06
Sirsch_2009_a	Sirsch et al	2009	226	11-19	adolescence	Austria	WEIRD	29	Binary	18	0.08
Tagliabue_2015	Tagliabue et al	2015	1513	19-30	emerging adulthood	Italy	WEIRD	46	Likert	785	0.52
Vleioras_2021_b	Vleioras	2021	73	41-60	adulthood	Greece	WEIRD	18	Likert	21	0.29

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Identifier	Author	Publication year	Sample N	Age range	Age group	Country	Country Group	Gender % male	Sampling method	Married N	Married proportion
Vleioras_2021_a	Vleioras	2021	73	18-24	emerging adulthood	Greece	WEIRD	45	Likert	7	0.10
Weier_2020	Weier & Lee	2020	365	16-30	emerging adulthood	Australia	WEIRD	28	Binary	69	0.19
Wider_2021	Wider et al	2021	208	18-29	emerging adulthood	Malaysia	non-WEIRD	34	Likert	136	0.65
Zacares_2015	Zacares et al	2015	347	18-30	emerging adulthood	Spain	WEIRD	46	Likert	53	0.15
Zhong_2014	Zhong & Arnett	2014	119	18-29	emerging adulthood	China	non-WEIRD	0	Binary	40	0.34

Table 2. *Studies included in meta-analysis for MoA item "Have at least one child".*

Identifier	Author	Publication year	Sample N	Age range	Age group	Country	Country Group	Gender % male	Sampling method	Children N	Children proportion
Arnett_1994	Arnett	1994	346	18-23	emerging adulthood	USA	WEIRD	46	Binary	412	0.12
Arnett_1997	Arnett	1997	140	21-28	emerging adulthood	USA	WEIRD	53	Binary	20	0.14
Arnett_2001_b	Arnett	2001	179	20-29	emerging adulthood	USA	WEIRD	37	Binary	13	0.07
Arnett_2001_c	Arnett	2001	165	30-55	adulthood	USA	WEIRD	38	Binary	18	0.11
Arnett_2001_a	Arnett	2001	171	13-19	adolescence	USA	WEIRD	40	Binary	15	0.09
Arnett_2003_a	Arnett	2003	122	18-29	emerging adulthood	USA	WEIRD	58	Binary	20	0.16
Arnett_2003_c	Arnett	2003	247	18-29	emerging adulthood	USA	WEIRD	50	Binary	25	0.10
Arnett_2003_b	Arnett	2003	96	18-29	emerging adulthood	USA	WEIRD	60	Binary	31	0.32
Arnett_2003_d	Arnett	2003	109	18-29	emerging adulthood	USA	WEIRD	50	Binary	16	0.15

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Identifier	Author	Publication year	Sample N	Age range	Age group	Country	Country Group	Gender % male	Sampling method	Children N	Children proportion
Arnett_2015	Arnett & Padilla Walker	2015	400	17-29	emerging adulthood	Denmark	WEIRD	43	Binary	72	0.18
Bao_2023_a	Bao et al	2023	763	18-29	emerging adulthood	China	non-WEIRD	45	Likert	361	0.47
Beckert_2020_a	Beckert et al	2020	364	18-29	emerging adulthood	Italy	WEIRD	22	Likert	141	0.39
Beckert_2020_b	Beckert et al	2020	372	18-29	emerging adulthood	Taiwan	non-WEIRD	19	Likert	105	0.28
Beckert_2020_c	Beckert et al	2020	574	18-29	emerging adulthood	USA	WEIRD	44	Likert	323	0.56
Grahe_2018	Grahe et al	2018	3134	18-29	emerging adulthood	USA	WEIRD	25	Likert	1072	0.34
Galanaki_2017	Galanaki & Leontopoulou	2017	784	18-28	emerging adulthood	Greece	WEIRD	38	Binary	24	0.03
Hall_2016	Hall & Walls	2016	651	18-29	emerging adulthood	USA	WEIRD	39	Likert	156	0.24
Nelson_2004	Nelson et al	2005	207	19-25	emerging adulthood	China	non-WEIRD	45	Binary	59	0.29

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Identifier	Author	Publication year	Sample N	Age range	Age group	Country	Country Group	Gender % male	Sampling method	Children N	Children proportion
Norman_2021	Norman et al	2021	861	18-29	emerging adulthood	USA	WEIRD	27	Likert	694	0.81
Obidoa_2018_a	Obidoa et al	2018	215	18-30	emerging adulthood	Ghana	non-WEIRD	40	Likert	97	0.45
Obidoa_2018_b	Obidoa et al	2018	242	16-30	emerging adulthood	Nigeria	non-WEIRD	45	Likert	154	0.64
Oleszkowicz_2015_c	Oleszkowicz & Misztela	2015	128	28-34	adulthood	Poland	non-WEIRD	49	Binary	19	0.15
Oleszkowicz_2015_b	Oleszkowicz & Misztela	2015	207	21-26	emerging adulthood	Poland	non-WEIRD	39	Binary	19	0.09
Oleszkowicz_2015_a	Oleszkowicz & Misztela	2015	349	17-19	emerging adulthood	Poland	non-WEIRD	59	Binary	14	0.04
Petrogiannis_2011	Petrogiannis	2011	183	18-25	emerging adulthood	Greece	WEIRD	27	Binary	53	0.29
Roth_2012	Roth et al	2012	874	18-19	emerging adulthood	Romania	non-WEIRD	47	Binary	378	0.43

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Identifier	Author	Publication year	Sample N	Age range	Age group	Country	Country Group	Gender % male	Sampling method	Children N	Children proportion
Seiter_2011	Seiter & Nelson	2011	576	18-26	emerging adulthood	India	non-WEIRD	50	Binary	276	0.48
Sharon_2016	Sharon	2016	1133	18-25	emerging adulthood	USA	WEIRD	35	Binary	378	0.33
Sheikholeslami_2019	Sheikholeslami et al	2019	400	17-29	emerging adulthood	Iran	non-WEIRD	65	Binary	84	0.21
Sirsch_2009_c	Sirsch et al	2009	232	30-55	adulthood	Austria	WEIRD	41	Binary	28	0.12
Sirsch_2009_b	Sirsch et al	2009	317	20-29	emerging adulthood	Austria	WEIRD	39	Binary	19	0.06
Sirsch_2009_a	Sirsch et al	2009	226	11-19	adolescence	Austria	WEIRD	29	Binary	18	0.08
Tagliabue_2015	Tagliabue et al	2015	1513	19-30	emerging adulthood	Italy	WEIRD	46	Likert	992	0.66
Vleioras_2021_b	Vleioras	2021	73	41-60	adulthood	Greece	WEIRD	18	Likert	19	0.26
Vleioras_2021_a	Vleioras	2021	73	18-24	emerging adulthood	Greece	WEIRD	45	Likert	6	0.08
Weier_2020	Weier & Lee	2020	365	16-30	emerging adulthood	Australia	WEIRD	28	Binary	47	0.13
Wider_2021	Wider et al	2021	208	18-29	emerging adulthood	Malaysia	non-WEIRD	34	Likert	138	0.66

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Identifier	Author	Publication year	Sample N	Age range	Age group	Country	Country Group	Gender % male	Sampling method	Children N	Children proportion
Zacares_2015	Zacares et al	2015	347	18-30	emerging adulthood	Spain	WEIRD	46	Likert	43	0.12
Zhong_2014	Zhong & Arnett	2014	119	18-29	emerging adulthood	China	non-WEIRD	0	Binary	54	0.45

Table 3. *Studies included in meta-analysis for MoA item "Settled into a long-term career".*

Identifier	Author	Publication year	Sample N	Age range	Age group	Country	Country Group	Gender % male	Sampling method	Career N	Career proportion
Arnett_1994	Arnett	1994	346	18-23	emerging adulthood	USA	WEIRD	46	Binary	97	0.28
Arnett_1997	Arnett	1997	140	21-28	emerging adulthood	USA	WEIRD	53	Binary	29	0.21
Arnett_2001_b	Arnett	2001	179	20-29	emerging adulthood	USA	WEIRD	37	Binary	48	0.27
Arnett_2001_c	Arnett	2001	165	30-55	adulthood	USA	WEIRD	38	Binary	48	0.29
Arnett_2001_a	Arnett	2001	171	13-19	adolescence	USA	WEIRD	40	Binary	58	0.34
Arnett_2003_a	Arnett	2003	122	18-29	emerging adulthood	USA	WEIRD	58	Binary	29	0.24
Arnett_2003_c	Arnett	2003	247	18-29	emerging adulthood	USA	WEIRD	50	Binary	79	0.32
Arnett_2003_b	Arnett	2003	96	18-29	emerging adulthood	USA	WEIRD	60	Binary	38	0.40

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Identifier	Author	Publication year	Sample N	Age range	Age group	Country	Country Group	Gender % male	Sampling method	Career N	Career proportion
Arnett_2003_d	Arnett	2003	109	18-29	emerging adulthood	USA	WEIRD	50	Binary	15	0.14
Arnett_2015	Arnett & Padilla Walker	2015	400	17-29	emerging adulthood	Denmark	WEIRD	43	Binary	168	0.42
Bao_2023_a	Bao et al	2023	763	18-29	emerging adulthood	China	non-WEIRD	45	Likert	672	0.88
Beckert_2020_a	Beckert et al	2020	364	18-29	emerging adulthood	Italy	WEIRD	22	Likert	248	0.68
Beckert_2020_b	Beckert et al	2020	372	18-29	emerging adulthood	Taiwan	non-WEIRD	19	Likert	309	0.83
Beckert_2020_c	Beckert et al	2020	574	18-29	emerging adulthood	USA	WEIRD	44	Likert	455	0.79
Grahe_2018	Grahe et al	2018	3134	18-29	emerging adulthood	USA	WEIRD	25	Likert	2453	0.78
Galanaki_2017	Galanaki & Leontopoulou	2017	784	18-28	emerging adulthood	Greece	WEIRD	38	Binary	524	0.67

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Identifier	Author	Publication year	Sample N	Age range	Age group	Country	Country Group	Gender % male	Sampling method	Career N	Career proportion
Hall_2016	Hall & Walls	2016	651	18-29	emerging adulthood	USA	WEIRD	39	Likert	358	0.55
Nelson_2004	Nelson et al	2005	207	19-25	emerging adulthood	China	non-WEIRD	45	Binary	129	0.62
Norman_2021	Norman et al	2021	861	18-29	emerging adulthood	USA	WEIRD	27	Likert	730	0.85
Obidoa_2018_a	Obidoa et al	2018	215	18-30	emerging adulthood	Ghana	non-WEIRD	40	Likert	174	0.81
Obidoa_2018_b	Obidoa et al	2018	242	16-30	emerging adulthood	Nigeria	non-WEIRD	45	Likert	213	0.88
Oleszkowicz_2015_c	Oleszkowicz & Misztela	2015	128	28-34	adulthood	Poland	non-WEIRD	49	Binary	29	0.23
Oleszkowicz_2015_b	Oleszkowicz & Misztela	2015	207	21-26	emerging adulthood	Poland	non-WEIRD	39	Binary	50	0.24
Oleszkowicz_2015_a	Oleszkowicz & Misztela	2015	349	17-19	emerging adulthood	Poland	non-WEIRD	59	Binary	105	0.30

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Identifier	Author	Publication year	Sample N	Age range	Age group	Country	Country Group	Gender % male	Sampling method	Career N	Career proportion
Petrogiannis_2011	Petrogiannis	2011	183	18-25	emerging adulthood	Greece	WEIRD	27	Binary	161	0.88
Roth_2012	Roth et al	2012	874	18-19	emerging adulthood	Romania	non-WEIRD	47	Binary	726	0.83
Seiter_2011	Seiter & Nelson	2011	576	18-26	emerging adulthood	India	non-WEIRD	50	Binary	374	0.65
Sharon_2016	Sharon	2016	1133	18-25	emerging adulthood	USA	WEIRD	35	Binary	627	0.55
Sheikholeslami_2019	Sheikholeslami et al	2019	400	17-29	emerging adulthood	Iran	non-WEIRD	65	Binary	188	0.47
Sirsch_2009_c	Sirsch et al	2009	232	30-55	adulthood	Austria	WEIRD	41	Binary	123	0.53
Sirsch_2009_b	Sirsch et al	2009	317	20-29	emerging adulthood	Austria	WEIRD	39	Binary	165	0.52
Sirsch_2009_a	Sirsch et al	2009	226	11-19	adolescence	Austria	WEIRD	29	Binary	111	0.49
Tagliabue_2015	Tagliabue et al	2015	1513	19-30	emerging adulthood	Italy	WEIRD	46	Likert	1342	0.89
Vleioras_2021_b	Vleioras	2021	73	41-60	adulthood	Greece	WEIRD	18	Likert	57	0.78

Identifier	Author	Publication year	Sample N	Age range	Age group	Country	Country Group	Gender % male	Sampling method	Career N	Career proportion
Vleioras_2021_a	Vleioras	2021	73	18-24	emerging adulthood	Greece	WEIRD	45	Likert	38	0.52
Weier_2020	Weier & Lee	2020	365	16-30	emerging adulthood	Australia	WEIRD	28	Binary	157	0.43
Wider_2021	Wider et al	2021	208	18-29	emerging adulthood	Malaysia	non-WEIRD	34	Likert	197	0.95
Zacares_2015	Zacares et al	2015	347	18-30	emerging adulthood	Spain	WEIRD	46	Likert	209	0.60
Zhong_2014	Zhong & Arnett	2014	119	18-29	emerging adulthood	China	non-WEIRD	0	Binary	88	0.74

Table 4. *Studies included in meta-analysis for MoA item "Do you think you have reached adulthood?"*

Identifier	Author	Publication year	Sample N	Age range	Age group	Country	Country Group	Gender % male	"Yes" N	"Yes" proportion	"Maybe" N	"Maybe" proportion	"No" N	"No" proportion
Arnett_1994	Arnett	1994	346	18-23	emerging adulthood	USA	WEIRD	46	93	0.27	218	0.63	35	0.10
Arnett_1997	Arnett	1997	140	21-28	emerging adulthood	USA	WEIRD	53	88	0.63	49	0.35	3	0.02
Arnett_2001_a	Arnett	2001	171	13-19	adolescence	USA	WEIRD	40	32	0.19	82	0.48	56	0.33
Arnett_2001_b	Arnett	2001	179	20-29	emerging adulthood	USA	WEIRD	37	82	0.46	90	0.50	7	0.04
Arnett_2001_c	Arnett	2001	165	30-55	adulthood	USA	WEIRD	38	142	0.86	20	0.12	3	0.02
Arnett_2003_a	Arnett	2003	122	18-29	emerging adulthood	USA	WEIRD	58	72	0.59	41	0.34	9	0.07
Arnett_2003_b	Arnett	2003	96	18-29	emerging adulthood	USA	WEIRD	60	46	0.48	42	0.44	8	0.08
Arnett_2003_c	Arnett	2003	247	18-29	emerging adulthood	USA	WEIRD	50	94	0.38	133	0.54	22	0.09

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Identifier	Author	Publication year	Sample N	Age range	Age group	Country	Country Group	Gender % male	"Yes" N	"Yes" proportion	"Maybe" N	"Maybe" proportion	"No" N	"No" proportion
Arnett_2003_d	Arnett	2003	109	18-29	emerging adulthood	USA	WEIRD	50	39	0.36	65	0.60	4	0.04
Arnett_2015	Arnett & Padilla Walker	2015	400	17-29	emerging adulthood	Denmark	WEIRD	43	108	0.27	248	0.62	44	0.11
Bao_2023_a	Bao et al	2023	650	18-29	emerging adulthood	China	non-WEIRD	28	182	0.28	449	0.69	20	0.03
Galanaki_2017	Galanaki & Leontopoulou	2017	784	18-28	emerging adulthood	Greece	WEIRD	38	125	0.16	557	0.71	102	0.13
Grahe_2018	Grahe et al	2018	3134	18-29	emerging adulthood	USA	WEIRD	25	2194	0.70	721	0.23	219	0.07
Hall_2016	Hall & Walls	2016	651	18-29	emerging adulthood	USA	WEIRD	39	91	0.14	469	0.72	91	0.14
Nelson_2004	Nelson et al	2004	207	18-29	emerging adulthood	China	non-WEIRD	45	122	0.59	72	0.35	12	0.06

PAPER 1: MARKERS OF ADULTHOOD META-ANALYSIS

Identifier	Author	Publication year	Sample N	Age range	Age group	Country	Country Group	Gender % male	"Yes" N	"Yes" proportion	"Maybe" N	"Maybe" proportion	"No" N	"No" proportion
Norman_2021	Norman et al	2021	861	18-29	emerging adulthood	USA	WEIRD	27	732	0.85	112	0.13	17	0.02
Obidoa_2018_b	Obidoa et al	2018	242	16-20	emerging adulthood	Nigeria	non-WEIRD	45	148	0.61	44	0.18	51	0.21
Petrogiannis_2011	Petrogiannis	2011	183	18-25	emerging adulthood	Greece	WEIRD	27	70	0.38	108	0.59	5	0.03
Seiter_2011	Seiter & Nelson	2011	576	18-26	emerging adulthood	India	non-WEIRD	50	351	0.61	150	0.26	81	0.14
Sheikholeslami_2019	Sheikholeslami et al	2019	400	17-29	emerging adulthood	Iran	non-WEIRD	65	252	0.63	68	0.17	80	0.20
Sirsch_2009_a	Sirsch et al	2009	226	11-19	adolescence	Austria	WEIRD	29	36	0.16	142	0.63	47	0.21
Sirsch_2009_b	Sirsch et al	2009	317	20-29	emerging adulthood	Austria	WEIRD	39	120	0.38	174	0.55	22	0.07
Sirsch_2009_c	Sirsch et al	2009	232	30-55	adulthood	Austria	WEIRD	41	186	0.80	42	0.18	5	0.02
Weier_2020	Weier & Lee	2020	365	16-30	emerging adulthood	Australia	WEIRD	28	37	0.10	248	0.68	80	0.22

PAPER 1: MARKERS OF ADULTHOOD META-ANALYSIS

Identifier	Author	Publication year	Sample N	Age range	Age group	Country	Country Group	Gender % male	"Yes" N	"Yes" proportion	"Maybe" N	"Maybe" proportion	"No" N	"No" proportion
Wider_2021	Wider et al	2021	208	18-29	emerging adulthood	Malaysia	non-WEIRD	34	81	0.39	119	0.57	8	0.04
Zacares_2015	Zacares et al	2015	347	18-30	emerging adulthood	Spain	WEIRD	46	73	0.21	243	0.70	31	0.09
Zhong_2014	Zhong & Arnett	2014	119	18-29	emerging adulthood	China	non-WEIRD	0	52	0.44	62	0.52	5	0.04

Country categorisation

Countries were classified as WEIRD (Western, Educated, Industrialised, Rich, and Democratic) or non-WEIRD based on Hendriks et al (2019). Of the 16 countries represented in this meta-analysis, 9 were classified by Hendriks and colleagues (2018): Australia, China, India, Iran, Italy, Malaysia, Spain, Taiwan, and the USA. The remaining 7 countries were classified for this paper according to the criteria set out by Hendriks et al (2019): Austria, Denmark, Ghana, Greece, Nigeria, Poland, and Romania.

Criteria in Hendriks et al (2019) included: region, Western or non-Western (based on Gosling et al., 2010); Education, which was assessed by level of human development (based on the Human Development Report, 2015) resulting in levels of very high, high, medium, or low education; Industrialisation, which classified countries by their economy being advanced or emerging/developing, based on gross domestic product (GDP; International Monetary Fund, 2016); and Democratic, for which countries were classified based on the Democracy Index compiled by the Economist Intelligence Unit (Kekic, 2008).

Table 5 shows the 16 countries included in this meta-analysis and their WEIRD classification from Hendriks et al. (2019).

Table 5. *Classification of countries into WEIRD and non-WEIRD categories for meta-regression (adapted from Hendriks et al., 2019)*

Country	Samples (*n*, % of N^{total})	Region (Western)	Human Development (Educated)	Economy (Industrialised)	Income (Rich)	Democratic	Classification	Classified for
Australia	1 (365, 2%)	Western	Very high	Advanced	High	Full democracy	WEIRD	Hendriks et al (2019)
Austria	3 (775, 5%)	Western	Very high	Advanced	High	Full democracy	WEIRD	The current paper
China	3 (1089, 7%)	non-Western	Very high	Emerging	High/lower middle	Authoritarian	non-WEIRD	Hendriks et al (2019)
Denmark	1 (400, 2%)	Western	Very high	Advanced	High	Full democracy	WEIRD	The current paper
Ghana	1 (215, 1%)	non-Western	Medium	Emerging	Low	Hybrid	non-WEIRD	The current paper
Greece	2 (967, 6%)	non-Western	Very high	Advanced	High	Full democracy	WEIRD	The current paper
India	1 (576, 3%)	non-Western	Medium	Emerging	Low	Flawed democracy	non-WEIRD	Hendriks et al (2019)
Iran	1 (400, 2%)	non-Western	High	Emerging	Lower middle	Authoritarian	non-WEIRD	Hendriks et al (2019)
Italy	2 (1877, 11%)	Western	Very high	Advanced	High	Full democracy	WEIRD	Hendriks et al (2019)
Malaysia	1 (208, 1%)	non-Western	High	Emerging	Upper middle	Flawed democracy	non-WEIRD	Hendriks et al (2019)
Nigeria	1 (242, 1%)	non-Western	Low	Emerging	Low	Authoritarian	non-WEIRD	The current paper
Poland	3 (684, 4%)	non-Western	Very high	Emerging	Upper middle	Flawed democracy	non-WEIRD	The current paper
Romania	1 (874, 5%)	non-Western	High	Emerging	Lower middle	Flawed democracy	non-WEIRD	The current paper
Spain	1 (347, 2%)	Western	Very high	Advanced	High	Full democracy	WEIRD	Hendriks et al (2019)
Taiwan	1 (372, 2%)	non-Western	Very high	Advanced	High	Flawed democracy	non-WEIRD	Hendriks et al (2019)
USA	14 (7928, 46%)	Western	Very high	Advanced	High	Full democracy	WEIRD	Hendriks et al (2019)

In total, 6 countries were classified as WEIRD: Australia, Austria, Denmark, Italy, Spain, and the USA. This represents 22 samples and N = 11,692 participants, 68% of the total number of participants across all samples. The remaining 10 countries were classified as non-WEIRD: China, Ghana, Greece, India, Iran, Malaysia, Nigeria, Poland, Romania, and Taiwan. Non-WEIRD countries represent 15 samples in our meta-analysis, with total N = 5,627, which is 32% of the total number of participants.

Forest plots

Figure 4. *Forest plot for meta-analysis of the endorsement of "Married".*

Figure 5. *Forest plot for meta-analysis of the endorsement of "Have at least one child"*

Study	Events	Total	Proportion	95%-CI
Arnett_1994	42	346	0.12	[0.09; 0.16]
Arnett_1997	20	140	0.14	[0.09; 0.21]
Arnett_2001_emergingadults	13	179	0.07	[0.04; 0.12]
Arnett_2001_midlife	18	165	0.11	[0.07; 0.17]
Arnett_2001_teens	15	171	0.09	[0.06; 0.14]
Arnett_2003_africanamerican	20	122	0.16	[0.11; 0.24]
Arnett_2003_asianamerican	25	247	0.10	[0.07; 0.14]
Arnett_2003_latino	31	96	0.32	[0.23; 0.42]
Arnett_2003_white	16	109	0.15	[0.09; 0.23]
Arnett_PadillaWalker_2015	72	400	0.18	[0.15; 0.22]
Bao_2023_study1	361	763	0.47	[0.44; 0.51]
Beckert_2020_Italy	141	364	0.39	[0.34; 0.44]
Beckert_2020_Taiwan	105	372	0.28	[0.24; 0.33]
Beckert_2020_US	323	574	0.56	[0.52; 0.60]
EAMMi2	1072	3134	0.34	[0.33; 0.36]
Galanaki_2017	24	784	0.03	[0.02; 0.04]
Hall_2016	156	651	0.24	[0.21; 0.27]
Nelson_2004	59	207	0.28	[0.23; 0.35]
Norman_2021	694	861	0.81	[0.78; 0.83]
Obidoa_2019_ghana	97	215	0.45	[0.38; 0.52]
Obidoa_2019_nigeria	154	242	0.64	[0.57; 0.70]
Oleszkowicz_2015_adults	19	128	0.15	[0.10; 0.22]
Oleszkowicz_2015_emergingadults	19	207	0.09	[0.06; 0.14]
Oleszkowicz_2015_teens	14	349	0.04	[0.02; 0.07]
Petrogiannis_2011	53	183	0.29	[0.23; 0.36]
Roth_2012	378	874	0.43	[0.40; 0.47]
Seiter_2011	276	576	0.48	[0.44; 0.52]
Sharon_2016	378	1133	0.33	[0.31; 0.36]
Sheikholeslami_2019	84	400	0.21	[0.17; 0.25]
Sirsch_2009_adults	28	232	0.12	[0.08; 0.17]
Sirsch_2009_emergingadults	19	317	0.06	[0.04; 0.09]
Sirsch_2009_teens	18	226	0.08	[0.05; 0.12]
Tagliabue_2015	992	1513	0.66	[0.63; 0.68]
Vleioras_2021_parents	19	73	0.26	[0.17; 0.37]
Vleioras_2021_students	6	73	0.08	[0.04; 0.17]
Weier_2020	47	365	0.13	[0.10; 0.17]
Wider_2021	138	208	0.66	[0.60; 0.72]
Zacares_2015	43	347	0.12	[0.09; 0.16]
Zhong_2014	54	119	0.45	[0.36; 0.54]
Random effects model		**17465**	**0.23**	**[0.18; 0.29]**

Heterogeneity: $I^2 = 99\%$, $\tau^2 = 0.8668$, $p = 0$

Endorsement of 'Have at least one child'

Figure 6. Forest plot for meta-analysis of the endorsement of "Settle into a long-term

career"

Study	Events	Total	Proportion	95%-CI
Arnett_1994	97	346	0.28	[0.24; 0.33]
Arnett_1997	29	140	0.21	[0.15; 0.29]
Arnett_2001_emergingadults	48	179	0.27	[0.21; 0.34]
Arnett_2001_midlife	48	165	0.29	[0.23; 0.36]
Arnett_2001_teens	58	171	0.34	[0.27; 0.41]
Arnett_2003_africanamerican	29	122	0.24	[0.17; 0.32]
Arnett_2003_asianamerican	79	247	0.32	[0.26; 0.38]
Arnett_2003_latino	38	96	0.40	[0.31; 0.50]
Arnett_2003_white	15	109	0.14	[0.09; 0.22]
Arnett_PadillaWalker_2015	168	400	0.42	[0.37; 0.47]
Bao_2023_study1	672	763	0.88	[0.86; 0.90]
Beckert_2020_Italy	248	364	0.68	[0.63; 0.73]
Beckert_2020_Taiwan	309	372	0.83	[0.79; 0.87]
Beckert_2020_US	455	574	0.79	[0.76; 0.82]
EAMMi2	2454	3134	0.78	[0.77; 0.80]
Galanaki_2017	524	784	0.67	[0.64; 0.70]
Hall_2016	358	651	0.55	[0.51; 0.59]
Nelson_2004	129	207	0.62	[0.56; 0.69]
Norman_2021	730	861	0.85	[0.82; 0.87]
Obidoa_2019_ghana	174	215	0.81	[0.75; 0.86]
Obidoa_2019_nigeria	213	242	0.88	[0.83; 0.92]
Oleszkowicz_2015_adults	29	128	0.23	[0.17; 0.31]
Oleszkowicz_2015_emergingadults	50	207	0.24	[0.19; 0.30]
Oleszkowicz_2015_teens	105	349	0.30	[0.25; 0.35]
Petrogiannis_2011	161	183	0.88	[0.82; 0.92]
Roth_2012	726	874	0.83	[0.80; 0.85]
Seiter_2011	374	576	0.65	[0.61; 0.69]
Sharon_2016	627	1133	0.55	[0.52; 0.58]
Sheikholeslami_2019	188	400	0.47	[0.42; 0.52]
Sirsch_2009_adults	123	232	0.53	[0.47; 0.59]
Sirsch_2009_emergingadults	165	317	0.52	[0.46; 0.57]
Sirsch_2009_teens	111	226	0.49	[0.43; 0.55]
Tagliabue_2015	1342	1513	0.89	[0.87; 0.90]
Vleioras_2021_parents	57	73	0.78	[0.67; 0.86]
Vleioras_2021_students	38	73	0.52	[0.41; 0.63]
Weier_2020	157	365	0.43	[0.38; 0.48]
Wider_2021	197	208	0.95	[0.91; 0.97]
Zacares_2015	209	347	0.60	[0.55; 0.65]
Zhong_2014	88	119	0.74	[0.65; 0.81]
Random effects model		**17465**	**0.58**	**[0.51; 0.65]**

Heterogeneity: $I^2 = 99\%$, $\tau^2 = 0.8915$, $p = 0$

Endorsement of 'Being settled into a long-term career'

Figure 7. Forest plot for meta-analysis of the response "Yes" to the item "Do you think you

have reached adulthood?"

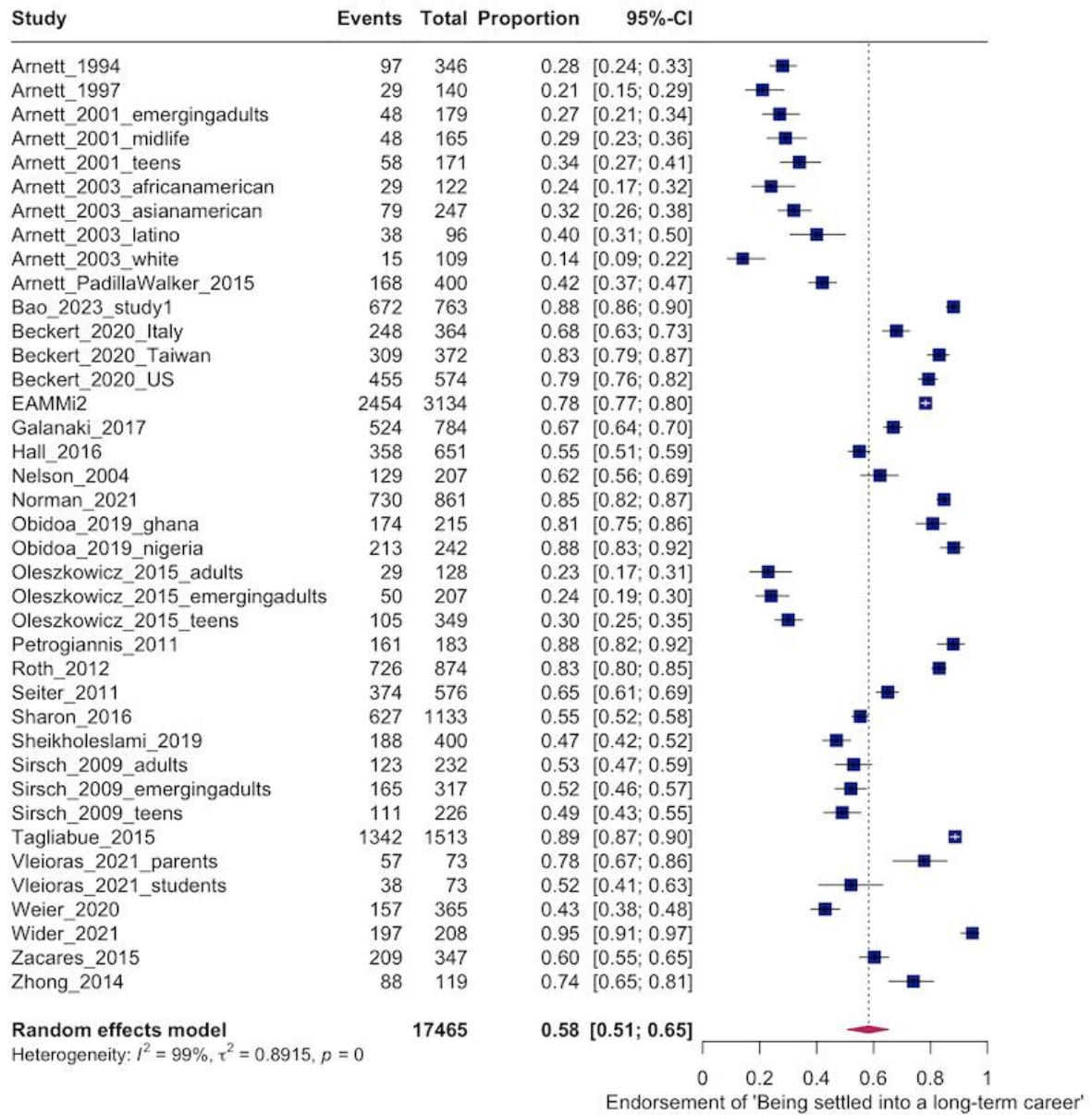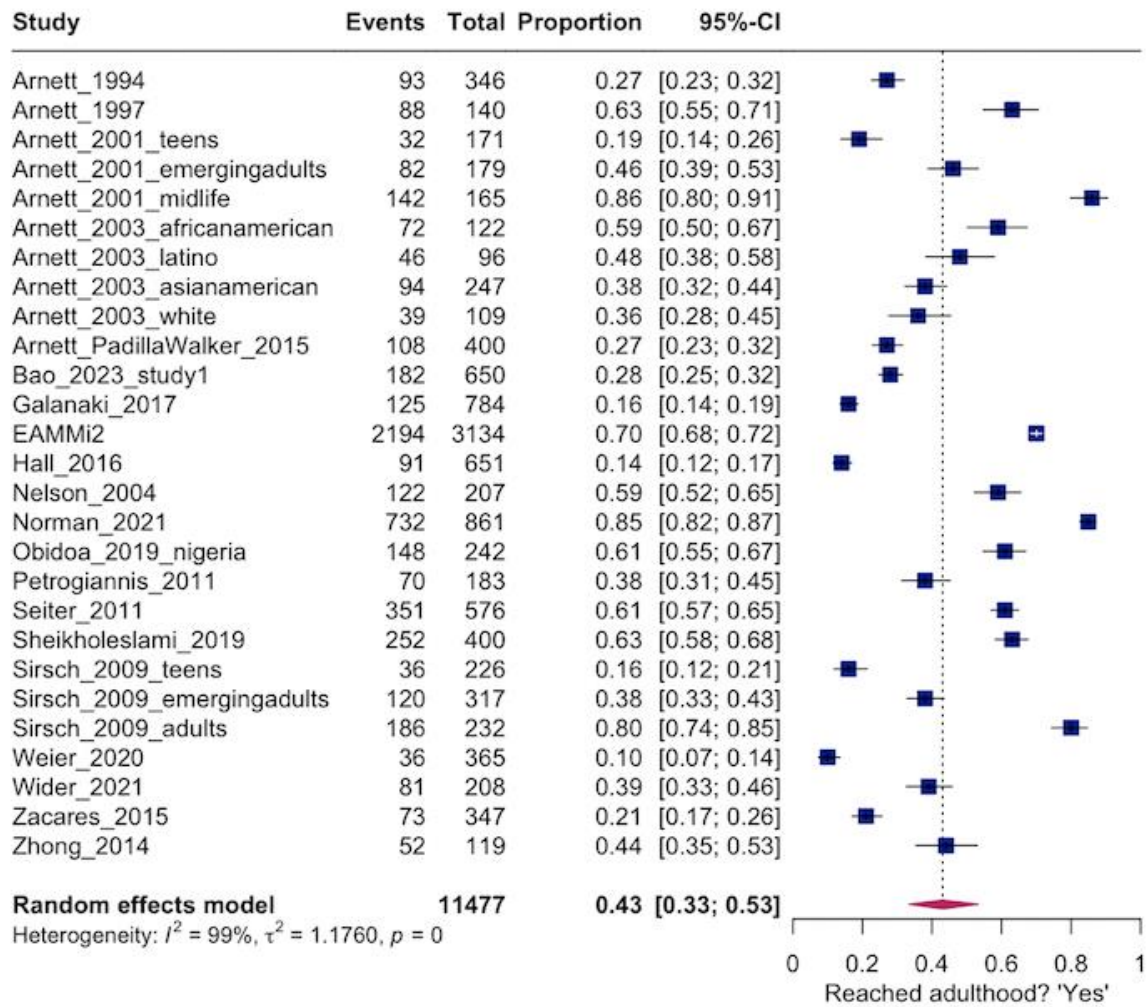| Study	Events	Total	Proportion	95%-CI
Arnett_1994	93	346	0.27	[0.23; 0.32]
Arnett_1997	88	140	0.63	[0.55; 0.71]
Arnett_2001_teens	32	171	0.19	[0.14; 0.26]
Arnett_2001_emergingadults	82	179	0.46	[0.39; 0.53]
Arnett_2001_midlife	142	165	0.86	[0.80; 0.91]
Arnett_2003_africanamerican	72	122	0.59	[0.50; 0.67]
Arnett_2003_latino	46	96	0.48	[0.38; 0.58]
Arnett_2003_asianamerican	94	247	0.38	[0.32; 0.44]
Arnett_2003_white	39	109	0.36	[0.28; 0.45]
Arnett_PadillaWalker_2015	108	400	0.27	[0.23; 0.32]
Bao_2023_study1	182	650	0.28	[0.25; 0.32]
Galanaki_2017	125	784	0.16	[0.14; 0.19]
EAMMi2	2194	3134	0.70	[0.68; 0.72]
Hall_2016	91	651	0.14	[0.12; 0.17]
Nelson_2004	122	207	0.59	[0.52; 0.65]
Norman_2021	732	861	0.85	[0.82; 0.87]
Obidoa_2019_nigeria	148	242	0.61	[0.55; 0.67]
Petrogiannis_2011	70	183	0.38	[0.31; 0.45]
Seiter_2011	351	576	0.61	[0.57; 0.65]
Sheikholeslami_2019	252	400	0.63	[0.58; 0.68]
Sirsch_2009_teens	36	226	0.16	[0.12; 0.21]
Sirsch_2009_emergingadults	120	317	0.38	[0.33; 0.43]
Sirsch_2009_adults	186	232	0.80	[0.74; 0.85]
Weier_2020	36	365	0.10	[0.07; 0.14]
Wider_2021	81	208	0.39	[0.33; 0.46]
Zacares_2015	73	347	0.21	[0.17; 0.26]
Zhong_2014	52	119	0.44	[0.35; 0.53]
Random effects model		**11477**	**0.43**	**[0.33; 0.53]**

Heterogeneity: $I^2 = 99\%$, $\tau^2 = 1.1760$, $p = 0$

Figure 8. *Forest plot for meta-analysis of the response "In some ways yes, in some ways no"*

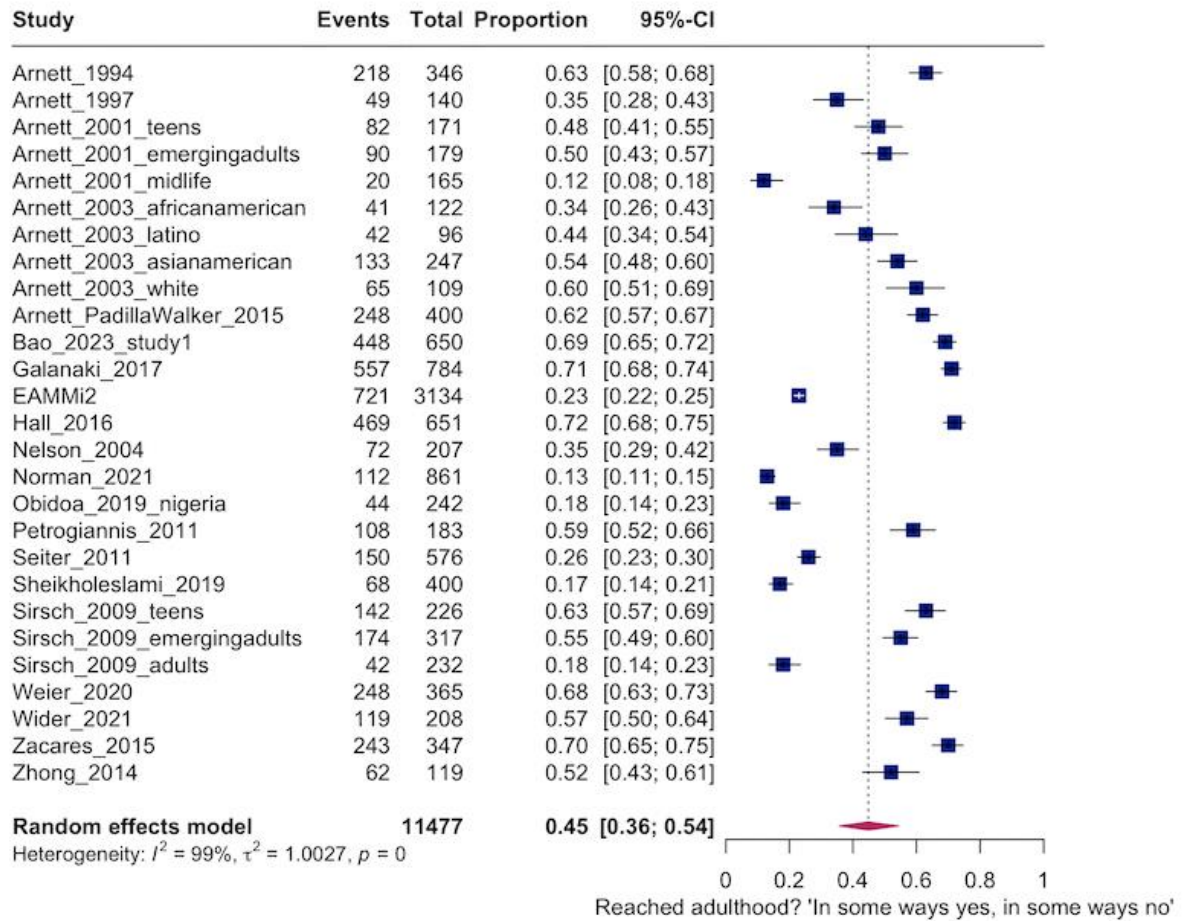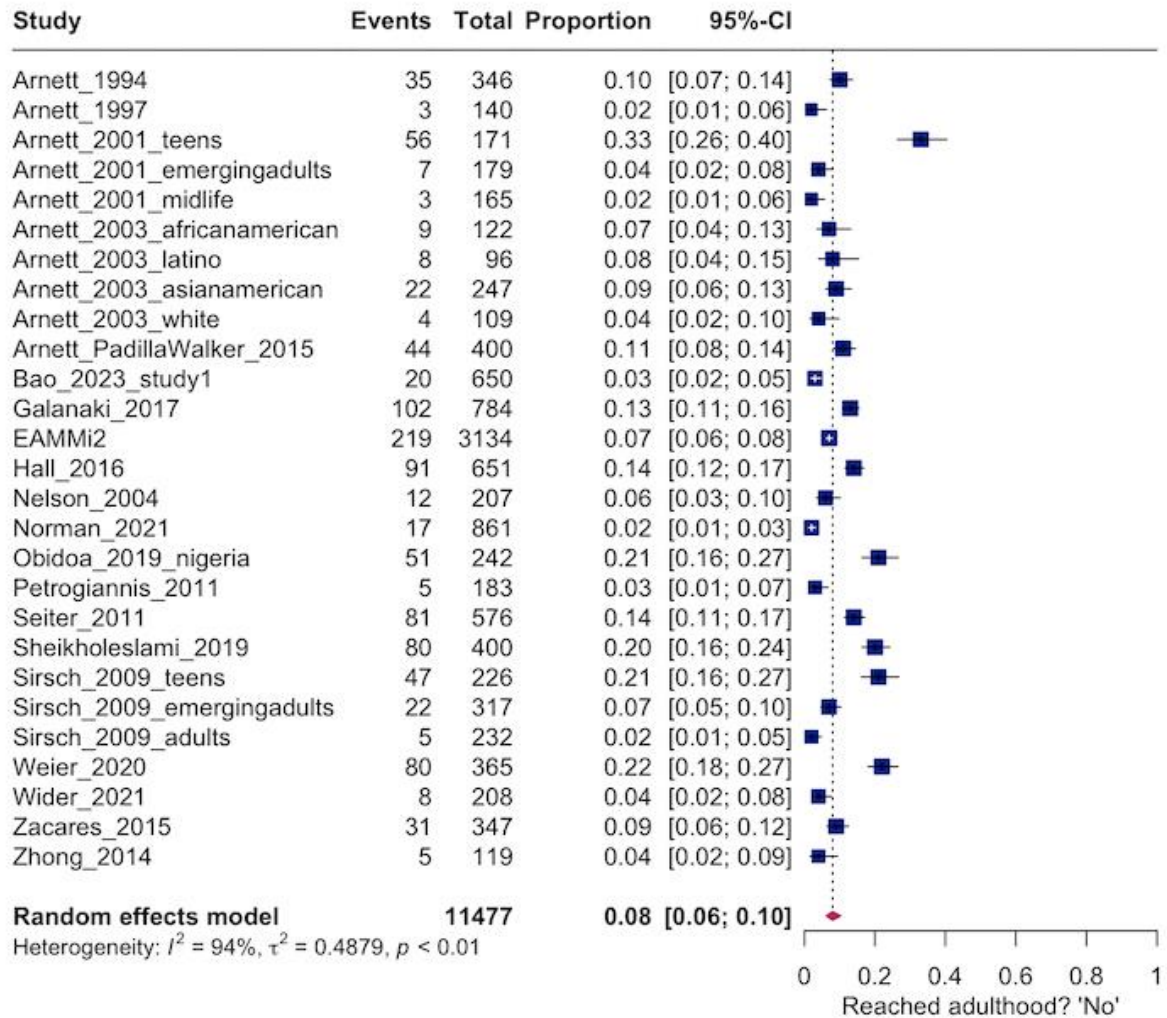*to the item "Do you think you have reached adulthood?"*

Study	Events	Total	Proportion	95%-CI
Arnett_1994	218	346	0.63	[0.58; 0.68]
Arnett_1997	49	140	0.35	[0.28; 0.43]
Arnett_2001_teens	82	171	0.48	[0.41; 0.55]
Arnett_2001_emergingadults	90	179	0.50	[0.43; 0.57]
Arnett_2001_midlife	20	165	0.12	[0.08; 0.18]
Arnett_2003_africanamerican	41	122	0.34	[0.26; 0.43]
Arnett_2003_latino	42	96	0.44	[0.34; 0.54]
Arnett_2003_asianamerican	133	247	0.54	[0.48; 0.60]
Arnett_2003_white	65	109	0.60	[0.51; 0.69]
Arnett_PadillaWalker_2015	248	400	0.62	[0.57; 0.67]
Bao_2023_study1	448	650	0.69	[0.65; 0.72]
Galanaki_2017	557	784	0.71	[0.68; 0.74]
EAMMi2	721	3134	0.23	[0.22; 0.25]
Hall_2016	469	651	0.72	[0.68; 0.75]
Nelson_2004	72	207	0.35	[0.29; 0.42]
Norman_2021	112	861	0.13	[0.11; 0.15]
Obidoa_2019_nigeria	44	242	0.18	[0.14; 0.23]
Petrogiannis_2011	108	183	0.59	[0.52; 0.66]
Seiter_2011	150	576	0.26	[0.23; 0.30]
Sheikholeslami_2019	68	400	0.17	[0.14; 0.21]
Sirsch_2009_teens	142	226	0.63	[0.57; 0.69]
Sirsch_2009_emergingadults	174	317	0.55	[0.49; 0.60]
Sirsch_2009_adults	42	232	0.18	[0.14; 0.23]
Weier_2020	248	365	0.68	[0.63; 0.73]
Wider_2021	119	208	0.57	[0.50; 0.64]
Zacares_2015	243	347	0.70	[0.65; 0.75]
Zhong_2014	62	119	0.52	[0.43; 0.61]
Random effects model		11477	0.45	[0.36; 0.54]

Heterogeneity: $I^2 = 99\%$, $\tau^2 = 1.0027$, $p = 0$

Reached adulthood? 'In some ways yes, in some ways no'

Figure 9. *Forest plot for meta-analysis of the response "No" to the item "Do you think you have reached adulthood?"*

Study	Events	Total	Proportion	95%-CI
Arnett_1994	35	346	0.10	[0.07; 0.14]
Arnett_1997	3	140	0.02	[0.01; 0.06]
Arnett_2001_teens	56	171	0.33	[0.26; 0.40]
Arnett_2001_emergingadults	7	179	0.04	[0.02; 0.08]
Arnett_2001_midlife	3	165	0.02	[0.01; 0.06]
Arnett_2003_africanamerican	9	122	0.07	[0.04; 0.13]
Arnett_2003_latino	8	96	0.08	[0.04; 0.15]
Arnett_2003_asianamerican	22	247	0.09	[0.06; 0.13]
Arnett_2003_white	4	109	0.04	[0.02; 0.10]
Arnett_PadillaWalker_2015	44	400	0.11	[0.08; 0.14]
Bao_2023_study1	20	650	0.03	[0.02; 0.05]
Galanaki_2017	102	784	0.13	[0.11; 0.16]
EAMMi2	219	3134	0.07	[0.06; 0.08]
Hall_2016	91	651	0.14	[0.12; 0.17]
Nelson_2004	12	207	0.06	[0.03; 0.10]
Norman_2021	17	861	0.02	[0.01; 0.03]
Obidoa_2019_nigeria	51	242	0.21	[0.16; 0.27]
Petrogiannis_2011	5	183	0.03	[0.01; 0.07]
Seiter_2011	81	576	0.14	[0.11; 0.17]
Sheikholeslami_2019	80	400	0.20	[0.16; 0.24]
Sirsch_2009_teens	47	226	0.21	[0.16; 0.27]
Sirsch_2009_emergingadults	22	317	0.07	[0.05; 0.10]
Sirsch_2009_adults	5	232	0.02	[0.01; 0.05]
Weier_2020	80	365	0.22	[0.18; 0.27]
Wider_2021	8	208	0.04	[0.02; 0.08]
Zacares_2015	31	347	0.09	[0.06; 0.12]
Zhong_2014	5	119	0.04	[0.02; 0.09]
Random effects model		**11477**	**0.08**	**[0.06; 0.10]**

Heterogeneity: $I^2 = 94\%$, $\tau^2 = 0.4879$, $p < 0.01$

Reached adulthood? 'No'

Bubble plot

Figure 10. *Bubble plot showing the proportion of people endorsing the items (A) "Married"; (B) "Have at least one child"; and (C) "Settle into a long-term career" to define adult status across mean age and country of origin.*
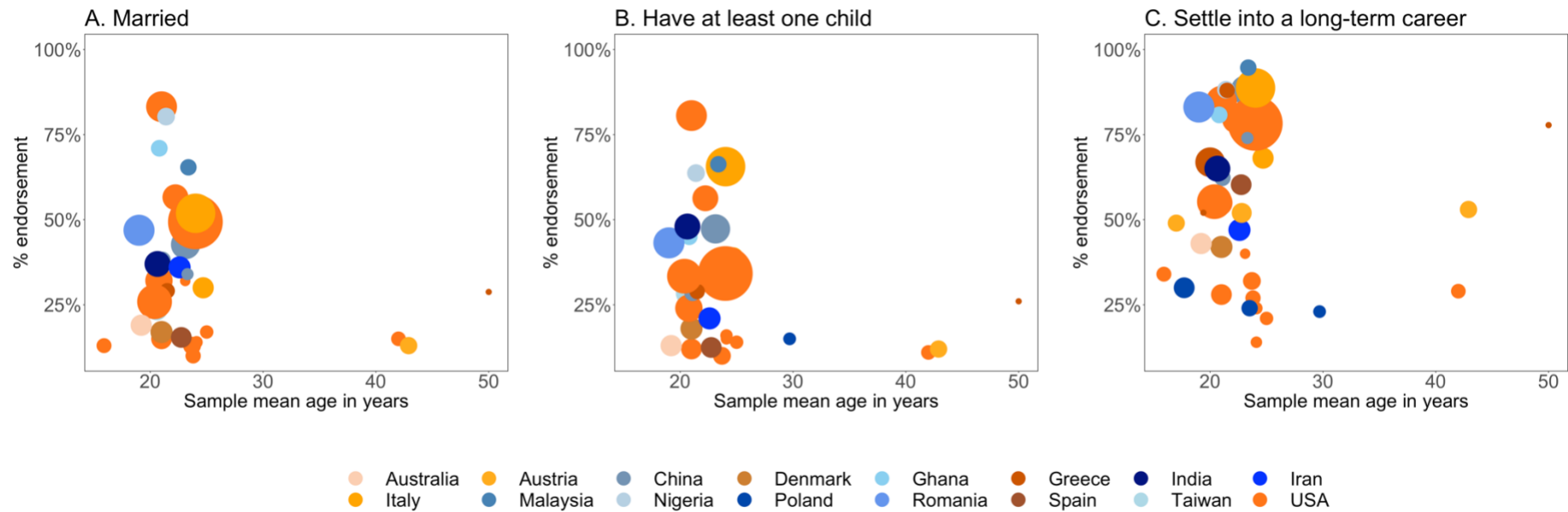
Note: countries in orange are those classified as WEIRD, and countries in blue are those classified as non-WEIRD. Bubble size refers to sample size.

3. Paper 2: The CARES taxonomy

The CARES taxonomy: Five psychological qualities of adulthood

3.1. Abstract

Adulthood has been traditionally inferred from the attainment of socio-demographic roles such as having a professional career, being married, and rearing children. Yet, in today's world, these traditional 'adult' roles are increasingly delayed or even entirely forgone. Existing psychological models describe adulthood by the labels of employee, spouse, and parent, not as the rich, dynamic, and rewarding phase of life that it is. Here we propose the CARES taxonomy, which describes contemporary adulthood using five psychological qualities that are key for adult development. The five CARES qualities are: *C*ognitive maturity, the confidence in one's knowledge and abilities; sense of *A*geing, the realisation that one is ageing and that life is finite; self-*R*eliance, the feeling of control and ability to rely on one's inner strength in life; *E*udaimonia, knowing oneself and living in alignment with one's core values and beliefs; and *S*ocial convoy, the network of relationships and level of social support in life. These five qualities have conceptual and methodological foundations in the psychological literature, map the cognitive, affective, and behavioural roots of development in adulthood, and form the basis of adults' mental health and well-being. We outline how the

CARES taxonomy offers a promising framework for understanding psychological development in adulthood.

3.2. Introduction

Adulthood is the longest phase of life, and 65% of the global population are classified as adults (The World Bank, 2022a). Yet, we know surprisingly little about the psychological development that occurs during adulthood because most developmental psychology research is focused either on childhood growth or on old age decline. For example, between 2013 and 2023, the term "child development" featured in the titles and abstracts of over 40,000 published articles, but the term "adult development" was included in the titles and abstracts of only 1,104 published articles[2]. Adult development appears to attract relatively little research interest, yet adults are the core pillars of societies and economies around the world – without adults, there would be no labour markets, no governments, and no healthcare and education systems (Hogan & Astone, 1986; Turturean, 2015). Adults drive innovation, exploration, and discovery, and they procreate and nurture the next generation. Thus, the psychological health and wellbeing of adults is pivotal for the welfare of mankind.

Fostering a happy, healthy, and resilient adult population requires a thorough understanding of contemporary adult development. Previous models of adult development were based on the experiences of generations for whom the transition to adulthood was fairly uniform and converged on obtaining a stable job, marrying a spouse, and having children (Blatterer, 2007). These paths to 'settling down' are less viable in our current world that is increasingly characterized by volatility, uncertainty, complexity, and ambiguity. Young people's trajectories through adulthood have become more varied: they move frequently

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[2] Search details: two searches were conducted using Scopus with article title, abstract, or keywords from date range 2013-present. First with keywords "child development" and second with keywords "adult development". Searches carried out on 18th September 2023.

between jobs and places, build diverse family structures, and aspire to flexibility rather than stability. In short, adults' experiences today differ from previous generations upon whom earlier models of lifespan development were built. For example, young adults now spend more time in education than ever before and obtain overall higher qualifications compared with previous generations. In 2020, 38% of the US population aged 25 years or older had graduated from college or another higher education institution compared with only 8% in 1960 (Duffin, 2022), a trend that can be observed across the world (e.g., ABS, 2017; OECD, 2019; Yoon, 2023). As young people spend more time in education, traditional 'adult' social roles such as home ownership, marriage, and parenthood are delayed in comparison with previous generations. First, home ownership and financial independence are increasingly difficult to achieve for today's young adults (e.g., Clark, 2022; Qu, 2019), illustrated by the fact that 50% of Americans aged 18-30 were living with their parents in 2020 – the largest proportion of young adults to do so since the Great Depression (Fry et al., 2020). Second, marriage rates in the US have halved over the past three decades, from 9.8 marriages per 1,000 people in 1990 to 5.1 per 1,000 people in 2020 (Duffin, 2023). Third, the number of total births per woman in the US population dropped from 3.65 in 1960 to 1.70 in 2020 (The World Bank, 2022b), while the average age of first-time mothers in the US steadily increased from 21 to 27 years during the same time (CDC, 2002; OECD, 2022), and the proportion of women choosing not to have children grew by a third (Frejka, 2017). These trends are not exclusive to the US: fertility rates are now lower across the globe compared with previous generations (Cheng et al., 2022; Stone, 2019), and marriages are declining also in non-Western populations, including in Latin America, Africa, and Asia (Ortiz-Ospina & Roser, 2020).

As pathways into adulthood have become longer and more diverse, adults have begun to place less emphasis on social roles such as marriage or parenthood but instead endorse

psychological qualities such as "Taking responsibility for the consequences of my actions" and "Making independent decisions" as markers of adult status (Arnett, 1994, 1997, 2001, 2003; Beckert et al., 2020; Sharon, 2016; Sirsch et al., 2009; Vleioras, 2021; Wright & von Stumm, 2023; Wright et al., 2023). The growing body of studies that show that psychological qualities are endorsed more often for adult status than socio-demographic roles substantiate the need for a new model of adulthood focusing on psychological change.

Describing adult development in terms of psychological qualities rather than the attainment of socio-demographic roles is key to improving adults' mental health and well-being. Mental health refers to a "state of well-being in which the individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community" (WHO, 2022) and is at the core of healthy, productive societies (Diener et al., 1997; Durand, 2015). We argue that people's evaluation of their lives, and their contributions to society, are likely affected by how they perceive adulthood: if adulthood is viewed as a fixed state that follows from the attainment of socio-demographic roles that are out of reach or irrelevant today, people's evaluations of their adult lives are inevitably in deficit. Experiencing a discrepancy between expectation and experience – for example the expectation that adulthood stems from attaining socio-demographic milestones and the actual experience that these milestones are unattainable – can cause psychological distress (e.g., Carver, 2012; McDaniel & Grice, 2008). Viewing adulthood as a continuous developmental process will prevent adults from validating their happiness or life satisfaction against outdated socio-demographic roles and help them foster positive feelings towards themselves which will positively impact their mental health and well-being. This view will also likely increase people's sense of belonging to the adult population. Research shows that feeling a sense of belonging, whether to a neighbourhood, a workplace, a school, or a wider population such as one's gender or sexuality, is associated

with positive well-being and mental health outcomes (e.g., Gopalan & Brady, 2020; Rubin et al., 2019; Sargent et al., 2002; Young et al., 2004). Thus, feeling a sense of belonging to the adult population could improve adults' mental health and well-being. If one does not feel a sense of belonging in adulthood, they could experience a level of cultural mismatch whereby the cultural norms of adulthood do not match with individuals' upbringing or expectations. Such cultural mismatches can have negative impacts. For example, one study found that a performance gap between first-generation and continuing-generation university students in the US was due to a cultural mismatch between the first-generation students' working-class backgrounds and the middle-class norms prevalent at universities (Stephens et al., 2012). By representing the university culture as more similar to first-generation students' cultures through emphasising a sense of community, first-generation students felt an increased sense of belonging and their performance at university subsequently increased (Stephens et al., 2012). These findings suggest that redefining adulthood in terms of psychological characteristics that are relevant for contemporary adults could improve adults' sense of belonging, and ultimately their well-being.

Here we propose the CARES taxonomy: five qualities of continuous psychological development in adulthood: (1) *C*ognitive maturity, the confidence that adults have in their knowledge to solve problems in life; (2) sense of *Ageing*, the awareness that adults have of time passing and the finiteness of life; (3) self-*R*eliance, adults' sense of control over their lives; (4) *E*udaimonia, adults' knowledge of themselves; and (5) *S*ocial convoy, adults' perception of social support. Because the CARES taxonomy is intended to describe psychological development in adulthood rather than to explain why adults develop differently, we chose the word *quality* that refers to "a characteristic or feature of something, be it physical or abstract" (APA Dictionary, 2023). The five CARES qualities have conceptual and methodological foundations in the literature and map emotional (eudaimonia

and social convoy), cognitive (cognitive maturity), motivational (self-reliance and sense of ageing), and physical (sense of ageing) aspects of adult development.

This paper is laid out in three sections. First, we demonstrate why current models of adult development are obsolete, focusing on Erik Erikson's seminal psychosocial stage model of the human lifespan (Erikson, 1963) and the more recent theories of emerging and established adulthood (Arnett, 2000, 2015; Mehta et al., 2020). Second, we introduce the CARES taxonomy and describe the five CARES qualities. Third, we introduce potential pathways between the CARES qualities and mental health and well-being in adulthood. Fourth, we discuss future directions for research, outlining how the CARES taxonomy could be used to further our understanding of psychological development in adulthood.

3.2.1. Earlier models of adult development

Traditional models of human development divided the lifespan into distinct age-bounded stages which were each associated with specific developmental tasks. In these 'stage models', the consecutive completion of developmental tasks and the subsequent progression through the stages of life were thought to result in maturity and stability, the implied goals of adulthood. Examples of stage models of lifespan development which include adulthood are Erik Erikson's psychosocial stage model (Erikson, 1963), Robert Havighurst's developmental task model (Havighurst, 1953), and Daniel Levison's seasons of life (Levinson, 1978, 1996).

To illustrate stage models in detail, we review Erik Erikson's eight-stage model of psychosocial development (Erikson, 1963, 1994) which was based on observations of men's lives in the 1940s and 1950s. Each developmental stage in Erikson's model describes a psychosocial crisis which must be resolved in order to progress toward maturity and optimal psychological health (Erikson, 1963; Kivnick & Wells, 2014). Three of Erikson's eight life

stages pertain to psychosocial development in adulthood. The first is the stage of young adulthood, roughly between the ages of 18 and 40 years, which concerns the psychosocial crisis of intimacy versus isolation. The developmental challenge is finding the balance between forming intimate, loving relationships and establishing one's independence (Erikson, 1963). The next stage, which defines middle adulthood, is the crisis of generativity versus stagnation. Here, the paramount issue is becoming a productive member of society through work, volunteering, or child rearing. The goal is to make meaningful contributions to society and help to build future generations. Failure to achieve generativity results in stagnation, characterised by the belief that one's life is meaningless (Erikson, 1963). The last stage of late adulthood concerns the crisis of integrity versus despair, as people reflect on their lives and their accomplishments, while coming to terms with their own mortality and the finiteness of their life. The solution to this crisis lies in striking a balance between being satisfied with the life one has lived and accepting that this life is ending (Erikson, 1963).

Erikson's model has many strengths, including that it was one of the first to suggest that development extends beyond biological maturity, highlighting the importance of development and psychological growth throughout life (Gilleard, 2020). However, Erikson's psychosocial stage model has limitations. First, the notion that a crisis is necessary for development to take place is untrue: development occurs across the lifespan during but also outside of periods of crisis. For example, there are continuous changes during adulthood in personality traits, a phenomenon known as the maturity principle which states that people tend become more conscientious, emotionally stable, and socially dominant as they grow older (Roberts & DelVecchio, 2000; Roberts & Mroczek, 2008; Schwaba et al., 2022). Personality maturity occurs gradually over time, has been observed in cultures across the world, and is not associated with other aspects of development such as marriage or divorce, parenthood or bereavement, and career-related events (Bleidorn et al., 2013; Bleidorn et al., 2022). Second,

the tiered nature of stage models implies that once developmental tasks are completed, a certain level of maturity is permanently reached. But development neither follows an inherent hierarchical order nor is it completed at a certain point. For example, Erikson's psychosocial crisis of balancing intimacy and isolation is not confined to young adulthood but also occurs in midlife and later – over 40% of US adults have experienced divorce by the age of 55 (US Census, 2021), and many of them will be thrust back into the psychosocial crisis of finding a romantic partner while maintaining independence despite no longer being in Erikson's stage of "young adulthood". A third limitation of Erikson's model is that the age bounds associated with developmental stages are arbitrary and not supported by empirical evidence (e.g., Gilleard, 2020; Hoare, 2013; Vaillant & Milofsky, 1980), because chronological age is not much related to development in adulthood. Erikson himself did not support strict age bounds being applied to his model (Erikson, 1994), and some researchers suggest that Erikson's psychosocial stages should instead be viewed as crises that occur throughout life, not tied to specific ages (Gilleard, 2020; Hoare, 2013). However, researchers have tried to restrict Erikson's stages to particular age groups in empirical studies. For example, studies have found that generativity, Erikson's psychosocial crisis of midlife, is unrelated to age (McAdams & de St. Aubin, 1992; McAdams et al., 1998), while other studies found that midlife adults scored higher on generativity measures compared with adults in their 30s (Keyes & Ryff, 1998; Stewart et al., 2001). This mixed evidence suggests that development is not strictly bound to chronological age, and instead individuals face developmental change throughout their lives depending on their circumstances.

These limitations of Erikson's model apply also to the most recent incarnations of stage models, for example emerging adulthood (Arnett, 2000; 2015) and established adulthood (Metha et al., 2020). Emerging adulthood has been described as a "new conception of development" (Arnett, 2000, p.469), an extension of adolescence that occurs between the

ages from 18-29 years and is characterised by five features: self-focus, instability, identity

exploration, feeling in-between, and a sense of possibilities (Arnett, 2000; 2015). Emerging

adults spend more time in education and exploring their opportunities, while postponing

career and family commitments, than young adults in previous generations did (Arnett, 2000,

2015). After emerging adulthood, from the ages of 30-45 years, individuals are said to

experience established adulthood, a life phase defined by the 'career-and-care-crunch' as

adults juggle the competing demands of work and family (Mehta et al., 2020; Mehta &

LaRiviere, 2022). The term 'established' connotes that individuals in their thirties and forties

are stable, settled, and secure. However, many people, who by their chronological age

classify as established adults, still identify with the characteristics of emerging adulthood and

do not feel wholly 'adult' (Andrew et al., 2007; Arnett, 1994; Arnett & Mitra, 2020; Mary,

2014). While emerging and established adulthood better reflect adults' contemporary realities

compared with Erikson's psychosocial stage models, they continue to define development

based on chronological age, to mandate linear, tiered development, and to imply the

attainment of a fixed adult status, limiting their suitability for describing development

throughout adulthood.

3.3. The CARES qualities

To move beyond the limitations of stage models of adult development, we conducted

a scoping review of the literature to identify qualities of psychological development which (a)

occur across adulthood and are not restricted to a specific age range, (b) do not assume linear

or tiered development, and (c) do not rely on socio-demographic milestones to define

adulthood. We identified five qualities that fit these criteria: Cognitive maturity, sense of

Ageing, self-Reliance, Eudaimonia, and Social convoy (Figure 11). Below, we define each

quality, before reviewing their theoretical and empirical foundations, hypothesising about

development across adulthood (e.g., within-person differences over time), and summarising potential pathways through which each quality could impact mental health and well-being in adulthood (Figure 12).

Figure 11. *The five CARES qualities and their definitions*
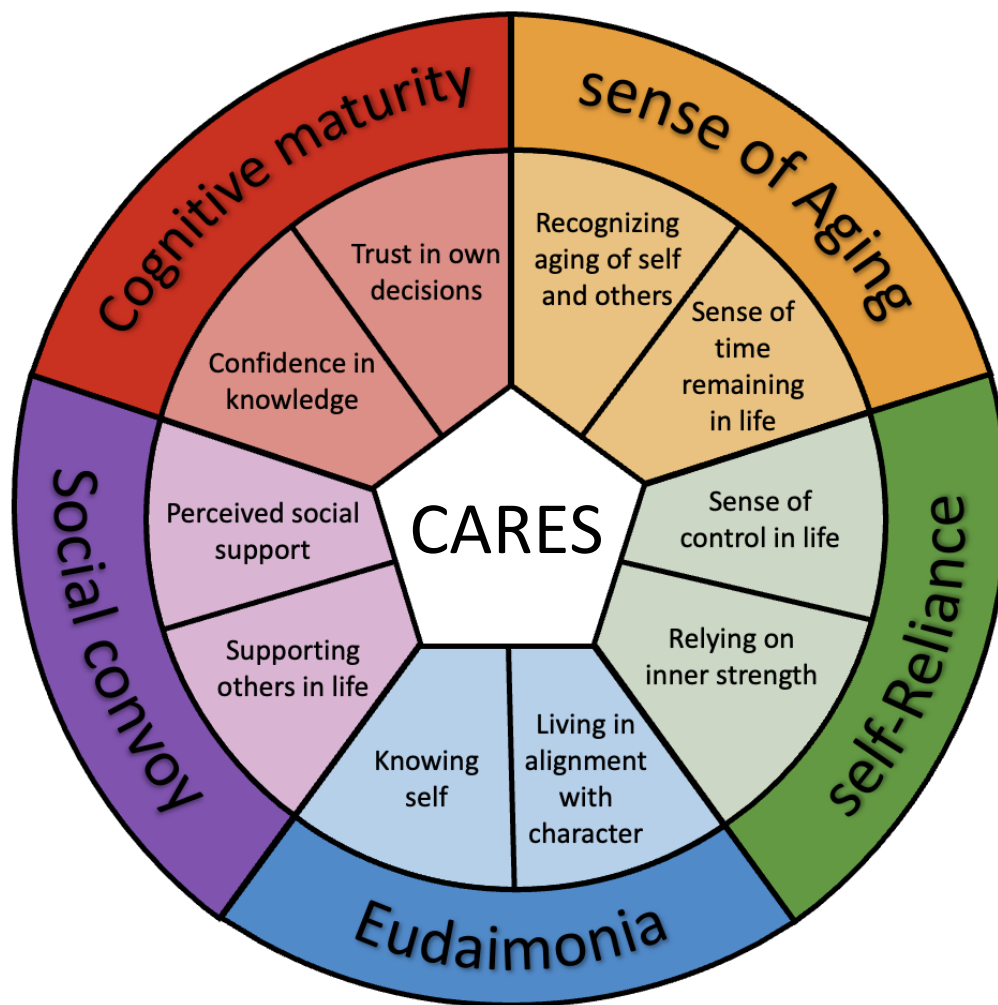
3.3.1. Cognitive maturity

The quality of cognitive maturity describes the confidence that adults have in their knowledge to solve problems and make decisions. Knowledge is at the core of adult intelligence which has been defined as "The entire repertoire of knowledge (declarative, procedural, and tacit) and skills available to the individual to solve tasks that demand cognitive, perceptual, and/or psychomotor processing and behaviours, and the processes to acquire new knowledge and skills" (Ackerman, 2022, p.3). Knowledge is accumulated through experiences in many domains across life, such as school, career, relationships, and avocational interests, and everyone has a rich, diverse, and unique body of knowledge (Ackerman, 1996; 2022). The psychological quality of cognitive maturity is distinct from knowledge, as it is not concerned with the content or amount that a person knows, but rather the confidence that one holds in their knowledge.

An individual's cognitive maturity likely fluctuates over time based on their experiences of utilising their knowledge. For instance, if individuals made good decisions and solved problems effectively, the confidence they hold in their knowledge is likely to increase. In contrast, if decisions were poor and problems remained unsolved, the experience is likely to reduce a person's confidence in their knowledge and may motivate seeking out new or additional knowledge. Research suggests that personal circumstances could also be associated with variation in cognitive maturity, as children from low socio-economic backgrounds and girls report feeling less confident about their knowledge in academic settings (Fischer & Sliwka, 2018; Filippin and Paccagnella, 2012; Reuben et al., 2013).

Increasing cognitive maturity can have beneficial effects. For example, a recent study demonstrated that giving feedback to increase students' confidence in their knowledge had a positive effect on students' investment in an academic test and increased the probability that they would pass the test, but only for individuals whose prior knowledge was lower than

average (Fischer & Sliwka, 2018). Little research exists exploring the development or effects of confidence in knowledge across adulthood, but we expect that cognitive maturity impacts many areas of life including vocational and relationship decisions, job performance, and financial investments, and has an indirect effect on well-being and mental health.

3.3.2. Sense of Ageing

Sense of ageing describes the realisation that adults have as they come to terms with their physical and psychological ageing and notice that time in life is limited. The quality of sense of ageing has three pillars. First, individuals tend to perceive their own ageing in adulthood through signs of physical decline, such as grey hair, wrinkles, and reduced resilience to injury and stress. Second, these signs of ageing are observed in others. The realisation of the ageing of peers, family members, and children could cause individuals to reflect on their own ageing, and on the finiteness of life. Also, as friends and family members age, adults may need to take on care responsibilities, for example for elderly parents, which can have emotional, financial, and time costs (e.g., the career-and-care-crunch, Mehta et al., 2020). Third, adults notice generational shifts in society and culture, and they become aware of the growing distance between themselves and younger generations. For example, older adults are likely less familiar with "slang" expressions or new colloquialisms, social media trends, and new technological advances compared with younger adults.

Adulthood is the time that people begin to notice their own ageing and that of others around them, which informs the sense of time remaining in life. In youth, time feels vast and boundless, but as people move through adulthood, they realise that time is limited and life will one day come to an end (e.g., Mehta & LaRiviere, 2022). This perception of time remaining in life impacts individuals' goals and motivations (Socioemotional Selectivity Theory; Carstensen, 1993; Carstensen et al., 1999). Those who perceive time in life as

limitless, as is often the case for young people, tend to pursue knowledge-seeking goals like having new experiences and preparing for the future (Carstensen et al., 1999). In contrast, those who view time in life as more limited, as may be the case for older adults, pursue emotionally meaningful goals such as spending time with loved ones (Carstensen et al., 1999). A distinct sense of ageing develops across adulthood, and likely influences adults' motivations, goals, and well-being.

3.3.3. Self-reliance

Self-reliance describes an individual's sense of control in life and their ability to rely on their own inner strength to overcome challenges in life. Sense of control is the extent to which an individual feels that their actions determine outcomes in their life. The related construct "locus of control", which is well established in the psychological literature, indexes whether an individual ascribes events in their life to forces within or beyond their control (e.g., Churchill et al., 2020; Galvin et al., 2018; Robinson & Lachman, 2017; Rotter & Mulry, 1965). One's sense of control varies with age, displaying a curvilinear pattern across the life course as it peaks in midlife and declines in later adulthood (Drewelies et al., 2017; Lachman et al., 2009). Locus of control also varies based on levels of anxiety and stress: one study found that anxiety and stress measures significantly predicted locus of control in a sample of 78 pregnant couples, with individuals experiencing consistent anxiety and stress reporting lower levels of locus of control, thus feeling less in control of their lives (Ryon & Gleason, 2014).

As well as feeling a sense of control over their lives, self-reliant individuals rely on their own inner strength and capabilities to solve problems and make choices in life independently, without needing help from others. A related psychological construct is resourcefulness, which encapsulates both personal resourcefulness, the ability to regulate one's own emotions,

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cognitions, and behaviours (one's inner strength), and social resourcefulness, which is the ability to seek help from others when it is needed (Zauszniewski, 1996, 2012). Self-reliant adults have a sense of control over life and use their personal resourcefulness to act on that sense of control. It follows that self-reliant individuals are able to adapt well to challenges, carry out daily tasks independently, and function in social roles, all of which benefit mental health and well-being (e.g., Huang et al., 2008; Lai et al., 2014; Wang et al., 2015).

Self-reliance has previously been defined as hyper-independence and a reluctance to seek help (Choo & Marszalek, 2019; Lynch, 2013; Ryan et al., 2005). However, the quality of self-reliance that we propose here is distinct from hyper-independence or the inability to ask for help when it is needed – instead, self-reliance describes the belief that adults have control over their lives, and the ability that adults have to rely on their own resources to approach challenges in life.

3.3.4. Eudaimonia

To "know thyself" and to "become what you are" are two Ancient Greek imperatives that define the CARES quality eudaimonia. The term 'eudaimonia' is derived from the Greek words *eu* meaning 'good' and *daimon* meaning 'spirit': the 'good spirit' refers to achieving an optimal identity or realising one's 'true self', which is key to living life well (Kraut, 2018). Eudaimonia has been equated to a broad range of positive psychology constructs, including *flourishing* (Norton, 1976), achieving one's true potential (Ryan & Deci, 2001), pursuing authenticity and meaning in life (Huta, 2015), and self-realisation and personal expressiveness (Waterman, 1993, 2013). It has also been translated as *happiness,* or general psychological well-being (Ryff, 1989; Ryan & Deci, 2001). We define eudaimonia here in accordance with its Ancient Greek and philosophical roots: eudaimonia is knowing and becoming who you are – that is, the combination between the subjective sense that you know

yourself, your likes, dislikes, and values, and actively pursuing activities that align with your character.

Although "finding yourself" is often associated with coming-of-age stories in adolescence and young adulthood, the process of knowing yourself and becoming who you are is a lifelong endeavour that resonates with adults of all ages (Arnett & Mitra, 2020) is and not tied to specific phases of life. When surveyed, adults who ranged in age from 18 to 60 years reported univocally that they felt they were still in the process of "finding out who I really am" and "focusing on myself" (Arnett and Mitra, 2020). Thus, learning to know yourself, becoming who you are, and expressing yourself are developmental processes that span across adulthood. Adults of all ages report that knowing themselves is important for their well-being (Ryff & Singer, 2013), and adulthood provides a variety of contexts, challenges, and opportunities for people to learn to know and express themselves.

3.3.5. Social convoy

A convoy is a group that travels together for mutual protection, such as military vehicles crossing enemy territory (Cambridge Dictionary, 2023). The concept of a protective convoy also applies to adulthood, in the way that adults travel through their lives embedded within a network of social relationships, from whom they receive and to whom they give support. This 'social convoy' includes all relationships in a person's life such as family, friends, romantic partners, children, colleagues, and acquaintances (Antonucci et al., 2014). Relationships within the social convoy vary in terms of number of connections and level of emotional closeness, which together inform the extent of social support and strain that people experience in life (Antonucci et al., 2014; Huxhold et al., 2022; Wrzus et al., 2013).

The social convoy is dynamic, and within-person changes have been observed over time as individuals make and break relationships across settings and life phases (Wrzus et al.,

2013). Relationships with close family members or spouses are relatively stable across time, whereas peripheral relationships such as those with co-workers, neighbours, and acquaintances, tend to be interchangeable (Huxhold et al., 2022; Roberts & Dunbar, 2011).

The social convoy also varies between people in terms of structure, size, and level of relationship satisfaction, in part as a result of personal preferences and in part because of wider life circumstances. For example, the personality traits of extraversion, referring to assertiveness, talkativeness, and sociability (Costa & McCrae, 1995), and agreeableness, characterised by being warm, caring, and altruistic (Costa & McCrae, 1995), are both predictive of larger social network sizes, and higher relationship satisfaction (Breil et al., 2019; Harris & Vazire, 2016; Malcolm et al., 2021; Rollings et al., 2022). The social convoy is also affected by life transitions, with job changes, marriage and its dissolution, and parenthood changing or even destabilising existing relationships (Schmidt et al., 2022; Wrzus et al., 2013). For example, entry into the workforce typically expands one's social convoy as being in close proximity to others and belonging to the same social group increases the chances of forming relationships (e.g., Back et al., 2008; Huxhold et al., 2022). In contrast, entry into parenthood tends to reduce the social convoy as people focus on close family relationships and spend less time with non-family connections (e.g., Bost et al., 2002; Sander et al., 2017; Wrzus et al., 2013). Finally, one's social convoy also changes according to the life events of others. For example, if an individuals' friends marry and have children, they have less time in their social convoys for that individual, and thus the individual may experience feelings of loneliness, exclusion, or being left behind (e.g., Schmidt et al., 2022).

The social convoy offers psychological support in adulthood, and a plethora of research has reported the positive effects of social connections on the mental health and well-being of adults (e.g., Dunbar, 2018; Gómez-López et al., 2019; Kansky & Diener, 2017; Lucas & Dyrenforth, 2006).

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3.4. Associations between CARES and adults' mental health and well-being

The five CARES qualities have all been associated with mental health and well-being in previous research. Here we explore potential pathways through which the CARES qualities could influence behaviour that is beneficial to adults' mental health and well-being. Figure 12 summarises these pathways.

First, cognitive maturity, or having confidence in one's knowledge, could have indirect effects on well-being and mental health in adulthood through increased trust. Individuals with cognitive maturity likely trust in themselves and their knowledge. For example, individuals who have confidence in their knowledge may trust their own perceptions, meaning that if they felt unwell or needed help, they would trust their ability to perceive this need, and seek help. Another example is that individuals who have confidence in their knowledge trust their own decisions, meaning that they are happier with the result of their decisions, and worry less about making decisions or the outcomes of such decisions. Cognitive maturity could also increase the trust that others have in an individual. For example, research shows that individuals who have higher self-confidence are more trusted and respected in society (i.e., the confidence heuristic; Campbell-Meiklejohn et al., 2016; Pulford et al., 2018). Having confidence in one's own knowledge could result in being more trusted and respected. Self-confidence has been associated with well-being above and beyond actual competence levels (Lamborn & Groh, 2009; Schneider et al., 2022), suggesting that having confidence in one's knowledge has positive implications for the mental health and well-being of adults.

Second, sense of Ageing could impact mental health and well-being through two distinct pathways. First, having a sense of limited time remaining in life has been associated with prioritising emotionally meaningful goals (Carstensen et al., 1999). Striving towards emotional goals regulates emotion in the present moment, and the focus on meaningful short-

term goals has benefits for individuals' well-being (e.g., van der Goot et al., 2021). Second, having a positive view of one's own ageing is likely associated with feelings of optimism for the future, with people focusing on growth and acquiring wisdom rather than on decline and loss. Having positive views of ageing would build resilience against negative societal pressures and expectations. The values attributed to ageing are socially constructed, and in Western society ageing is largely seen as a negative phenomenon, especially for women. For example, studies have found that when people are asked to describe older adults, they use negative adjectives six times more often than positive adjectives (Ng, 2021). Age stereotypes, such as ageing being perceived as a time of decline, have great influence on people's well-being (Sollner et al., 2021). Ageing in a society which values youth could have negative impacts on well-being as people age, as they may feel pressure to undergo procedures or enact strict beauty regimes to retain a youthful appearance. Constructing a positive sense of ageing could be protective against these negative age stereotypes.

Third, self-reliance is concerned with sense of control over life, which has been associated with favourable economic, social, and psychological outcomes, including better health, greater marital satisfaction, and higher well-being (Cobb-Clark, 2014; Jain & Singh, 2015; Lee & McKinnish, 2019; Robinson & Lachman, 2017). There are two pathways through which self-reliance could influence mental health and well-being in adulthood. First, self-reliant individuals would be less phased by minor disruptions in life. An individual high in self-reliance believes that they can make changes in their life through their own actions and behaviours (i.e., locus of control; Churchill et al., 2020; Robinson & Lachman, 2017; Rotter & Mulry, 1965), and thus believes that they can overcome external challenges in life. Research demonstrates that locus of control is negatively associated with poor mental health and well-being outcomes such as depression (e.g., Cheng et al., 2013; Churchill et al., 2020; Khumalo & Plattner, 2019; Kurtovic et al., 2018). Second, individuals with high self-reliance

are resourceful, and the construct of personal resourcefulness – being able to regulate one's emotions, cognitions, and behaviours to achieve a goal (Zauszniewski, 1996, 2016) – has been associated with improved quality of life and adaptive functioning in patients suffering with diabetes, cancer, and depression (Huang et al., 2008, 2010; Li et al., 2014). One study demonstrated that personal resourcefulness was negatively correlated with depression ($r = -.17$) and stress ($r = -.26$) in a sample of 154 nurses (Wang et al., 2015). Thus, self-reliance could be protective against stress and depression in life through promoting a sense of control over life and personal resourcefulness.

Fourth, eudaimonia – knowing yourself and becoming who you are – has been positively associated with mental health and well-being in previous research (e.g., Ryff & Singer, 2013; Waterman et al., 2010). Here we outline two pathways between eudaimonia and mental health and well-being in adults. First, people who know themselves know what they like and dislike, and so are likely to engage in activities that they enjoy, promoting positive affect and subjective well-being. Second, individuals feel happier (i.e., have higher subjective well-being) when they live in alignment with their true selves and pursue activities that are congruent with their character (e.g., Waterman et al., 2010). Thus, greater eudaimonia would benefit the mental health and well-being of adults.

Finally, we outline two pathways through which social convoy may impact mental health and well-being in adulthood. First, social support is a protective factor against depression, loneliness, stress, and disease (e.g., Holt-Lunstad et al., 2010; Mansour et al., 2022; Sehmi et al., 2020; Shiovitz-Ezra & Leitsch, 2010). For example, longitudinal research shows that having close friends was protective against depressive symptoms one year later (Mansour et al., 2022). Second, the act of offering and providing support to others in one's social convoy also boosts well-being (Weinstein & Ryan, 2010). Within the social convoy, support from certain relationships impact well-being more than others. Specifically, romantic relationships

have been found to protect against psychological distress and mental health problems (e.g., Braithwaite & Holt-Lunstad, 2017). The relationships that people have with their partners and close family members such as children are often the most important and rewarding relationships in a person's life, and the support that people receive from these close relationships has great influence on their well-being and mental health. Understanding more about how social relationships and people's perception of their social support varies across adulthood could inform interventions focused on curating a social convoy to boost well-being to reduce loneliness and poor mental health in older adulthood.

The suggestions proposed here for associations between CARES qualities and mental health and well-being in adulthood have not been empirically tested. We expect that the CARES qualities will positively impact adults' mental health and well-being based on the existing literature and assumptions outlined above, however thorough empirical testing is required to first assess the associations between the CARES taxonomy and measures of mental health and well-being outcomes, such as depression, anxiety, stress, subjective well-being, and life satisfaction.

Figure 12. *Proposed pathways between the CARES qualities and mental health and well-being, through behaviours that could be associated with CARES qualities. Note: no empirical research has tested the proposed pathways, and we would expect these associations to be bidirectional (i.e., positive mental health may also influence the development and attainment of the CARES qualities*

CARES quality	Potential associated behaviours	Proposed pathways to mental health and well-being	
Cognitive maturity Confidence in knowledge	Trust in own perception	Help-seeking behaviours	Positive mental health and well-being
	Trust own decisions	Self-confidence	
Sense of ageing Realization of ageing and time remaining in life	Positive view of ageing	Resilience against societal pressures	
	Realize that time in life is limited	Prioritize emotional goals and relationships	
Self-reliance Sense of control in life and reliance on own inner strength	Independence and agentic behaviours	Resilience against violated expectations	
	Personal resourcefulness	Not dependent on others in day-to-day life	
Eudaimonia Knowing oneself and becoming who you are	Knowing what you like and dislike	Engaging in activities that you enjoy	
	Living in alignment with values and beliefs	Satisfaction in life	
Social convoy Network of relationships in life and level of social support	Receiving support from others	Resilience against loneliness	
	Offering support to others	Sense of belonging and purpose in life	

3.5. Suggestions for future research

We outline five areas for future research into the psychological development of adulthood using the CARES taxonomy: (1) creating and validating psychometric scales to measure the CARES qualities; (2) mapping the nomological network of the CARES qualities; (3) assessing stability and change in the development of the CARES qualities over time; and (4) exploring CARES qualities across different socio-cultural backgrounds.

First, valid psychometric scales measuring the CARES taxonomy would allow further understanding of how the qualities are inter-related, how they are related to other developmental constructs, and how they develop over time. To assess CARES qualities in future research, we have developed a 25-item self-report measure, with five items for each quality (Wright & von Stumm, 2023). A self-report questionnaire is a well-suited measurement tool for CARES, as the CARES qualities are meta-cognitive and subjective. Preliminary analyses of survey data from 722 adults from the UK aged 18-77 years showed that the CARES qualities are inter-related (Wright & von Stumm, 2023), suggesting that the five CARES qualities map overlapping domains. Further research and refinement and development of the 25-item CARES scale will elucidate our understanding of

Second, mapping the nomological network of CARES – in other words, how the CARES qualities are inter-related with other constructs or outcomes – is critical for establishing construct validity of the CARES taxonomy (Cronbach & Meehl, 1955; Preckel & Brunner, 2017). To better understand psychological development in adulthood, we first need to assess how psychological qualities of adulthood are associated with established and prominent constructs for adult development such as personality and intelligence. For example, the CARES quality of social convoy is likely related to the personality traits of extraversion and agreeableness, which have been shown to relate to sociability (Breil et al., 2019; Harris & Vazire, 2016; Malcolm et al., 2021; Rollings et al., 2022). Furthermore,

cognitive aspects of CARES, such as cognitive maturity, may relate to intelligence and educational attainment: differences in education and intelligence may lead to individuals perceiving their confidence in their own knowledge in different ways. As a final example, social convoy is likely to be associated with life events such as the attainment of socio-demographic roles. Research has found that entry into parenthood has a negative effect on friendship ties, with people becoming less close to friends, but this is balanced by a shift towards strengthening local ties such as neighbours (Kalmijn, 2012). Understanding how the CARES qualities relate to well-studied aspects of lifespan development will improve our understanding of adult development as a whole.

A third suggestion for future research into the psychology of adulthood is to chart the developmental trajectories of CARES qualities over time, for which longitudinal data are needed. Ideally, longitudinal research could chart the development of cognitive maturity, sense of ageing, self-reliance, eudaimonia, and social convoy from (a) adolescence into young adulthood, (b) young adulthood to middle adulthood, and (c) middle adulthood to older adulthood, to assess the growth and decline of these qualities across the human lifespan, and measure both mean-level and rank-order stability and change. We speculate that the CARES qualities would change both between and within people over time, as past research demonstrates that constructs close to the CARES qualities fluctuate across the lifespan. For example, research shows that locus of control, a key aspect of the quality of self-reliance, increases to middle age, then dips in older adulthood (e.g., Drewelies et al., 2017; Robinson & Lachman, 2018). Also, research shows the fluctuating nature of social networks over time, both in terms of size and satisfaction (e.g., Wrzus et al., 2013), suggesting that one's perception of social support (i.e., social convoy) would change over time. Longitudinal research is needed to identify whether there is a normative pattern of change in CARES

qualities between or within people across adulthood, and the extent of individual differences in patterns of stability and change in CARES.

Longitudinal research could also assess the impact of life events such as completing education, starting full-time employment, entering marriage, and having children on the development of CARES qualities. Recent research has demonstrated that personality traits are not impacted by life events (Bleidorn et al., 2022), however we speculate that the CARES qualities would be affected by life events. For example, entering into parenthood would have a considerable impact on one's confidence in their knowledge (cognitive maturity), sense of time remaining in life (sense of ageing), ability and need to rely on themselves (self-reliance), knowledge of and expression of the self (eudaimonia), and their level of social support (social convoy). Empirical research with longitudinal data is key to investigate the impact of life events on the developmental trajectory of CARES qualities across adulthood. Longitudinal data are costly, both in terms of time and money, but are essential to understanding the trajectory of psychological development across adulthood.

Fourth, cross-cultural research is needed to assess the applicability of the CARES taxonomy in different cultural contexts. All prevalent theories of adult development are Western in origin – from Erikson's psychosocial stage model (Erikson, 1963), to Arnett's emerging adulthood (Arnett, 2000). The CARES taxonomy is no different, as it was developed by researchers with a Western background, and initially tested on a UK population (Wright & von Stumm, 2023). However, the CARES taxonomy may be applicable across cultures. Trends in the attainment of social milestones reveal that we are moving away from traditional routes to adulthood on a global scale, for example birth rates have been decreasing in countries across the world (Cheng et al., 2022; Stone, 2019). With globalisation such as this, Western and non-Western countries are becoming more similar, and opportunities and

experiences are more accessible and universal, as travel and connection between countries and continents is easier and more affordable than it was in the past.

Even where cultural differences exist in the experience of adulthood, the concept of being an adult still remains. For example, age at first marriage varies across countries and cultures, with developing countries in Africa and Asia exhibiting lower age at first marriage and larger age gaps between the age of marriage for men and women compared with developed countries such as the US and UK (Buchholz, 2021). In Mozambique, a developing country, women marry at a median age of 18.7 years, and men at 23.4 years, almost a decade earlier than the median age of first marriage in the US, which is 28.6 years for women and 30.6 years for men (Statista, 2021). However, despite these differences in the path to adulthood and the experience of young adulthood, people from developing countries such as Mozambique, and those from developed countries such as the US, still have a subjective sense of being grown-up and becoming an adult. By redefining adulthood as the continuous development of psychological qualities, we can begin to think differently about cultural and societal differences, and to begin to understand the universal aspects of adult development that apply across cultures and countries. Cross-cultural research is needed to validate these claims, and to assess the importance, development, and nomological networks of the CARES qualities in different cultures.

3.6. Conclusion

This paper introduced the CARES taxonomy of five psychological qualities to describe psychological development adult development. The CARES recognises adulthood as a life phase of continuous development, which is dissociated from attaining socio-demographic roles such as marriage, career, and parenthood. The CARES' qualities – *C*ognitive maturity, sense of *A*geing, self-*R*eliance, *E*udaimonia, and *S*ocial convoy – align with the key areas of

emotional (eudaimonia and social convoy), cognitive (cognitive maturity), motivational (self-reliance and sense of ageing), and physical development (sense of ageing). The CARES qualities are developmental, broad, and crucially, they are all integral to the adult experience: all adults make decisions, perceive time passing, rely on themselves, know themselves, and feel a sense of community to an extent. The CARES qualities likely influence on, and are influenced by, factors such as social roles, personality, and intelligence; yet they constitute independent psychological markers of adulthood. We proposed five qualities of adult development here, but this is not exhaustive: the qualities of psychological development in adulthood may require revision over time, as the CARES taxonomy may only reflect experiences of adults today but not of tomorrow. Overall, the CARES taxonomy is a starting point to rethink adult development and recognise its value and importance as a research area in psychological science.

4. Paper 3: Perceptions of adulthood study

Wright, M., & von Stumm, S. (2023b). Perceptions of adulthood: What does it mean to be grown-up? *Journal of Adult Development*. [Under review]

Preprint: https://psyarxiv.com/rbygt/

Preregistration & Data: https://osf.io/b7pjw/

Perceptions of adulthood: What does it mean to be grown-up?

4.1. Abstract

Adulthood has traditionally been defined by the attainment of socio-demographic milestones such as career, marriage, and parenthood, but these milestones are increasingly delayed or have become inaccessible for young people today. As a result, young people are likely to experience a discrepancy between their expectations for adulthood and their actual reality of adulthood, with negative effects on their well-being and psychological development. To systematically study contemporary definitions of and attitudes towards adulthood, we assessed in a sample of 722 UK adults with an age range from 18-77 years (a) subjective adult status, or the extent to which people feel like adults; (b) attitudes towards adulthood, or whether people think adulthood is a positive time of life; and (c) the characteristics that people use to define adulthood today. We found that most of our participants felt adult and had positive attitudes towards adulthood. Our sample defined adulthood predominantly through psychological characteristics, for example "Accepting responsibility for the consequences of my actions" (endorsed by 80% of the sample), rather than by socio-demographic milestones which were endorsed by only 22-40% of participants.

Both subjective adult status and attitudes towards adulthood were significantly associated with older age and the attainment of the socio-demographic milestones of marriage and parenthood. Regression analyses revealed that having a positive attitude towards adulthood was the strongest psychological predictor of subjective adult status, accounting for 10% of the variance in responses. This suggests that fostering positive attitudes towards adulthood may constitute a pathway for improving the well-being of contemporary adults.

4.2. Introduction

Adulthood makes up the longest period of the lifespan, and perceptions of adulthood – that is, whether people feel like adults, how they feel towards adulthood, and how they define adulthood – have changed substantially over the past 30 years (e.g., Arnett, 2000; Settersten, 2007; Sharon, 2016). Traditionally, adult status was defined by reaching the age of majority or legal age, which is 18 years in most jurisdictions, or by the attainment of socio-demographic milestones such as having a career, getting married, and becoming a parent. These traditional markers of adulthood were the core pillars of psychological models of lifespan development in the 1950s and 1960s (e.g., Erikson, 1950; Havighurst, 1953), when paths to adulthood were relatively uniform, and young people started long-term careers, married, and had children in quick succession in their early twenties (Blatterer, 2007). In recent years, transitions to adulthood have taken place in a world that is characterised by increasing volatility, uncertainty, complexity, and ambiguity, where socio-demographic milestones are less likely to define adult status (e.g., Arnett, 2000, 2015; Blatterer, 2007; Sharon, 2016). In modern Western societies or WEIRD countries (Western, Educated, Industrialised, Rich, and Democratic; Henrich et al., 2010), people often settle into long-term careers later in adulthood, after prolonged periods of education and 'job-hopping'. For example, in the US, Millennials born between 1980 and 1996 changed jobs twice as often as

Generation X, who were born between 1965 and 1979, and three times more often than the Baby Boomers born between 1945 and 1964 (Lyons et al., 2015). Contemporary adults are also delaying or foregoing marriage and parenthood compared with previous generations. The average age of first marriage for women in the UK has risen from 25 to 35 years between 1970 and 2019 (ONS, 2012; Stripe, 2019), and marriage rates have fallen by 50% from 1991 to 2019 (Clark, 2023). For parenthood, the average age of first-time mothers in the UK has also increased, from 26 to 31 between 1970 and 2019 (Clark, 2023), and the number of children per woman has decreased from 2.93 to 1.6 between 1964 and 2020 (ONS, 2022b). As career, marriage, and parenthood are occurring later in life and less frequently compared with previous generations, these traditional socio-demographic milestones may no longer be relevant markers of adult status.

Further understanding how contemporary adults define and perceive adulthood could help efforts to improve adults' subjective well-being. Accurate models of the perception of adulthood will help to foster young adults' identity development and sense of belonging and thus, strengthen their subjective adult status. By contrast, outdated models of adulthood may alienate individuals from this life phase and drive an unbridgeable discrepancy between the 'ideal' adult self (i.e., the one defined by traditional, unfeasible socio-demographic markers) and the 'actual' adult self. Significant dissonance between ideal and actual identities causes psychological distress, which impairs well-being and mental health (e.g., Carver, 2012). For example, in a sample of 1,166 cancer survivors from the United States aged 18 to 39 years, perceiving oneself as an adult was positively correlated with well-being with medium effect sizes (Kim et al., 2022). Although this study assessed a special population, its findings suggest that strengthening subjective adult social status can help promote a happy and healthy adult population that makes important economic, social, and civic contributions to current and future generations.

Defining adulthood

Research shows that adults today define adulthood using psychological characteristics rather than socio-demographic milestones (e.g., Arnett, 2001; Bao et al., 2023; Kuang et al., 2023; Molgat, 2007; Obidoa et al., 2018; Settersten, 2007; Sharon, 2016; Sirsch et al., 2009). For example, one study found that 55% of US respondents aged 18-25 endorsed being settled into a long-term career as defining adult status, 26% endorsed marriage, and 33% parenthood ($N = 1,113$; Sharon, 2016). In contrast, the items "Accept responsibility for the consequences of my actions", "Make independent decisions", and "Develop greater consideration for others" were endorsed by 96%, 95%, and 82% of the sample respectively (Sharon, 2016). Thus, the most frequently endorsed characteristics of adulthood were psychological, not socio-demographic, emphasising the psychological development that occurs throughout adulthood beyond the traditional social roles of employee, spouse, and parent. However, it is unclear whether the low endorsement of socio-demographic milestones relative to that of psychological characteristics to define adult status is limited to emerging adults, who range in age from 18-29 years (Arnett, 2000; 2015), or if this phenomenon also holds true for older adults.

Previous research has assessed the defining characteristics of adulthood using the Markers of Adulthood (MoA) scale (Arnett, 1994, 2001), which indexes the proportion of participants who endorse certain characteristics as important for adult status. The MoA scale was developed in the early 1990s (Arnett, 1994) and has been recently revised and updated (Norman et al., 2021). Although the revised MoA scale includes some psychological characteristics that describe adult status, such as accepting responsibility for one's actions and deciding one's beliefs and values independently (Arnett, 1994; Norman et al., 2021), other important qualities are not included, for example relying on and trusting in one's abilities

(Wright & von Stumm, 2023a, 2023c; Wright et al., 2023). To assess a broad range of psychological qualities of adulthood, we developed a scale based on the CARES taxonomy that identified five qualities of adult development (Wright & von Stumm, 2023a, 2023c): (1) *C*ognitive maturity, pertaining to the confidence adults have in their own knowledge and abilities; (2) sense of *A*geing, which captures the realisation that one is ageing and life is finite; (3) self-*R*eliance, defined as the ability to look after oneself; (4) *E*udaimonia, entailing knowing and living in alignment with oneself; and (5) *S*ocial convoy, comprising of adults' network of social relationships over their lives (Wright & von Stumm, 2023a, 2023c). These qualities are posited to be central pillars of adult development which impact adults' mental health and well-being and are based on previous literature. Together, the CARES qualities map different aspects of psychological development: emotional (eudaimonia and social convoy), cognitive (cognitive maturity), motivational (self-reliance), and physical (sense of ageing; Wright & von Stumm, 2023a, 2023c). Because the items of the MoA scale do not capture the five CARES qualities, we developed and administered a novel CARES scale in the current study, in addition to the MoA scale. We report here the proportion of participants who endorsed one or more of the five CARES qualities (cognitive maturity, sense of ageing, self-reliance, eudaimonia, and social convoy), as well as those who endorsed items from the MoA scale, as defining characteristics of adulthood.

Subjective adult status

Subjective adult status describes the extent to which people identify as adults. It is usually assessed with a single-item question, such as "Do you feel that you have reached adulthood?" (e.g., Arnett, 1994; Axxe et al., 2022; Bao et al., 2023; Obidoa et al., 2018; Sirsch et al., 2009). Subjective adult status has been associated with chronological age, as older participants report feeling 'adult' to a greater extent than younger participants (Arnett,

2001; Sirsch et al., 2009). For example, in a sample of 515 US participants, 86% of those aged between 30 and 55 years reported feeling that they had reached adulthood, but only 46% of people aged 18-29 years, and 19% of adolescents aged between 13 and 17 years old classified themselves as adults (Arnett, 2001). While the effect of age on subjective adult status has been well documented, less is known about the influence of achieving socio-demographic milestones – career, marriage, and parenthood – on subjective adult status. We could only identify two previous studies in this area. The first reported that being married or having children significantly predicted subjective adult status in a sample of 119 female workers from China (Zhong & Arnett, 2014). Regardless of age, married women were 3.1 times more likely to view themselves as adults than were single women, and women with children were 3.4 times more likely to view themselves as adults than women without children (Zhong & Arnett, 2014). The second study found that being in a relationship predicted subjective adult status in a sample of 4,833 adolescents aged 11 to 17 years living in Mexico, Mozambique, and Nepal (Axxe et al., 2022). No study to date has assessed the predictors of subjective adult status in a sample with a wide age range that spans emerging, established, and late adulthood.

Knowing which factors impact subjective adult status is important because whether people perceive themselves as adults or not could affect their mental health and well-being. Subjective adult status is positively correlated with well-being, and feeling like an adult significantly predicts well-being after associations with age and health are accounted for (Kim et al., 2022). The positive link between subjective adult status and well-being could be driven by having a sense of belonging, which has been shown to promote mental health (e.g., Inoue et al., 2019). Higher subjective adult status is likely to imply that an individual identifies more strongly as an adult and thus, has a greater sense of belonging to the social group of adults. Alternatively, subjective adult status could be associated with well-being

through the alignment between expectations for adulthood and the reality of adulthood. A discrepancy between the 'ideal' adult self (i.e., the expectation for adulthood) and the 'actual' adult self (i.e., the reality of adulthood) might negatively impact well-being (e.g., Carver, 2012). If ideal and actual adult self are more closely aligned, for example when adulthood is understood as a time of continuous growth and development, rather than a fixed state inferred from socio-demographic milestone attainment, benefits for well-being and mental health may occur (Carver, 2012).

Attitudes towards adulthood

People's attitudes towards adulthood as a life phase can be positive, for example when adulthood is viewed as a rich, dynamic, and empowering life period. Attitudes towards adulthood can also be negative, for example when adulthood is primarily thought of as a 'career and care crunch' during which adults must juggle the competing responsibilities of building their career and caring for young children and ageing parents (Mehta et al., 2020). However, attitudes towards adulthood have not previously been studied. We expect that attitudes to adulthood will be in some ways analogous to attitudes towards ageing, a concept which describes how people feel about the process of getting older (e.g., Ingrand et al., 2018; Wettstein & Hans-Werner, 2021). Having a positive attitude towards ageing and believing that people can gain competencies and capabilities as they age are associated with improved cognitive and physical functioning in later adulthood, as well as with greater health and well-being (Ingrand et al., 2018). Conversely, negative attitudes towards ageing, defined by the belief that ageing is accompanied by declines in all areas of life, are associated with worse physical functioning, health, and well-being in later adulthood (Wettstein & Hans-Werner, 2021; Wurm et al., 2017). Many studies have shown that attitudes towards ageing – whether people perceive ageing as a positive or negative process – relate to well-being and mental

health but associations between attitudes towards adulthood – whether people perceive adulthood as a positive or negative time of life – and well-being have not been tested before.

Attitudes towards adulthood are likely to influence adults' well-being through their association with subjective adult status. We speculate that having a positive attitude towards adulthood would predict higher subjective adult status, with people who view adulthood as a rewarding and exciting life period identifying more readily as adults themselves. By comparison, negative attitudes towards adulthood are likely to predict resistance to identify as adults, leading to lower or delayed subjective adult status. Because of the association between subjective adult status and well-being (Kim et al., 2022), promoting positive attitudes towards adulthood that lead to higher subjective adult status could be an effective pathway for improving people's subjective well-being.

The current study

Our study had four aims. First, we sought to investigate how adulthood is defined by measuring the characteristics that today's adults endorse to define adulthood. To do so, we recruited a large sample of UK adults with a wide age range from 18 to77 years and administered the revised MoA scale (Norman et al., 2021) and the CARES scale, which we developed specifically for the current study (details in the measurement section). Our second aim was to measure attitudes towards adulthood, which to the best of our knowledge have not been previously investigated. We assessed attitudes towards adulthood using two novel measures, including whether participants thought adulthood was a positive or negative time of life, and whether they associated adulthood with positive or negative emotive words.

Our third aim was to measure subjective adult status, for which we developed a new assessment instrument. Because our sample includes the widest age range for which subjective adult status has been reported to date, we can for the first time compare levels of subjective adult status across age groups from emerging adulthood to old age. Finally, we tested the relative strength of predictors of subjective adult status, including age, the attainment of socio-demographic milestones, and attitudes towards adulthood.

4.3. Method

Participants

A total of 722 UK residents were recruited via the online survey platform Prolific (https://www.prolific.com/). Age was normally distributed (53% female; M_{age} = 39.20, SD = 13.14, range 18-77 years). We differentiated four age groups: (1) emerging adulthood (aged 18-29 years; Arnett, 2000; 2015) included 207 participants (29% of the sample); (2) established adulthood (aged 30-45 years; Mehta et al., 2020) included 300 participants (42%), (3) midlife (aged 46-59 years; Lachman, 2004) included 143 participants (20%), and (4) older adulthood, age 60 and above, included 72 participants (9%).

One third of our sample reported being married or in a civil partnership (n = 261; 36%), one third identified as being in a committed relationship (n = 223; 31%), and one third identified as single (n = 238; 33%). Our sample included 347 parents (48%) and 375 non-parents (52%).

To index their career status, participants reported if they were full-time or part-time employed, or not in employment. We chose employment status as a measure of career to accommodate younger participants who may not have started a 'career' but are already in employment. Over two-thirds of our sample reported being in full-time employment (n = 511; 71%), with 18% in part-time employment (n = 129), and 11% stating not to be in

employment (n = 82). Full characteristics of the sample are shown in Table 8 in the supplementary materials.

Sample size rationale

Our target sample size was 700 based on power analyses and suggested sample sizes in the literature. First, for correlations, a minimum of 250 participants is recommended for covariances to stabilise (Schönbrodt & Perugini, 2013). Second, for our preregistered One-Way Analysis of Covariance (ANCOVA) analyses we performed a G*Power analysis (Faul et al., 2007), which suggested a minimum of 700 participants was necessary to detect a small-to-medium effect size in an ANOVA (Cohen's f =.20; η^2 = .06). Third, our regression analyses, which were not preregistered, required a minimum of 172 participants to detect a small effect size (F = .15) with an alpha value of .05 according to G*power (Faul et al., 2007).

Missing data

We applied pairwise omission to missing data. Analysis samples are reported in the results section below.

Procedure

Data were collected in June and July of 2022. The authors received ethical approval from [Blinded for submission]. Participants completed a 165-item survey on Prolific, with an average completion time of 15 minutes. The survey included measures of demographic factors, self-perceived adult status, attitudes towards adulthood, and defining characteristics of adulthood. Participants provided informed consent, and all personal and identifying

information was removed prior to extracting the data for analysis. Participants received £1.80 to their Prolific account as compensation for their participation.

A pilot ($N = 5$) was carried out to test (a) the time taken to complete the survey and (b) the effectiveness of the data quality control items. We utilised Geo-IP address blockers, so that only participants with IP addresses registered in the UK could access the survey. Also, throughout the survey, five attention checks were embedded, such as "If you are paying attention, select agree". Participants, who failed any attention check item or who did not complete the survey, were not included in the analyses. A total of 778 participants were recruited for this study. Fifty-six participants did not complete the study either because they failed the attention checks ($N = 38$), timed out ($N = 11$), or stopped the study before completion ($N = 7$). In total, 722 participants were included in the data collection.

Measures

Defining Characteristics of Adulthood

We measured the defining characteristics of adulthood using a combination of the Revised Markers of Adulthood scale (Norman et al., 2021) and the CARES scale, which was developed for this study.

The Markers of Adulthood scale (MoA; Arnett, 1994) was revised by Norman and colleagues (2021) to reflect the modern transition to adulthood using literature reviews, focus groups, and empirical analysis. The resulting Revised MoA scale consisted of 22 items across four subscales: independence (e.g., "Being financially independent from parents"), legality markers (e.g., "Having reached age of legal adulthood"), role transitions (e.g., "Being married"), and relative maturity (e.g., "Accepting responsibility for the consequences of your actions"). Intra-subscale correlations range from .26-.63 (Norman et al., 2021). The revised

MoA has a coefficient alpha of .89 (Norman et al., 2021), suggesting high internal consistency.

The CARES scale was developed to reflect the CARES taxonomy (Wright & von Stumm, 2023a, 2023c), a descriptive model of psychological development in adulthood. The CARES taxonomy consists of five qualities of psychological development, which are described briefly below.

Cognitive maturity is the confidence that adults have in their own knowledge to solve problems and address challenges in life. Every individual builds up a diverse and unique body of knowledge across life through experiences in a variety of domains such as education, career, relationships, and interests (Ackerman, 2022). Cognitive maturity is not defined by the amount or content of one's knowledge, but the confidence that one holds in their knowledge. Self-confidence has been associated with well-being beyond competence levels (e.g., Schneider et al., 2022), suggesting that having confidence in one's knowledge has positive implications for adults' mental health and well-being.

Sense of Ageing is twofold. First, sense of ageing involves an adult's recognition of their own ageing and the ageing of others around them, for example through signs of physical decline such as grey hair, wrinkles, and a reduced resilience to injury and stress. Second, adults have a sense of time remaining in life, and the realisation that time is limited impacts individuals' motivations and goals (i.e., socioemotional selectivity theory; Carstensen et al., 1999). Individuals who perceive time as limited are more likely to pursue goals that provide emotional meaning in the present moment, which has been shown to improve their subjective well-being (Sullivan-Singh et al., 2015).

Self-Reliance describes an adult's sense of control in life, and their ability to rely on their own inner strength to overcome challenges. Adults who are self-reliant have an internal

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locus of control, meaning that they ascribe events in their lives to their own actions and behaviour (Churchill et al., 2020). An internal locus of control has been associated with positive economic, social, and psychological outcomes (Cobb-Clark, 2014). Self-reliant adults also have a high level of personal resourcefulness, or the ability to regulate their emotions, cognitions, and behaviours (Zauszniewski, 1996, 2012). It follows that self-reliant individuals can adapt well to challenges in life, carry out daily tasks independently, and function in social roles, all of which benefit mental health and well-being (e.g., Huang et al., 2008; Lai et al., 2014; Wang et al., 2015).

Eudaimonia comes from the Greek words 'eu' meaning 'good' and 'daimon' meaning 'spirit' which relates to the ancient Greek adages "Know thyself" and "Become who you are". The quality of eudaimonia is defined as knowing oneself and living in alignment with one's true character. Previous research shows that knowing oneself has positive effects on mental health and well-being (Ryff & Singer, 2013), and pursuing activities that are in alignment with one's character also has a positive impact on subjective well-being (Waterman et al., 2010).

Social convoy is the network of relationships in a person's life including family, friends, romantic partners, children, colleagues, and acquaintances. This network changes across life as relationships are made and broken over time (Wrzus et al., 2013). A 'convoy' is a group that travels together for mutual protection (Cambridge Dictionary, 2023), and an individual's social convoy is protective for mental health and well-being in adulthood. Individuals receive support from, and give support to, their social convoy, both of which have positive effects on mental health and well-being (e.g., Sehmi et al., 2020).

The CARES scale consists of 25 questions relating to the five CARES qualities of adult development: *C*ognitive maturity (e.g., "Being able to solve problems in life"), sense of

Ageing (e.g., "Knowing that life is finite"), self-*R*eliance (e.g., "Having control over my life"), *E*udaimonia (e.g., "Living in alignment with who I am"), and *S*ocial convoy (e.g., "Having people in my life who understand and support me"). Items in the MoA and CARES scales and their respective subscales are shown in tables 11 and 12 in the supplementary materials.

For both the revised MoA and the CARES scales, participants were presented with the prompt "This defines adulthood for me" and asked to respond on a 5-point Likert scale ranging from "Strongly disagree", "Disagree", "Somewhat agree", "Agree", and "Strongly agree". Responses were coded as "Strongly disagree" = 1, "Disagree" = 2, "Somewhat agree" = 3, "Agree" = 4, and "Strongly agree" = 5. Each participant had a unit-weighted average score ranging from 1-5 for each of the 22 revised MoA items, and the 25 CARES items.

Subjective adult status

In previous research, subjective adult status has been assessed using a single-item measure: "Do you think that you have reached adulthood?", with responses: "Yes", "No", and "In some respects yes, in some respects no" (e.g., Arnett, 1994; Zhong & Arnett, 2014). Single item measures are more susceptible to measurement error and can have lower reliability in cross-sectional samples compared with multiple-item measures (Allen et al., 2022). We developed a five-item measure to assess subjective adult status in this study.

The subjective adult status scale includes the items: "I feel like an adult", "I no longer feel like a child", "Other people consider me an adult", "Other people treat me like a child" (reverse-scored), and "I think of myself as a grown-up person". Participants rated items on a 5-point Likert scale ranging from "Never" to "Always". Responses were scored as: never = 1, rarely = 2, sometimes = 3, often = 4, and always = 5. An average score from 1 to 5 was

calculated for each participant, with a higher number indicating a higher level of subjective adult status (i.e., a higher score indicates that the participant feels like an adult more frequently compared with a lower score).

Attitudes towards adulthood

Attitudes towards adulthood were measured using (a) the attitudes towards adulthood scale, and (b) the valenced attitudes towards adulthood scale, both developed for this study. The attitudes towards adulthood scale was comprised of six items: "Adulthood is a desirable phase of life", "I enjoy being an adult", "Overall, adulthood is a positive time of life", "Adulthood is not a desirable phase of life" (reverse scored), "I dislike being an adult" (reverse scored), and "Overall, adulthood is a negative time of life" (reverse scored). All items were rated on a 5-point Likert scale ranging from "Strongly disagree" to "Strongly agree". Responses were coded as "Strongly disagree" = 1, "Disagree" = 2, "Somewhat agree" = 3, "Agree" = 4, and "Strongly agree" = 5. A composite score was calculated for each participant, representing their overall attitude towards adulthood from 1-5, where a higher number indicates a more positive attitude.

The valenced attitudes towards adulthood scale consisted of 30 emotive words (15 positive and 15 negative) selected from the English Word Database of Emotional Terms (EMOTE; Grühn, 2016). The word selection procedure and full word list are reported in the supplementary materials. To measure valenced attitudes towards adulthood, participants were asked whether they agreed with the following statement: "This word describes adults in general", on a dichotomous scale consisting of "Agree" or "Disagree", coded as 1 and 0, respectively. For each participant, we calculated a total numerical score between 0 and 15 for both positive and negative words. A higher score on the positive words scale indicated more positive attitudes towards adulthood, and a higher score on the negative words scale indicated

more negative attitudes towards adulthood. Total scores for the endorsement of positive words and negative words correlated at r = -.41. In line with our preregistered analysis plan (https://osf.io/b7pjw/?view_only=379e6803fb3d4b96a25e161fc508a912), we treated the endorsement of positive and negative words as two separate domains in the following analyses since the two scales correlated at less than .60. For comparison, positive and negative valence scores correlated with the attitudes towards adulthood scale at .45 and -.39 respectively.

4.4. Results

Data were analysed using R (R core team, 2022). Analysis scripts and data are available on the OSF; the analyses reported here were preregistered amongst other analyses of these data (https://osf.io/b7pjw/?view_only=379e6803fb3d4b96a25e161fc508a912).

Descriptive statistics for all study measures are in Table 6, and their correlations are shown in Figure 16 in the supplementary materials. All study scales had satisfactory Cronbach's alpha values (α > .75), with the exception of the legality markers subscale of the MoA scale (α = .57). Across scales and measures, data were normally distributed.

Table 6. *Descriptive statistics for perceptions of adulthood scales: subjective adult status, attitudes towards adulthood, and defining characteristics of adulthood.*

	n	Mean	SD	Min	Max	Skew	Kurtosis	SE	α
Subjective adult status	5	3.87	0.79	1	5	-0.46	-0.26	0.03	0.82
General attitudes towards adulthood	6	3.52	0.88	1	5	-0.67	0.25	0.03	0.94
Positive valenced words	15	10.31	3.60	0	15	-0.70	-0.23	0.13	0.83
Negative valenced words	15	7.18	3.76	0	15	-0.11	-1.03	0.14	0.84
Revised MoA scale	22								
MoA: Independence	8	3.58	0.72	1	5	-0.52	0.26	0.03	0.85
MoA: Relative maturity	5	3.55	0.71	1	5	-0.42	0.09	0.03	0.76
MoA: Role transitions	5	2.86	0.91	1	5	0.17	-0.56	0.03	0.82
MoA: Legality markers	4	2.82	0.68	1	5	0.26	0.19	0.03	0.57
CARES scale	25								
CARES: Cognitive maturity	5	3.66	0.67	1	5	-0.31	0.12	0.03	0.82
CARES: Sense of ageing	5	3.58	0.75	1	5	-0.36	0.02	0.03	0.78
CARES: Self-reliance	5	3.63	0.76	1	5	-0.32	-0.17	0.03	0.77
CARES: Eudaimonia	5	3.60	0.73	1	5	-0.35	0.07	0.03	0.80
CARES: Social convoy	5	3.40	0.77	1	5	-0.26	0.02	0.03	0.81

n = number of items

How is adulthood defined?

To assess the defining characteristics of adulthood, we first measured the frequency with which participants endorsed the items of the MoA scale (e.g., Arnett, 1994; Norman et al., 2021). Traditional milestones of adulthood were endorsed by less than half of participants. Full-time employment was endorsed by 28% of participants, marriage by 22%, and parenthood by 26%. The most frequently endorsed items from the MoA scale were "Accepting responsibility for the consequences of my actions" (endorsed by 80% of participants), "Being financially independent from my parents" (79%), and "Paying for my own living expenses" (79%). The least endorsed items were "Having had sexual intercourse" (endorsed by 15% of participants), "Being married" (22%), and "Having obtained a driver's license" (23%). The subscales of independence and relative maturity were endorsed the most frequently in the MoA scale, by almost two thirds of our sample (57% of participants endorsed each). Role transitions and legality markers were only endorsed by a third of our sample (33% and 27% respectively).

We performed frequency analysis of items from the CARES scale in the same manner as we did for the MoA scale. The most frequently endorsed items from the CARES scale were all from the self-reliance subscale: "Being able to look after myself" (endorsed by 76% of participants), "Making my own choices without having to rely on others" (74%), and "Having control over my life" (70%). The self-reliance subscale was the most endorsed of all subscales in the MoA and CARES scales, with 68% of participants agreeing that self-reliance items define adulthood. The least frequently endorsed subscale of the CARES scale was social convoy (endorsed by 48%). The least endorsed items were "Being satisfied with my social network" (endorsed by 34% of participants) and "Having true connections with others" (37%). Figure 13 shows the percentage endorsement for the five most endorsed and five least

endorsed items in the MoA and CARES scales. Endorsement % of individual items from the MoA and CARES scales is shown in table 14 in the supplementary materials.

Defining Characteristics of adulthood by age

We also assessed whether endorsement of traditional socio-demographic milestones as defining characteristics of adulthood varied by age group (Figure 14). "Being settled into a long-term career" was endorsed on average by 40% of our participants. By age groups, career was endorsed by 48% of participants aged 18-29 years, 41% of participants aged 30-45 years, 30% of participants aged 46-59 years, and 31% of participants aged 60-77 years. Thus, being settled into a long-term career was more often considered a defining characteristic of adulthood at younger than at older ages. "Being married" and "Having had at least one child" were endorsed most often by the 30–45-year-old group (26% and 33%, respectively), but less so by younger and older adults. Endorsement of all MoA and CARES items by age group can be found in tables 17 and 18 in the supplementary materials.

Figure 13. *Percentage of endorsement of defining charactersitics of adulthood.*
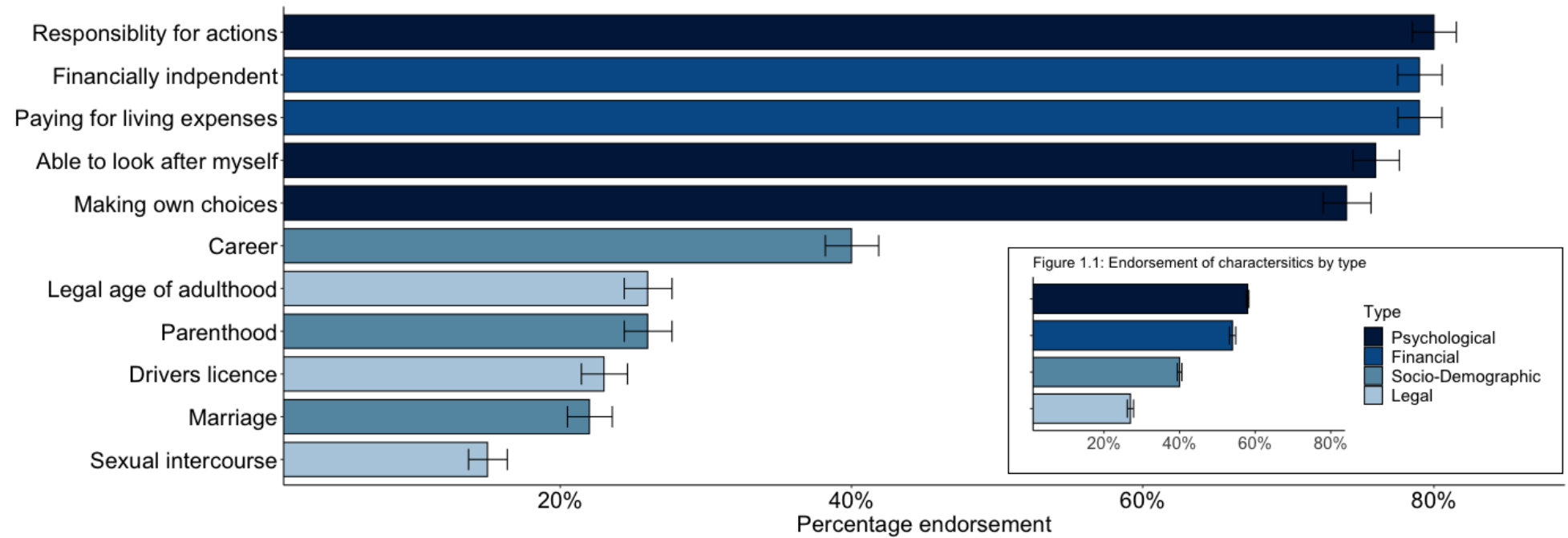
Note: Figure 13 shows the five most and least endorsed items from the Markers of Adulthood (MoA) and CARES scales are shown. Item names have been shortened for clarity. Figure 13.1 shows the average endorsement of characteristic types: psychological, financial, socio-demographic, and legal. Graph colours also refer to characteristic types.

Figure 14. *Percentage endorsement of traditional socio-demographic milestones as defining characteristics of adulthood*
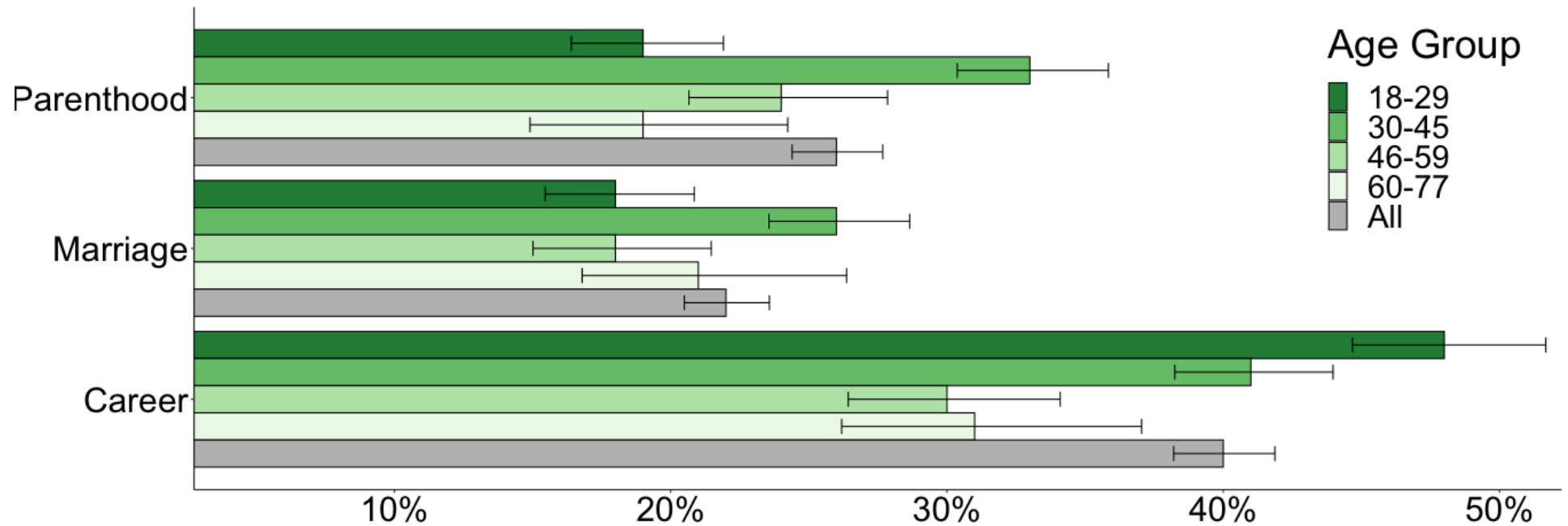
Note: The respective items were "Having had at least one child", "Being married", and "Being settled into a long-term career". Dotted lines refer to the overall proportion of participants who endorsed each item (i.e., across all age groups). A total of 26% of participants endorsed parenthood, 22% marriage, and 40% career.

Attitudes towards adulthood

Participants had a positive attitude towards adulthood overall, indicated by a mean score of 3.52 on the attitudes towards adulthood scale ($SD = 0.88$), ranging from 0 (strongly disagree that adulthood is positive) to 5 (strongly agree that adulthood is positive). This equates to positive items being on average rated between agree and strongly agree and negative items between disagree and strongly disagree.

On the valenced attitudes towards adulthood scale, participants had a mean score of 10.33 ($SD = 3.60$) for endorsement of the 15 positive words, and a mean of 7.16 ($SD = 3.77$) for the 15 negative words, suggesting again positive attitudes towards adulthood overall. The most frequently endorsed words to describe adults were "versatile" (positive; endorsed by 91% of participants), "interesting" (positive; endorsed by 88%), and "frustrated" (negative; endorsed by 86%). The least endorsed words were "useless" (negative; endorsed by 2% of participants), "unskilled" (negative; endorsed by 4%), and "unkind" (negative; endorsed by 28%). Endorsement of individual items in the valenced attitudes towards adulthood scale are shown in Table 13 (supplementary materials).

Are perceptions of adulthood predicted by chronological age, employment, relationship, or parent status?

We fitted one-way ANCOVAs to assess differences in the perceptions of adulthood by (a) age groups (i.e., 18-29, 30-45, 46-59, or 60+), (b) employment group (i.e., full-time, part-time, or no employment), and (c) relationship group (i.e., married, in a relationship, or single). A t-test determined the influence of parent status (i.e., parent or non-parent) on attitudes towards adulthood. All ANCOVAs were adjusted for gender, educational attainment, and income. Results are summarised in Figure 15.

Figure 15. *Perceptions of adulthood by age, employment, relationship, and parent groups.*
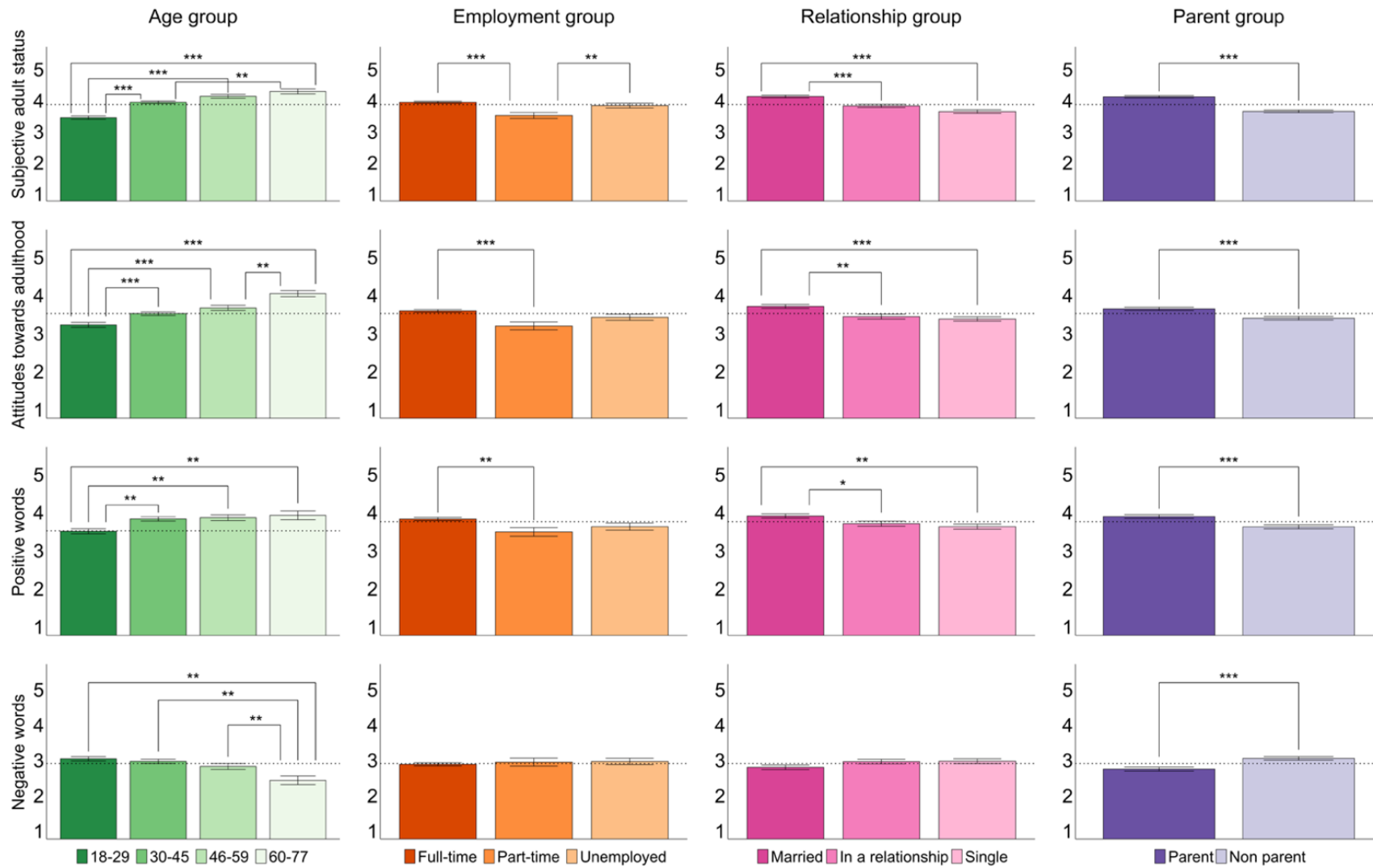
Note: Dotted lines indicate mean scores (3.87 on subjective adult status scale, 3.52 on attitudes towards adulthood scale, 3.76 for positive word endorsement, and 2.91 for negative word endorsement). Stars indicate statistical significance: * p < .05; ** p < .01; *** p < .001. All ANCOVAs were adjusted for gender, educational attainment, and income.

First, age group was significantly associated with scores on the attitudes towards adulthood scale ($F(3) = 20.21$, $p < .001$, $\eta^2 = .08$). A post-hoc Tukey test indicated that emerging adults had significantly more negative attitudes towards adulthood compared with all other age groups ($p < .001$), and participants aged 60 and above had significantly more positive attitudes towards adulthood compared with established adults ($p < .001$) and midlife adults ($p = .01$). There were no other significant differences on the attitudes towards adulthood scale by age. For the valenced attitudes towards adulthood scale, the endorsement of positive and negative words differed by age, as indicated by a significant ANCOVA analysis ($F(3) = 6.53$, $p < .001$, $\eta^2 = .03$) after controlling for gender, educational attainment, and income. A post-hoc Tukey test revealed that emerging adults endorsed positive words significantly less often than established adults ($p = .001$), midlife adults ($p = .003$), and those aged 60 and above ($p = .007$). Furthermore, participants aged 60 and above were significantly less likely to endorse negative words compared with all other age groups (18-29 $p < .001$, 30-45 $p < .001$, and 46-59 $p = .03$).

Second, participants in full-time employment had significantly more positive attitudes towards adulthood compared with those in part-time employment ($F(2) = 8.61$, $p < .001$, $\eta^2 = .02$). There were no significant differences between participants with no employment and those with full-time or part-time employment. On the valenced attitudes towards adulthood scale, ANCOVA analysis showed differences in the endorsement of positive words by employment group ($F(2) = 6.32$, $p = .002$, $\eta^2 = .02$). Participants who had experienced full-time employment were significantly more likely to endorse positive words compared with those in part-time employment ($p = .01$) or no employment ($p = .04$). There were no significant differences between participants in part-time and no employment. Employment group was not associated with the endorsement of negative words.

Third, differences in scores on the attitudes towards adulthood scale between relationship groups was significant ($F(2) = 11.08$, $p < .001$, $\eta^2 = .03$), as married participants had more positive attitudes towards adulthood compared with those in a relationship ($p = .002$) and single participants ($p < .001$). There were no significant differences between participants in a relationship and those who were single. In the valenced attitudes towards adulthood scale, the endorsement of positive words to describe adults differed by relationship group ($F(2) = 5.91$, $p = .003$, $\eta^2 = .02$), as married participants endorsed more positive words compared with single participants ($p = .003$). There were no significant differences between participants in a relationship and those who were married or single. Relationship group was not associated with the endorsement of negative words.

Fourth, a t-test revealed that parents had significantly more positive attitudes towards adulthood compared with non-parents ($t(710.40) = -3.88$, $p < .001$, $d = .29$). Parents also endorsed more positive words on the valenced attitudes towards adulthood scale compared with non-parents ($t(719.11) = -3.87$, $p < .001$, $d = .29$), and non-parents endorsed more negative words than parents ($t(698.85) = 4.05$, $p < .001$, $d = .30$).

Is subjective adult status associated with age, employment status, relationship status, or parent status?

On average, our participants felt like adults, as shown by a mean score of 3.87 on the subjective adult status scale ($SD = 0.79$), which ranged from 0 (never feeling like an adult) to 5 (always feeling like an adult). Older participants felt more adult than younger participants, shown by the positive correlation between subjective adult status and age ($r = .38$, $p < .001$; Figure 16).

A series of one-way ANCOVAs was fitted using the same grouping variables as described above for the results pertaining to attitudes towards adulthood. As before, we controlled for gender, educational attainment, and income in all analyses (Figure 15).

First, age group had a significant effect on subjective adult status ($F(3) = 38.86$, $p < .001$, $\eta^2 = .14$). A post-hoc Tukey test revealed that emerging adults (age 18-29) scored significantly lower on subjective adult status than the other age groups ($p < .001$). Established adults (age 30-45) scored significantly lower than participants aged 60 and above ($p = .002$). No other significant differences were observed. Second, employment status had a significant effect on subjective adult status ($F(2) = 11.09$, $p < .001$, $\eta^2 = .03$). A post-hoc Tukey test indicated that participants in part-time employment scored significantly lower on the subjective adult status compared with those in full-time employment ($p < .001$) and with those not in employment ($p = .01$). There was no significant difference between part-time employment and no employment. Third, relationship status also had a significant effect on subjective adult status ($F(2) = 26.90$, $p < .001$, $\eta^2 = .07$), as married participants scored significantly higher on subjective adult status compared with those in a relationship ($p < .001$) and single participants ($p < .001$). There was no significant difference between participants in a relationship and single participants. Finally, a t-test indicated that parents scored significantly higher on the subjective adult status scale compared with non-parents ($t(705.15) = 8.31$, $p < .001$, $d = .62$).

What predicts subjective adult status?

We ran multiple regression models to explain differences in subjective adult status. Model 1 included as predictors the demographic factors gender, education, and income, model 2 also included age in years as a continuous predictor, and in model 3, we added employment, relationship, and parenthood. Model 4 included attitudes towards adulthood,

specifically scores on the attitudes towards adulthood scale, and positive and negative valence towards adulthood.

Model 1 was significant ($F(710) = 18.96$, $p < .001$, $R^2 = .07$), with educational attainment and income explaining 7% of the variance in subjective adult status. Gender was not significant (Table 7, see also Tables 19-22 in the supplementary materials for full regression outputs). In model 2, age significantly predicted subjective adult status, accounting for an additional 11% of the variance ($F(712) = 40.22$, $p < .001$, $R^2 = .18$). Employment, relationship, and parent status accounted for an extra 4% of the variance (model 3: $F(706) = 22.86$, $p < .001$, $R^2 = .22$). Model 4, including all predictors, explained a total of 32% of the variance in scores on the subjective adult status scale ($F(703) = 28.43$, $p < .001$, $R^2 = .32$), with attitudes towards adulthood accounting independently for 10% of the variance (Table 7). The results of model 4 suggest that participants reported feeling significantly more adult if they were older, had children, were in a relationship, had a higher income, or had a positive attitude towards adulthood.

Table 7. *Regression models predicting subjective adult status.*

	Model 1 $R^2 = 0.07$		Model 2 $R^2 = 0.18$		Model 3 $R^2 = 0.22$		Model 4 $R^2 = 0.32$	
	Est.	*CI* 95%	Est.	*CI* 95%	Est.	*CI* 95%	Est.	*CI* 95%
Gender (male)	0.05	[-0.05 to 0.14]	-0.01	[-0.10 to 0.08]	0.02	[-0.07 to 0.11]	0.00	[-0.08 to 0.08]
Highest Education	**0.05**	[0.01 to 0.10]	**0.07**	[0.03 to 0.11]	**0.08**	[0.03 to 0.12]	0.03	[-0.01 to 0.08]
Income	**0.08**	[0.06 to 0.10]	**0.06**	[0.04 to 0.08]	**0.05**	[0.03 to 0.07]	**0.05**	[0.03 to 0.07]
Age			**0.02**	[0.02 to 0.02]	**0.02**	[0.01 to 0.02]	**0.01**	[0.01 to 0.02]
Parent status (Parent)					**0.22**	[0.12 to 0.33]	**0.19**	[0.09 to 0.29]
Relationship status (Married)					0.04	[0.08 to 0.16]	0.02	[-0.09 to 0.13]
Relationship status (Single)					**-0.19**	[-0.30 to -0.07]	**-0.16**	[-0.26 to -0.05]
Employment status (No employment)					0.07	[-0.05 to 0.19]	0.08	[-0.32 to 0.19]
Employment status (Part-time)					-0.11	[-0.26 to 0.03]	-0.08	[-0.22 to 0.06]
Attitude towards adulthood							**0.24**	[0.19 to 0.30]
Endorsement of positive words							**0.06**	[0.01 to 0.11]
Endorsement of negative words							**-0.06**	[-0.10 to -0.01]

Note: Bold estimates indicate statistically significant predictors (p < .05). Relationship status and employment status were 3-level categorical

predictors with reference group stated in the table. For example, relationship status (Single) indicates the significance of being single for

subjective adult status versus being married or being in a relationship. Employment status (part-time) indicates the significance of being

employed part-time versus being employed full-time or having no employment.

4.5. Discussion

In the current study, we investigated the defining characteristics of adulthood in a UK sample with a wide age range from 18-77 years. We also measured and predicted people's attitudes towards adulthood – whether they perceive adulthood as a positive or negative time of life – and their subjective adult status – the extent to which people consider themselves adults. We discuss our findings with regards to these three outcomes – defining adulthood, attitudes towards adulthood, and subjective adult status – in turn below.

Defining characteristics of adulthood

Our sample defined adulthood more often by psychological characteristics and financial markers than by socio-demographic milestones, in line with previous research (e.g., Arnett, 2001; Bao et al., 2023; Kuang et al., 2023; Molgat, 2007; Obidoa et al., 2018; Settersten, 2007; Sharon, 2016; Sirsch et al., 2009). The items that were most frequently endorsed were: "Accepting responsibility for the consequences of my actions", "Being financially independent from my parents", "Paying for my own living expenses", "Being able to look after myself", and "Making my own choices without having to rely on others" (Figure 13). In contrast, the socio-demographic milestones of career, marriage, and parenthood were among the least endorsed items. Our sample, with a wide age range from 18-77 years, adds to the existing research and emphasises that the endorsement of psychological characteristics to define adulthood holds true across ages and is not restricted to emerging adults.

Endorsement of defining characteristics of adulthood varied by socio-demographic milestones and age. Career was endorsed more frequently than marriage and parenthood, particularly by participants aged 18-29 years (emerging adults) and 30-45 years (established adults). Those aged 30-45 years endorsed being married and a parent more often as defining characteristics of adulthood than participants of other ages. Due to the cross-sectional nature

of our data, we cannot determine whether these differences represent age effects or cohort effects. However, we speculate that cohort effects are likely. Our oldest participants' birth years spanned from 1945 to 2004, and they entered adulthood between the 1960s and the 2020s, a time period during which significant changes occurred in education and work in the UK. However, our youngest participants were born in 2003 and likely had a very different experience of adulthood. For example, more people attend university today than ever before: in 1970, 8% of school leavers attended university (Bolton, 2012), compared with 47% in 2020 (Department for Education, 2023). Higher rates of university enrolment suggest increased time investments in education and career development during young adulthood, with adults placing greater emphasis on their careers. Another example is women's rise in workplace participation, which increased from 42% to 57% between 1970 and 2020 (Watson, 2023) and coincides with declining rates of marriage and parenthood in the UK (e.g., Clark, 2023; ONS, 2012; Stripe, 2019). Together these societal trends are likely to bring about cohort effects, such that people born in earlier years endorse having a career less often as defining characteristic of adulthood than people born in later years.

Attitudes towards adulthood

Our sample's attitudes towards adulthood were positive overall, with the majority of participants agreeing that adulthood is an enjoyable time of life and endorsing positive words to describe adults. That said, attitudes towards adulthood varied by age. Older participants had more positive attitudes towards adulthood and endorsed more positive words to describe adults than younger participants. The greater positivity of older adults feeling may reflect self-protective biases of adults to view their contemporaneous lifetime in ways that promote well-being and encourage successful ageing (e.g., Ingrand et al., 2018; Jenull et al., 2023). Attitudes towards adulthood also differed according to the attainment of socio-demographic

milestones. Participants who were employed full-time, married, and had children reported more positive attitudes towards adulthood and endorsed more positive words to describe adults compared with participants who were employed part-time, single, or childfree.

The simultaneous attainment of socio-demographic milestones of marriage, career, and parenthood and the resulting responsibilities have been referred to as the 'career-and-care-crunch' (Mehta et al., 2020). It occurs as people juggle the challenge of progressing in their careers and their caring responsibilities for young children and/or ageing parents (Mehta et al., 2020). One may expect that attitudes towards adulthood become more negative as people enter the life phase of the career-and-care crunch. However, our results show that attitudes towards adulthood are more positive for established adults compared with emerging adults, and for those who have attained socio-demographic milestones compared with those who have not, suggesting that the career-and-care crunch does not necessarily bring about negative attitudes towards adulthood. The attainment of socio-demographic milestones could promote positive attitudes towards ageing through social comparisons, when people who are employed, married, or have children, compare themselves favourably to those who have not (yet) achieved these milestones. Alternatively, the association between socio-demographic milestones and positive attitudes towards adulthood may reflect personal goal attainment. For example, securing a job, marrying, or having children, may be frequent goals for adults, and attaining these goals is likely to increase personal satisfaction and by extension, positive attitudes towards adulthood.

Attitudes towards adulthood are likely to be influenced by individual differences in other domains such as well-being, mental health, and purpose in life, which also predict the attainment of socio-demographic milestones (e.g., Morse & Steger, 2019; Stone, 2022; Whisman et al., 2007). Our results suggest that positive attitudes towards adulthood and the attainment of socio-demographic milestones are associated, but we cannot infer a direction of

causality. Future research should assess whether the attainment of socio-demographic characteristics predicts changes in attitudes towards adulthood, or whether people with higher attitudes towards adulthood are more likely to be employed full-time, marry, and have children. Alternatively, future research must explore whether associations between attitudes towards adulthood and socio-demographic milestones are driven by people's differences in other domains, such as well-being, mental health, and purpose in life.

Subjective adult status

Subjective adult status varied by age, socio-demographic milestones, and attitudes towards adulthood. First, older participants felt more adult compared with younger participants, and age significantly predicted subjective adult status, in line with previous findings (Arnett, 2001; Mary, 2014). Our study was the first to quantify the relationship between age and self-perceived adult status, showing that age independently accounted for 11% of the variance in self-perceived adult status.

Second, participants who were employed full-time, married, and had children scored higher on the subjective adult status scale compared with those who were employed part-time or unemployed, in a relationship or single, and childfree. Parent status and relationship status significantly predicted higher subjective adult status, confirming a previous study (Zhong & Arnett, 2014).

The finding that parenthood and marriage predict subjective adult status but were not considered defining characteristics of adulthood highlights a contradiction between the perception of adulthood and the factors that influence people's subjective adult status. Perceptions are often informed by common beliefs or stereotypes (Pirolli & Card, 2005), in our case that adults are married parents with careers. Thus, our participants may have defined adulthood using social norms or identities that are removed from their own experience. Prior

studies have shown that being a member of a social group, regardless of whether membership is real or imagined, affects one's self-perception (e.g., Gales & Hubner, 2020; Williams, 2017). Thus, people may perceive themselves as adult because they know themselves to be members of 'adult' socio-demographic groups, including married, parent, and long-term career, even though they do not consider such group memberships per se as defining characteristics of adulthood.

Third, having a positive attitude towards adulthood predicted subjective adult status and independently accounted for 10% of the variance after adjusting for covariates. The effect of attitudes towards adulthood on subjective adult status was similar in magnitude to the effect of chronological age, and larger than that of the attainment of socio-demographic milestones. The association between attitudes towards adulthood and subjective adult status has implications for supporting young people during their transition to adulthood. Subjective adult status has previously been linked with adults' well-being (Kim et al., 2022), and so interventions which promote subjective adult status in emerging adults could improve well-being during this life phase. Well-being is impacted by many factors such as sense of belonging, positive relationships, socio-economic status, sleep, physical health, and underlying levels of trait well-being (e.g., Carver, 2012; Friedman & Kern, 2014; Noble & McGrath, 2011; Steptoe et al., 2008; Tan et al., 2020). Subjective adult status may constitute an additional and modifiable factor that contributes to well-being in adulthood. Future research is needed to investigate the mechanisms through which subjective adult status might be associated with well-being to inform interventions to improve the well-being of young people. Such interventions could target transforming unrealistic conceptions of adulthood or negative attitudes towards adulthood, to increase young peoples' sense of belonging to the adult population.

Limitations and future directions

This study has notable strengths, including assessing perceptions of adulthood in a large sample with a wide age range, and the development and use of comprehensive and reliable measures of the perceptions of adulthood. Nonetheless, it is not without limitations. First, our data were cross-sectional, which prohibits testing whether participants perceive adulthood differently as they age (i.e., as people get older, they feel more adult and have more positive attitudes towards adulthood), or whether older samples perceive adulthood differently compared with younger samples (i.e., cohort effects). Future research must address whether people feel more adult and their attitudes towards adulthood become more positive as they age, or whether older generations have higher subjective adult status and more positive attitudes towards adulthood.

Second, while we found that psychological characteristics were most often endorsed to define adulthood, we did not measure the attainment of these psychological characteristics. Future research should investigate if the extent to which participants have attained psychological characteristics of adulthood predicts their subjective adult status.

Third, our findings pertain to a UK sample and thus may not be generalisable to other populations. Future research is needed to evaluate cultural differences in perceptions of adulthood. For example, young people in WEIRD (Western, Educated, Industrialised, Rich, and Democratic) countries tend to spend extended periods of time in education and experiencing the identity exploration of emerging adulthood (Arnett, 2000; 2015). By comparison to WEIRD samples, young people in more developing countries, such as the Global South, tend to perceive of themselves as adults earlier and endorse the traditional socio-demographic milestones of career, marriage, and parenthood more often as defining characteristics of adulthood (e.g., Obidoa et al., 2018; Zhong & Arnett, 2014).

4.6. Conclusion

Traditionally, adulthood has been inferred from the age of majority and the attainment of socio-demographic milestones, such as long-term career, marriage, and parenthood. However, these milestones are increasingly delayed or forgone altogether for young adults today. Our findings showed that adults from the age of 18-77 years define adulthood using psychological characteristics such as "Accepting responsibility for the consequences of my actions" and "Being able to look after myself". That said, subjective adult status – the extent to which people feel like adults – was predicted by marriage and parenthood, even though these socio-demographic milestones were not endorsed as defining characteristics of adulthood. We conclude that there is a chasm between people's explicit understanding of adulthood and their implicit, subjective experience of feeling adult: the factors which influence subjective adult status are not the ones considered to define adulthood. We also found that positive attitudes towards adulthood predicted subjective adult status to the same extent as chronological age. Fostering positive attitudes towards adulthood in young people is likely an effective pathway to improve subjective adult status, resulting in a greater sense of belonging in adulthood and increased subjective well-being.

4.7. Supplementary materials

Table 8. *Sample Characteristics for the perceptions of adulthood study*

		Min	**Max**	**Mean**	**SD**
Age		18	77	39	13.14
Income		£0	£300,000	£25,704	£21,869

		Frequency	**Percentage**
Age range	18-29	207	29%
	30-45	300	42%
	46-60	143	20%
	60+	72	9%
Gender	Male	331	46%
	Female	384	53%
	Prefer not to say	7	1%
Employment	Full-time	511	71%
	Part-time	82	11%
	No employment	129	18%
Currently in education	Yes	93	13%
	No	629	87%
Highest qualification	GCSE	86	12%
	A-Level	173	24%
	Undergrad	275	38%
	Master's	159	22%
	Doctorate	28	4%
Relationship status	Single	238	33%
	In a committed relationship	223	31%
	Married / Civil partnership	261	36%
Has children	Yes	347	48%
	No	375	52%

Measures

Demographic characteristics

To assess the demographic characteristics of our sample, we included 9 questions in our survey which asked about (1) gender, (2) employment, (3) education, (4) income, (5) relationship status, and (6) parenthood status. First, we asked participants "What is your gender?" with the responses: "Male", "Female", or "Prefer not to say". Second, to assess employment, we asked "Have you ever been in salaried employment?", participants responded with: "Yes, full-time", "Yes, part-time", or "No". We chose to ask whether participants had ever been in salaried employment rather than their current employment status as we wanted to assess the impact of employment on perceptions of adulthood, and the experience of having been employment could still impact one's perception of themselves as an adult even if they are currently not in employment. For example, participants may be out of employment due to childcare or retirement, but their previous experience of employment could still impact their self-perceived adult status. Third, we asked participants to report their highest educational qualification, with responses: "GCSE", "A-Level", "Undergraduate degree", "Master's degree", "Doctorate", or "Other". Fourth, to assess income we asked participants to enter their total income from the past year before tax deductions. Fifth, we asked participants to report their relationship status, with responses: "Single", "In a committed relationship", or "Married or in a civil partnership". Finally, we asked participants whether they have children, with responses "Yes" or "No".

Valenced words

The valenced attitudes towards adulthood scale consists of emotional words taken from the English Word Database of Emotional Terms (EMOTE; Grühn, 2016), and participants were asked whether each word describes adults. The EMOTE database contains 986 adjectives, which were subjectively rated by1627 adults ranging from 18 to 32 years (M = 20.0, SD = 1.7; 71.2% female; Gru Grühn, 2016). The adjectives were rated on a scale of 1-10 with 1 being highly negative and 10 being highly positive (Grühn, 2016). The word list was screened by the first author, and any words deemed inappropriate or irrelevant to the study were removed. For example, the word "abusing" was removed from the list of negative words, as it is not a general term one would use to describe adults and may be triggering for participants who have experienced abuse. An example of an excluded positive word is "well-bred", again because it is not a word typically used to describe adults and does not meet the aim of this variable, to capture participants' overall positive and negative attitudes towards adulthood. Following the exclusion of words using this logic, 30 words (15 positive and 15 negative) were randomly selected from the 150 most positive and 150 most negative adjectives in the EMOTE database using the RAND function in excel. The resulting list of 30 words makes up the valenced attitudes towards adulthood scale used in this study. Positive words include "lively" and "kind", negative words include "frustrated" and "intolerant". Tables 9 and 10 in the supplementary materials show the words used in this study and their relative valence compared with the average from the EMOTE database (Grühn, 2016). Both positive and negative words were, on average, a similar distance from the average valence rating in the EMOTE database. Positive words used in this study have an average valence score of 6.00, which is 59% more positive than the average score across all words in the EMOTE database. Negative words have an average valence score of 1.79, which is 53% less than the average EMOTE score.

Table 9. *Positive words from the valence towards attitude scale*

Positive word	Valence score	Difference from EMOTE words average	Percentage difference from average EMOTE words valence score
Admired	6.56	2.79	74%
Interesting	6.49	2.72	72%
Kind	6.40	2.63	70%
Warm-hearted	6.05	2.28	60%
Trusting	6.04	2.27	60%
Assured	6.04	2.27	60%
Free	6.02	2.25	60%
Hopeful	5.89	2.12	56%
Gentle	5.87	2.10	56%
Unselfish	5.85	2.08	55%
Warm	5.85	2.08	55%
Versatile	5.82	2.05	54%
Lively	5.80	2.03	54%
Masterful	5.70	1.93	51%
Self-controlled	5.56	1.79	47%
Average valence for positive words	6.00	2.23	59%

Table 10. Negative words from the valence towards attitude scale

Negative word	Valence score	Difference from average EMOTE words valence score	Percentage difference from average EMOTE words valence score
Useless	1.33	-2.44	-65%
Arrogant	1.38	-2.39	-63%
Unhealthy	1.46	-2.31	-61%
Unkind	1.50	-2.27	-60%
Ill-tempered	1.71	-2.06	-55%
Overcritical	1.78	-1.99	-53%
Controlling	1.81	-1.96	-52%
Angry	1.85	-1.92	-51%
Intolerant	1.87	-1.90	-50%
Unhappy	1.89	-1.88	-50%
Unskilled	1.96	-1.81	-48%
Careless	1.97	-1.80	-48%
Displeased	2.04	-1.73	-46%
Frustrated	2.10	-1.67	-44%
Self-conscious	2.13	-1.64	-44%
Average valence for negative words	1.79	-1.98	-53%

Table 11. *Items from the revised MoA scale and their respective subscales*

Item	MoA subscale (Norman et al., 2021)
Being employed full time	Independence
Being financially independent from parents	Independence
No longer living in parents' household	Independence
Paying for own living expenses	Independence
Actively saving or planning for retirement	Independence
Being capable of running a household	Independence
Being capable of supporting a family financially	Independence
Settled into long-term career	Independence
Having had sexual intercourse	Legality markers
Having obtained driver's license	Legality markers
Having reached the legal age of adulthood	Legality markers
Planning and engaging in travel independently	Legality markers
Determining beliefs and values independently	Relative maturity
Having developed greater consideration for others	Relative maturity
Having good control over emotions	Relative maturity
Recognising personal capabilities and shortcomings	Relative maturity
Accepting responsibility for the consequences of your actions	Relative maturity
Being capable of caring for children	Role transitions
Being committed to a long-term love relationship	Role transitions
Having had at least one child	Role transitions
Being married	Role transitions
Making lifelong commitments to others	Role transitions

Table 12. *Items from the CARES scale and their respective qualities*

Item	CARES quality
Being able to solve problems in my life	Cognitive maturity
Having knowledge and expertise	Cognitive maturity
Thinking about the bigger picture when solving problems	Cognitive maturity
Using my past experiences to make good decisions	Cognitive maturity
Feeling confident in the decisions I make	Cognitive maturity
Knowing that life is finite	sense of Ageing
Appreciating the time that I have in my life	sense of Ageing
Realising that I am ageing	sense of Ageing
Spending my time on things that are important to me	sense of Ageing
Knowing that I'm getting older	sense of Ageing
Having control over my life	self-Reliance
Acting according to my intentions	self-Reliance
Making my own choices without having to rely on others	self-Reliance
Feeling confident in my capabilities	self-Reliance
Being able to look after myself	self-Reliance
Knowing what I like	Eudaimonia
Doing things that make me happy	Eudaimonia
Respecting other people's opinions without changing my own	Eudaimonia
Living in alignment with who I am	Eudaimonia
Feeling confident in being who I am	Eudaimonia
Having true connections with others	Social convoy
Prioritising relationships that are important to me	Social convoy
Being satisfied with my social network	Social convoy
Having people in my life who understand and support me	Social convoy
Moving on from relationships that no longer serve me	Social convoy

Results

Figure 16. Correlations between age, education, income, subjective adult status, and attitudes towards adulthood
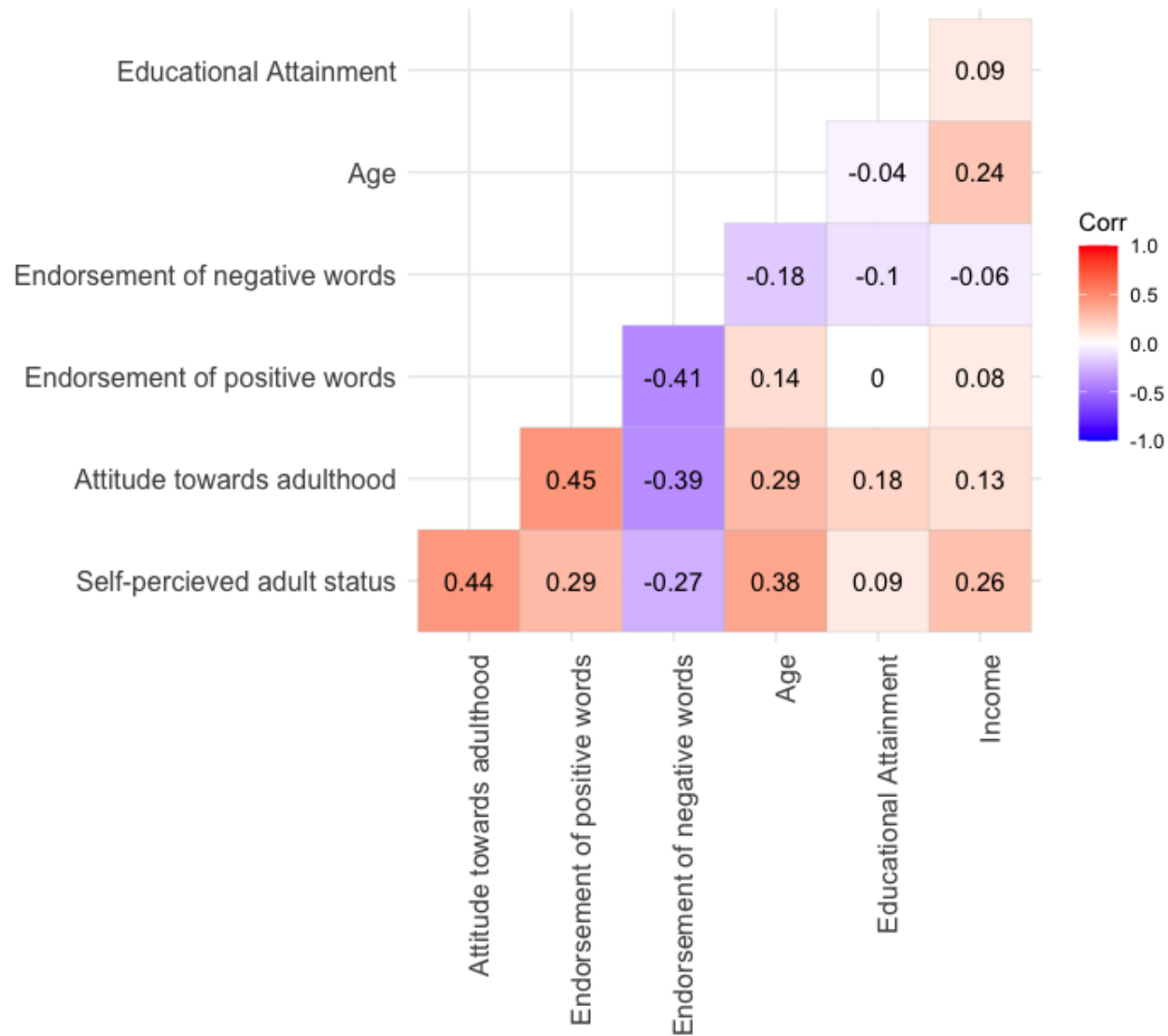
Table 13. *Endorsement of positive and negative words in the valenced attitudes towards adulthood scale*

		Endorsement	
Word	**Valence**	**n**	**%**
Versatile	Positive	657	91%
Interesting	Positive	638	88%
Frustrated	Negative	619	86%
Kind	Positive	591	82%
Assured	Positive	573	79%
Warm-hearted	Positive	560	78%
Self-controlled	Positive	557	77%
Self-conscious	Negative	548	76%
Warm	Positive	544	75%
Overcritical	Negative	530	73%
Admired	Positive	491	68%
Controlling	Negative	478	66%
Masterful	Positive	467	65%
Lively	Positive	463	64%
Hopeful	Positive	461	64%
Trusting	Positive	431	60%
Gentle	Positive	406	56%
Displeased	Negative	402	56%
Arrogant	Negative	395	55%
Unhappy	Negative	390	54%
Unhealthy	Negative	376	52%
Angry	Negative	345	48%
Free	Positive	331	46%
Intolerant	Negative	317	44%
Ill-tempered	Negative	316	44%
Unselfish	Positive	274	38%
Careless	Negative	223	31%
Unkind	Negative	204	28%
Unskilled	Negative	28	4%
Useless	Negative	15	2%

Table 14. Endorsement of items from the MoA and CARES scales to define adulthood.

Item	Subscale	n	SD	%
Accepting responsibility for the consequences of my actions	MoA relative maturity	568	0.40	79.55
Being financially independent from my parents	MoA independence	567	0.40	79.41
Paying for my own living expenses	MoA independence	564	0.41	78.99
Being able to look after myself	CARES self-reliance	545	0.43	76.33
Making my own choices without having to rely on others	CARES self-reliance	528	0.44	73.95
Being capable of running a household	MoA independence	513	0.45	71.85
Having control over my life	CARES self-reliance	503	0.46	70.45
Using my past experiences to make good decisions	CARES cognitive maturity	482	0.47	67.51
Living in alignment with who I am	CARES eudaimonia	479	0.47	67.09
Feeling confident in being who I am	CARES eudaimonia	477	0.47	66.81
Respecting other people's opinions without changing my own	CARES eudaimonia	455	0.48	63.73
Prioritising relationships that are important to me	CARES social convoy	452	0.48	63.31
Feeling confident in my capabilities	CARES self-reliance	447	0.48	62.61
Spending my time on things that are important to me	CARES sense of ageing	446	0.48	62.46
Appreciating the time that I have in my life	CARES sense of ageing	445	0.48	62.32
Being able to solve problems in my life	CARES cognitive maturity	444	0.49	62.18
Being capable of supporting a family financially	MoA independence	443	0.49	62.04
Determining my beliefs and values independently	MoA relative maturity	419	0.49	58.68
Thinking about the bigger picture when solving problems	CARES cognitive maturity	415	0.49	58.12

Item	Subscale	n	SD	%
Realising that I am ageing	CARES sense of ageing	412	0.49	57.70
Feeling confident in the decisions I make	CARES cognitive maturity	411	0.49	57.56
Recognising my personal capabilities and shortcomings	MoA relative maturity	402	0.50	56.30
Acting according to my intentions	CARES self-reliance	397	0.50	55.60
Knowing that I'm getting older	CARES sense of ageing	395	0.50	55.32
Moving on from relationships that no longer serve me	CARES social convoy	394	0.50	55.18
Having developed greater consideration for others	MoA relative maturity	392	0.50	54.90
No longer living in my parents' household	MoA independence	388	0.50	54.34
Having knowledge and expertise	CARES cognitive maturity	371	0.50	51.96
Having people in my life who understand and support me	CARES social convoy	368	0.50	51.54
Actively saving or planning for retirement	MoA independence	364	0.50	50.98
Being capable of caring for children	MoA role transitions	340	0.50	47.62
Doing things that make me happy	CARES eudaimonia	334	0.50	46.78
Knowing that life is finite	CARES sense of ageing	322	0.50	45.10
Planning and engaging in travel independently	MoA legality markers	317	0.50	44.40
Knowing what I like	CARES eudaimonia	305	0.50	42.72
Making lifelong commitments to others	MoA role transitions	296	0.49	41.46
Having good control over my emotions	MoA relative maturity	286	0.49	40.06
Being settled into a long-term career	MoA independence	284	0.49	39.78
Having true connections with others	CARES social convoy	263	0.48	36.83
Being satisfied with my social network	CARES social convoy	243	0.47	34.03
Being committed to a long-term love relationship	MoA role transitions	211	0.46	29.55

Item	Subscale	n	SD	%
Being employed full time	MoA independence	197	0.45	27.59
Having reached the age of legal adulthood	MoA legality markers	186	0.44	26.05
Having had at least one child	MoA role transitions	185	0.44	25.91
Having obtained a driver's licence	MoA legality markers	166	0.42	23.25
Being married	MoA role transitions	154	0.41	21.57
Having had sexual intercourse	MoA legality markers	106	0.36	14.85

Table 15. *Endorsement of subscales of the MoA scale.*

Subscale	Percentage endorsement
Independence	58%
Relative maturity	58%
Role transitions	33%
Legality markers	27%

Table 16. *Endorsement of subscales of the CARES scale.*

Subscale	Percentage endorsement
Self-reliance	68%
Cognitive maturity	60%
Sense of ageing	57%
Eudaimonia	57%
Social convoy	48%

Table 17. *Endorsement of MoA scale items by age*

Item	Scale	Percentage endorsement by age				
		All	18-29	30-45	46-59	60-77
Accepting responsibility for the consequences of my actions	Relative maturity	80%	79%	77%	84%	82%
Being financially independent from my parents	Independence	79%	82%	79%	80%	75%
Paying for my own living expenses	Independence	79%	82%	82%	75%	68%
Being capable of running a household	Independence	72%	71%	75%	70%	67%
Being capable of supporting a family financially	Independence	62%	58%	66%	59%	61%
Determining my beliefs and values independently	Relative maturity	59%	59%	57%	62%	60%
Recognising my personal capabilities and shortcomings	Relative maturity	56%	62%	54%	57%	47%
Having developed greater consideration for others	Relative maturity	55%	54%	56%	54%	56%
No longer living in my parents' household	Independence	54%	59%	55%	52%	43%
Actively saving or planning for retirement	Independence	51%	53%	53%	44%	50%
Being capable of caring for children	Role transitions	48%	39%	53%	50%	46%
Planning and engaging in travel independently	Legality markers	44%	54%	44%	41%	26%
Making lifelong commitments to others	Role transitions	41%	43%	42%	40%	38%
Having good control over my emotions	Relative maturity	40%	41%	43%	35%	38%
Being settled into a long-term career	Independence	40%	48%	41%	30%	31%
Being committed to a long-term love relationship	Role transitions	30%	28%	33%	26%	26%
Being employed full time	Independence	28%	33%	27%	27%	15%
Having reached the age of legal adulthood	Legality markers	26%	29%	26%	26%	17%
Having had at least one child	Role transitions	26%	19%	33%	24%	19%

Item	Scale	Percentage endorsement by age				
		All	**18-29**	**30-45**	**46-59**	**60-77**
Having obtained a driver's licence	Legality markers	23%	27%	23%	20%	19%
Being married	Role transitions	22%	18%	26%	18%	21%
Having had sexual intercourse	Legality markers	15%	11%	17%	20%	8%

Table 18. *Endorsement of CARES scale items by age*

Item	subscale	Percentage endorsement by age				
		All	18-29	30-45	46-59	60-77
Being able to look after myself	self-Reliance	76%	80%	76%	73%	76%
Making my own choices without having to rely on others	self-Reliance	74%	80%	73%	73%	64%
Having control over my life	self-Reliance	70%	77%	67%	69%	69%
Using my past experiences to make good decisions	Cognitive maturity	68%	73%	64%	69%	67%
Spending my time on things that are important to me	sense of Ageing	67%	68%	62%	59%	58%
Appreciating the time that I have in my life	sense of Ageing	67%	65%	63%	61%	53%
Realising that I am ageing	sense of Ageing	64%	54%	57%	60%	64%
Prioritising relationships that are important to me	Social convoy	63%	69%	61%	61%	64%
Feeling confident in my capabilities	self-Reliance	63%	60%	62%	65%	68%
Living in alignment with who I am	Eudaimonia	62%	73%	66%	64%	61%
Feeling confident in being who I am	Eudaimonia	62%	68%	65%	69%	65%
Being able to solve problems in my life	Cognitive maturity	62%	62%	63%	65%	53%
Thinking about the bigger picture when solving problems	Cognitive maturity	58%	59%	60%	56%	53%
Respecting other people's opinions without changing my own	Eudaimonia	58%	66%	64%	62%	63%
Feeling confident in the decisions I make	Cognitive maturity	58%	59%	55%	57%	64%
Acting according to my intentions	self-Reliance	56%	60%	56%	51%	50%
Doing things that make me happy	Eudaimonia	55%	61%	45%	40%	29%
Moving on from relationships that no longer serve me	Social convoy	55%	64%	57%	49%	38%
Having knowledge and expertise	Cognitive maturity	52%	56%	51%	48%	51%

Item	subscale	Percentage endorsement by age				
		All	18-29	30-45	46-59	60-77
Having people in my life who understand and support me	Social convoy	52%	61%	50%	47%	42%
Knowing that I'm getting older	sense of Ageing	47%	48%	56%	62%	63%
Knowing what I like	Eudaimonia	45%	50%	40%	41%	33%
Knowing that life is finite	sense of Ageing	43%	45%	44%	43%	57%
Having true connections with others	Social convoy	37%	45%	34%	34%	31%
Being satisfied with my social network	Social convoy	34%	39%	36%	26%	29%

Regression analyses

Table 19. *Regression model 1: Self-perceived adult status predicted by demographic*

characteristics (gender, education, income)

	Est.	5%	95%	t val.	p	
(Intercept)	2.92	2.70	3.15	21.59	0.00	
Gender (male)	0.05	-0.05	0.14	0.79	0.43	
Highest Education	0.05	0.01	0.10	1.92	0.06	*
Income	0.08	0.06	0.10	6.99	0.00	*

$(F(710) = 18.96, p < .001, R^2 = .07)$

Table 20. *Regression model 2: Self-perceived adult status predicted by demographic*

characteristics and age.

	Est.	5%	95%	t val.	p	
(Intercept)	2.34	2.11	2.58	16.73	0.00	
Age	0.02	0.02	0.02	9.82	0.00	*
Gender (male)	-0.01	-0.10	0.08	-0.12	0.91	
Highest Education	0.07	0.03	0.11	2.61	0.01	*
Income	0.06	0.04	0.08	4.93	0.00	*

$(F(712) = 40.22, p < .001, R^2 = .18)$

Age explains additional 11% of variance.

Table 21. *Regression model 3: Self-perceived adult status predicted by demographic characteristics, age, and social role attainment.*

	Est.	5%	95%	t val.	p	
(Intercept)	2.50	2.24	2.76	15.95	0.00	*
Age	0.02	0.01	0.02	7.24	0.00	*
Parent status (Parent)	0.19	0.08	0.30	2.88	0.00	*
Relationship status (Married)	0.04	-0.08	0.16	0.54	0.59	
Relationship status (Single)	-0.19	-0.30	-0.07	-2.70	0.01	*
Employment status (No employment)	0.07	-0.05	0.19	0.91	0.36	
Employment status (Part-time)	-0.11	-0.26	0.03	-1.28	0.20	
Gender (male)	0.02	-0.07	0.11	0.38	0.71	
Highest Education	0.07	0.03	0.11	2.67	0.01	*
Income	0.05	0.03	0.07	4.27	0.00	*

$(F(706) = 22.86, p < .001, R^2 = .22)$

Social roles explain an additional 4% of variance, parent status and relationship status significant predictors.

Table 22. *Regression model 4: Self-perceived adult status predicted by demographic characteristics, age, the attainment of social roles, and attitudes towards adulthood.*

	Est.	5%	95%	t val.	p	
(Intercept)	1.97	1.59	2.36	8.44	0.00	*
Age	0.01	0.01	0.02	5.28	0.00	*
Parent status (Parent)	0.16	0.06	0.26	2.60	0.01	*
Relationship status (Married)	0.02	-0.09	0.13	0.26	0.79	
Relationship status (Single)	-0.16	-0.26	-0.05	-2.47	0.01	*
Employment status (No employment)	0.08	-0.32	0.19	1.18	0.24	
Employment status (Part-time)	-0.08	-0.22	0.06	-0.94	0.35	
Gender (male)	0.00	-0.08	0.08	0.04	0.97	
Highest Education	0.03	-0.01	0.07	1.10	0.27	
Income	0.05	0.03	0.06	4.24	0.00	*
Attitude towards adulthood	0.24	0.18	0.30	6.99	0.00	*
Endorsement of positive words	0.06	0.01	0.11	1.94	0.05	*
Endorsement of negative words	-0.06	-0.10	-0.01	-2.06	0.04	*

$(F(703) = 28.43, p < .001, R^2 = .32)$

Attitudes towards adulthood explain additional 10% of variance.

Parent status only significant social role

4.8. Additional analyses: CARES factor analysis

Using the perceptions of adulthood study data (N = 722; age 18-77 years; M_{age} = 39.20, SD_{age} = 13.14), we assessed the effectiveness of the CARES scale through (a) correlations between CARES subscales; (b) measuring the internal consistency of the CARES subscales; and (c) factor analysis of the CARES scale.

Correlations

The CARES subscales were highly inter-correlated, but theoretically represent independent constructs. Their correlation likely reflects an underlying factor of psychological maturity which underpins the CARES taxonomy.

Figure 17. Correlation matrix for the five subscales of the CARES scale
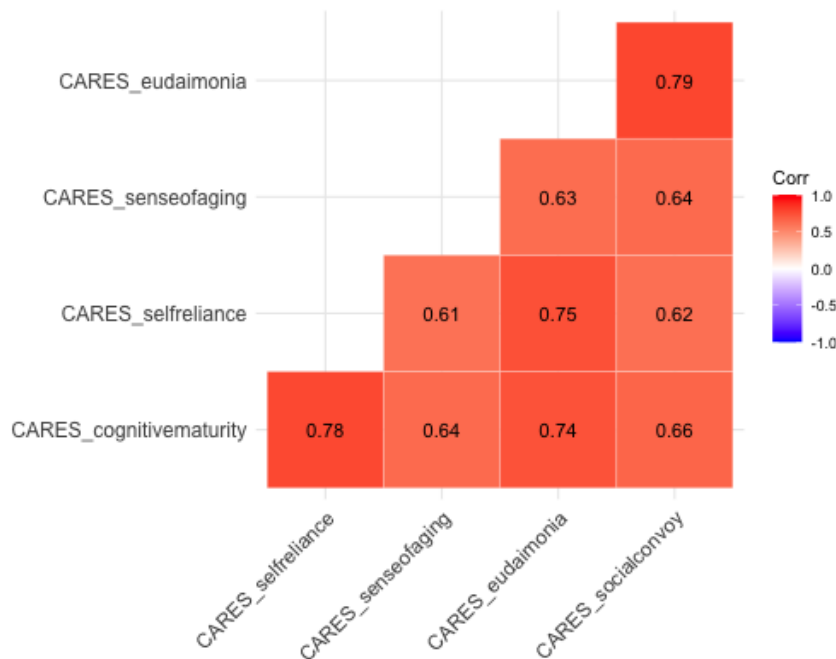
Internal consistency

All five CARES subscales had high Cronbach's alpha values, indicating strong internal

consistency, shown in Table 23.

Table 23. *Cronbach's alpha values for the five subscales of the CARES scale*

CARES subscale	α
Cognitive maturity	.82
Sense of Ageing	.78
Self-Reliance	.77
Eudaimonia	.80
Social convoy	.81

Factor analysis

We conducted exploratory and confirmatory factor analysis on the 25 items of the

CARES scale.

First, we ran parallel analysis to assess the number of factors which emerge in the

CARES scale for our data. The scree plot is shown in Figure 18. A visual evaluation of the

scree plot suggested up to four factors, but one large underlying factor. There were three

factors out of four with eigenvalues above 0.70.

Figure 18. *Scree plot for CARES scale*
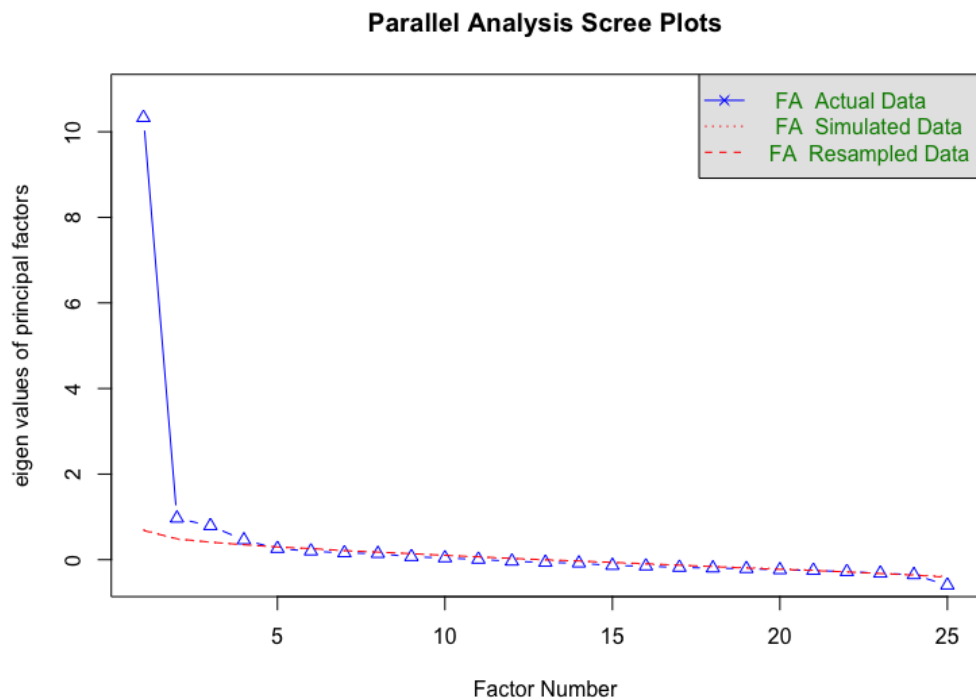
Exploratory Factor Analysis

We ran three Exploratory Factor Analysis (EFA) models based on the parallel analysis – a one-factor, a three-factor, and a four-factor model. The one-factor EFA accounted for 41% of the variance in the data, had TLI below 0.90 (TLI = 0.783), RMSEA above .08 (RMSEA = .097), and had a BIC value of -413.84. The three-factor EFA accounted for 51% of the variance, the TLI and RMSEA indicated a good fit (TLI = 0.914; RMSEA = .061), and the BIC value was -733.96, indicating that the three-factor model was a better fit for our data compared with the one-factor model. Finally, the four-factor EFA accounted for 53% of the variance, had a TLI and RMSEA indicating good fit (TLI = 0.914, RMSEA = .061), and had a BIC value of -733.96, suggesting that a four-factor model is the best fit for our data.

The four factors that emerge do not exactly match the five CARES domains, but can be interpreted as: (1) connection, a factor consisting of 15 items largely from the eudaimonia

and social convoy domains, (2) autonomy, a factor consisting of six items from the cognitive

maturity and self-reliance domains, (3) sense of ageing, consisting of two items from the

sense of ageing domain, and (4) sense of cognitive ageing, consisting of one item from the

sense of ageing domain. The fourth factor of sense of cognitive ageing had an eigenvalue

below 1.0, and only consisted of one item, ""Knowing that my life is finite", which had a

factor loading of 0.427. Since this factor had a low eigenvalue, and relatively low factor

loading of only one item, we decided to remove this factor from the model. The item

"Knowing that my life is finite" also loaded on to factor three, sense of ageing, with a factor

loading of 0.374. The resultant three-factor model for the CARES scale is shown in Table 24.

Table 24. *Factors and item loadings for the 3-factor model for the CARES scale*

| | EFA subscale | | |
| | WLS1 | WLS3 | WLS2 |
CARES item	(connections)	(autonomy)	(sense of ageing)
E2_dothingshappy	**0.827**		
S2_prioritiserelationships	**0.783**	-0.101	
S4_peoplesupport	**0.720**		0.139
S3_satisfiedsocialnetwork	**0.676**		
A4_spendtimewell	**0.638**	0.143	
S1_trueconnections	**0.630**		
E4_livinginalignment	**0.545**	0.225	
R2_actonintentions	**0.538**	0.198	
S5_moveonrelationships	**0.534**		
E1_knowlikes	**0.528**	0.223	-0.120
R4_confidentincapabilities	**0.526**	0.294	
A2_appreciatetime	**0.497**	0.160	0.115
E3_respectopinions	**0.483**	0.117	0.120
E5_feelconfident	**0.445**	0.373	
C5_confidentdecisions	**0.415**	0.380	
C4_experiencesdecisions	0.306	**0.399**	
C3_biggerpicture	0.270	0.340	0.206
A1_finitelife	0.198	0.143	**0.374**
R3_ownchoices	0.136	**0.520**	
C1_solveproblems		**0.779**	
R5_lookafterself		**0.669**	
R1_controllife		**0.668**	
C2_knowledgeexpertise		**0.558**	
A3_relaiseageing			**0.908**
A5_gettingolder			**0.881**

Confirmatory Factor Analysis

We also ran confirmatory factor analysis (CFA) on the CARES scale data using the three-factor structure identified in the EFA. The model fit was verging on acceptable as indicated by the CFI, TLI, and RMSEA values (CFI = 0.874, TLI = 0.861, RMSEA = .075). However, the RMSEA was significant (p < .001), and the SRMR indicated poor fit (SRMR = .070). The covariance between the two CARES factors of connection and autonomy was high (r = .845).

Finally, we ran a CFA using the theorised five-factor structure of the CARES framework (Wright & von Stumm, 2023a, 2023c). This model was a poor fit for our data (CFI = 0.20; TLI = 0.796; RMSEA = .091, p <.001; SRMR = .065). In this model, all factors had high covariances, between r = .756 and r = .984. Both models were not a good fit for the CARES scale data, and had high covariances, suggesting that the CARES scale is measuring one overall factor of maturity rather than distinct qualities. Further research is needed to confirm these findings and refine the CARES scale.

5. Integrative discussion

This thesis investigated the psychology of adulthood with three overarching aims. First, I aimed to assess the relative importance of the attainment of traditional 'adult' socio-demographic milestones – marriage, parenthood, and career – as defining characteristics of adult status today. My second aim was to identify psychological qualities of adulthood which have been neglected in previous models of adult development and compile them into a taxonomy of the psychology of adulthood. Third, I aimed to empirically investigate (a) whether people consider themselves to be adults, and the predictors of this subjective adult status, and (b) to assess whether adulthood is perceived as a positive or negative time of life. I addressed these three aims in three papers, and in this integrative discussion I explore four common themes which stem from the results of these studies: (1) The definition of contemporary adulthood; (2) A new perspective on adult development; (3) Subjective adult status and variations in feeling 'grown-up'; and (4) Adulthood as a positive time of life. I then outline the strengths and limitations of this thesis, and finally discuss future directions for research on the psychology of adulthood.

5.1. The definition of contemporary adulthood

Adulthood is traditionally defined by reaching the legal age of maturity, typically 18 or 21, or by the attainment of socio-demographic milestones such as marriage, parenthood, and career. However, these milestones are not as relevant for defining adulthood today as they once were, as young people now spend extended periods of time in education, struggle to achieve financial independence, and the average age of attainment of marriage and parenthood is delayed until the thirties (Clark, 2023; ONS, 2023a). Pathways to adulthood today are longer and more diverse compared with previous generations, and as a result adults place little emphasis on the socio-demographic milestones of marriage and parenthood to

define their adult status. Instead, previous research has found that young people, especially emerging adults (Aged 18-29 years; Arnett, 2000, 2015) use more individualistic and subjective criteria to define their adult status, such as "Taking responsibility for the consequences of my actions" and "Deciding on my beliefs and values independently" (e.g., Arnett, 1994, 1997, 2001, 2003; Beckert et al., 2020; Kuang et al., 2023; Molgat, 2007; Sharon, 2016; Sirsch et al., 2009; Vleioras, 2021). Findings from the markers of adulthood meta-analysis (paper 1) and the perceptions of adulthood study (paper 3) replicate this previous research, as psychological markers of adulthood were endorsed more frequently than socio-demographic milestones. The most frequently endorsed items to define adulthood in the perceptions of adulthood study were "Accepting responsibility for the consequences of my actions", "Being financially independent from my parents", and "Paying for my own living expenses", endorsed by 80%, 79%, and 79% of the sample respectively. In contrast, marriage and parenthood were endorsed by only 22% and 26% of the sample.

5.1.1. The relative importance of socio-demographic markers of adulthood

I explored the relative importance of the socio-demographic markers of marriage, parenthood, and career in both the markers of adulthood meta-analysis and the perceptions of adulthood study, the first and third publications included in this thesis.

The markers of adulthood scale meta-analysis (paper 1) synthesised 30 years of research using the markers of adulthood scale (MoA; Arnett, 1994, 1997, 2001) across a total of 17,465 participants from 40 independent samples. I derived meta-analytic estimates which indicated that marriage and parenthood were endorsed by less than a quarter of participants, but career was endorsed more than twice as often, by an average of 58% of participants. Meta-analytic estimates were independent of participants' age and country of origin. I replicated these results in the perceptions of adulthood paper (paper 3), showing that marriage

and parenthood were endorsed by 22% of participants, and parenthood by 26%, in a sample of 722 UK residents aged 18-77 years. Career was endorsed by 40% of participants in the perceptions of adulthood study. These results replicate previous work which showed that marriage and parenthood were among the least endorsed items to define adulthood in the markers of adulthood scale (e.g., Arnett, 2001; Bao et al., 2023; Kuang et al., 2023; Molgat, 2007; Obidoa et al., 2018; Settersten, 2007; Sharon, 2016; Sirsch et al., 2009).

Previous research also suggested that the endorsement of marriage and parenthood varied by participants' country of origin, suggesting that participants from non-WEIRD (Western, Educated, Industrialised, Rich, Democratic; Henrich et al., 2010) countries with more collectivist and traditional views endorse these traditional 'adult' socio-demographic milestones more than participants from more individualistic WEIRD countries (e.g., Badger et al., 2006; Nelson et al., 2004; Rankin & Kenyon, 2008; Sieter & Nelson, 2011; Zhong & Arnett, 2014). For example, research has shown that participants from China and India place greater emphasis on family obligations and consider the attainment of marriage and parenthood more important for adult status compared with US participants (Badger et al., 2006; Sieter & Nelson, 2011; Zhong & Arnett, 2014). We tested for country-level differences by running meta-regressions (paper 1) with country type (WEIRD or non-WEIRD) as a predictor of the endorsement of marriage and parenthood as markers of adulthood. We did not find supporting evidence for cultural variation in the endorsement of marriage and parenthood. We did find a significant effect of country type for the endorsement of career as a marker of adulthood, as the meta-regression analyses in paper 1 revealed that samples from non-WEIRD countries were more likely to endorse career as an important marker of adulthood than samples from WEIRD countries.

5.1.2. Career versus marriage and parenthood

Career emerged as a more relevant marker of modern adulthood compared with marriage and parenthood. This difference might be due to the increasingly normative delay of marriage and parenthood, meaning that these milestones do not become relevant until individuals reach their thirties. In contrast, career and employment are relevant for adults of all ages. Seventy-five percent of people aged 16 to 64 years old in the UK held a job in 2021 (Gov UK, 2022), so regardless of an adult's chronological age, marital status, or parent status, their daily lives are likely to include employment. Previous research has theorised that individuals choose markers of adulthood which are most relevant to them at the time, and over which they feel they have control (Sharon, 2016). According to this theory, marriage and parenthood would be endorsed mostly by adults who are around the average age of first marriage and parenthood, which in the UK is 31 years (Clark, 2023; ONS, 2023a). We found evidence for this pattern of endorsement in the perceptions of adulthood study (paper 3), as marriage and parenthood were endorsed by established adults (age 30-45 years) to a greater extent compared with all other age groups. Emerging adults (age 18-29 years) endorsed career more frequently than other age groups, suggesting that career is perceived as a more important marker for emerging adults than established, midlife, or older adults. Emerging adults are at the start of their employment journeys, making decisions which could shape their future careers, and may perceive marriage and parenthood as less relevant or further from their personal control, making career the more relevant marker of adulthood for emerging adulthood.

The results from our meta-analysis (paper 1) contest this pattern, as age did not emerge as a significant predictor of the endorsement of marriage and parenthood in the meta-regression analyses. However, the majority of publications included in the meta-analysis focused on emerging adults, aged 18-29 years. Only four out of 40 samples included participants aged

over 30 years old. In contrast, the survey sample I recruited and assessed on their perceptions of adulthood in paper 3 was aged 18-77 years, and 71% of the sample (n = 515) were over the age of 30. Thus, paper 3 had greater sensitivity to explore age differences in the endorsement of marriage, parenthood, and career as markers of adulthood.

Due to the cross-sectional nature of the data available for the meta-analysis (paper 1) and the survey data collected in the perceptions of adulthood study (paper 3), we cannot determine that the observed age differences reflect true age effects. In other words, we cannot say that when current emerging adults age and become established adults, they will begin to endorse marriage and parenthood as markers of adulthood to a greater extent. It could be that these differences reflect cohort effects – the emerging adults in our sample were born between 1992 and 2003, whereas the established adults were born between 1976-1991, and age differences could be due to generational or cohort effects as these two age groups likely had different experiences of adulthood. Societal trends such as increases in university attendance and declining rates of marriage and parenthood in the UK (e.g., Clark, 2023; ONS, 2012; Stripe, 2019; Watson, 2023), as well as the rising cost of living, likely contribute to cohort effects which could impact the markers that individuals associate with adult status regardless of their age. Longitudinal research is required to disentangle age and cohort effects in the perceptions of adulthood.

An alternative explanation for the relative importance of career for adult status compared with marriage and parenthood is that career is the more differentiated marker of adult status. Modern adulthood is characterised by increasing individuality, especially among emerging adults (Arnett, 2000, 2015). Career represents individual accomplishment in a way that marriage and parenthood do not, as marriage and parenthood are more comparable across people than career. For example, if two people both have children, they would both identify as a parent, whereas if two people have a career, one may identify as a singer and the other a

chef, or any other occupation. Furthermore, career is distinct from marriage and parenthood because both marriage and parenthood inherently involve at least one other person (e.g., a spouse, a partner, or a child). While individuals work with others during their careers, achievements in employment are generally considered to be individual and attributed to one person's ability or success, although there are distinct individual differences in claiming individual career success, for example gender differences (Sandberg, 2015). Finally, career is a more subjective and intangible marker of adulthood compared with marriage and parenthood, and so career may appeal to individualistic emerging adults as a subjective and self-defined marker of their adult status, compared with the prescribed and objective social markers of marriage and parenthood.

The observed age differences in endorsement of marriage, parenthood, and career for adult status suggest that the characteristics used to define adulthood change over time – whether that be as a result of age or generational differences. Understanding how contemporary adulthood is defined is essential for supporting people with their identity development and well-being both in the transition to adulthood, and throughout adult development. Research should continue to assess markers of adulthood using both the MoA scale (Arnett, 1994; Norman et al., 2021) and the novel CARES scale, which I developed as part of my PhD to capture psychological development in adulthood.

5.2. A new perspective on adult development

Previous research, and the results from paper 3 of this thesis, show that contemporary adulthood is defined using psychological markers such as "Taking responsibility for the consequences of my actions" (e.g., Arnett, 1994, 1997, 2001, 2003; Beckert et al., 2020; Kuang et al., 2023; Molgat, 2007; Sharon, 2016; Sirsch et al., 2009; Vleioras, 2021). However, there are still gaps in our knowledge of the psychological change that occurs during

adulthood. To capture a more comprehensive picture of psychological development in adulthood, I compiled the CARES taxonomy (paper 2), a model describing adulthood using five psychological qualities: Cognitive maturity (having confidence in one's knowledge); sense of Ageing (realising that time in life is limited); self-Reliance (feeling in control of one's own life); Eudaimonia (living in alignment with oneself); and Social convoy (the network of social relationships in life). The five CARES qualities are all grounded in empirical research and have been associated with adults' well-being and mental health. Together, the CARES qualities map aspects of adult development that have been overlooked in previous research: cognitive (cognitive maturity), emotional (eudaimonia), motivational (self-reliance and sense of ageing), physical (sense of ageing), and social (social convoy) development.

The aim of the CARES taxonomy was to identify and bring together psychological qualities of adulthood which have been neglected in previous models of lifespan development, which focused too heavily on the age-graded attainment of socio-demographic milestones. The CARES taxonomy emphasises that adulthood is a rich, dynamic, and rewarding phase of life that is not defined by being a spouse, parent, or employee.

5.2.1. The development and empirical exploration of CARES

I developed the CARES taxonomy according to Borsboom and colleagues' (2021) theory construction model. In the CARES paper (paper 2), I completed the first three steps of the theory construction model by identifying phenomena of interest – the five CARES qualities – then compiling a prototheory before developing this into a formal theory, resulting in the CARES taxonomy presented in paper 2. The fourth stage of the theory construction model, tests of the adequacy and effectiveness of CARES, was initiated in the perceptions of adulthood paper, the third publication in this thesis.

INTEGRATIVE DISCUSSION

For the perceptions of adulthood paper, I developed the CARES scale, a 25-item measure indexing the extent to which participants agree that the CARES qualities of psychological development are defining of their adult status. The CARES scale was derived from the CARES taxonomy and consists of five items for each of the five CARES qualities. Participants responded to the prompt "This defines adulthood for me" for each item on a Likert scale of 1 (strongly disagree) to 5 (strongly agree). Each subscale of the CARES scale (i.e., each quality of CARES) had high internal consistency, shown by a Cronbach's alpha value between .77-.82, suggesting that each subscale was measuring one underlying concept. In other words, results showed that each subscale of the CARES scale measured the relevant CARES quality.

We did find that the CARES qualities were highly correlated with each other (r values were between .61 to .78, see Figure 17), although the CARES qualities theoretically represent independent constructs. It is likely that their high correlation reflects one underlying factor of psychological maturity which underpins the CARES taxonomy.

To further test the effectiveness and applicability of the CARES scale, I conducted factor analysis as part of the additional analyses in paper 3. Results from exploratory factor analysis (EFA) suggested that a three-factor model was the best fit for data from the perceptions of adulthood study. While this does not exactly match the theoretical five factor structure of the CARES taxonomy, there are similarities between the theorised model and the data-driven model. The three-factor model which resulted from EFA consisted of the factors: (1) connections, largely encompassing items reflecting eudaimonia and social convoy; (2) autonomy, consisting of items reflecting cognitive maturity and self-reliance; and (3) sense of ageing, consisting of three out of five of the sense of ageing items. I also ran confirmatory factor analysis (CFA) on the perceptions of adulthood study data to assess the fit of the three-factor model and the theorised five-factor CARES model. Results indicated that neither

model was a good fit for our data, and covariances between factors were high for both models, suggesting that the CARES scale in its current iteration is measuring one factor of psychological maturity rather than five distinct qualities. Further research is needed to refine and validate the CARES scale further, and test its effectiveness for both defining, and measuring, contemporary adulthood.

5.2.2. CARES as defining characteristics of adulthood

I used the CARES scale in the perceptions of adulthood study (paper 3) to assess the extent to which participants endorsed items reflecting the five CARES qualities as defining characteristics of adult status. All five CARES qualities were endorsed as defining characteristics of adulthood by a larger proportion of the participants than those who endorsed socio-demographic milestones. Self-reliance and cognitive maturity were the most endorsed CARES qualities at 68% and 60% of participants, respectively. Sense of ageing and eudaimonia were each endorsed by 57%, and social convoy was endorsed by 48%. By comparison, the MoA scale domains of role transitions, including marriage and parenthood, and legality markers, including reaching the legal age of adulthood, were endorsed by only 33% and 27% of the same sample.

Results from the CARES scale in paper 3 suggest two core pillars of contemporary adulthood: (a) the ability to live independently and (b) alignment with, and confidence in, the self. These themes are reflected in the five most frequently endorsed items from the CARES scale, which were: (1) "Being able to look after myself" (self-reliance), endorsed by 76% of participants; (2) "Making my own choices without having to rely on others" (self-reliance), endorsed by 74% of participants; (3) "Having control over my life" (self-reliance), endorsed by 70% of participants; (4) "Using my past experiences to make good decisions" (cognitive maturity), endorsed by 68% of participants; and (5) the items "Living in alignment with who

I am" (eudaimonia) and "Feeling confident in being who I am" (eudaimonia) which were each endorsed by 67% of participants.

These core pillars of living independently and feeling aligned with and confident in oneself relate to concepts in existing models of psychological development. For example, Erikson's psychosocial model captures the crisis of identity vs role confusion in adolescence, pertaining to building one's own personal identity (Erikson, 1963). Also, one of the core themes of emerging adulthood is identity exploration as young adults explore their personal values and beliefs, and learn more about themselves (Arnett, 2000, 2015). Finally, established adulthood is characterised by actualisation, which relates to self-confidence and self-understanding in adulthood (Mehta & LaRiviere, 2022). The CARES taxonomy brings together these aspects of independence and the self to describe psychological development across all ages of adulthood.

5.3. Subjective adult status and variations in feeling 'grown-up'

Another aim of this thesis was to assess whether people considered themselves to be adults and explore the predictors of this subjective adult status. Previous research suggests that subjective adult status varies by age, the attainment of socio-demographic milestones, and cultural background. For example, studies have found that people in their thirties report feeling more 'adult' than those in their twenties (e.g., Arnett, 2001; Sirsch et al., 2009). Also, previous research shows that individuals who are married or have children report higher subjective adult status compared with single and childfree individuals (Axxe et al., 2022; Zhong & Arnett, 2014). Finally, research has shown that samples from non-WEIRD countries report feeling more 'adult' than those from WEIRD countries (e.g., Badger et al., 2006; Obidoa et al., 2018; Seiter & Nelson, 2011). Our results replicate some of these previous findings, providing evidence for the effect of age and socio-demographic milestone

attainment on subjective adult status. However, we found no evidence for cultural differences in subjective adult status between WEIRD and non-WEIRD countries.

First, we found that older people reported feeling more 'adult' than younger people in both the markers of adulthood meta-analysis (paper 1) and in the perceptions of adulthood paper (paper 3). Our studies were the first to quantify this effect of age on subjective adult status: we found that age accounted for 11% of the variance in subjective adult status in the perceptions of adulthood paper, and in the markers of adulthood meta-analysis we calculated that those aged 30 and above were 1.7 times more likely to report feeling adult compared with emerging adults aged 18-29. Since our data were cross-sectional, we cannot determine whether the effect of age on subjective adult status is due to age effects (e.g., people feel more adult as they get older), or cohort effects (e.g., older generations feel more adult than younger generations due to structural or economic differences in their experience of adulthood).

Second, we replicated the finding that the attainment of marriage and parenthood predicts subjective adult status in the perceptions of adulthood study (paper 3). The finding that subjective adult status is associated with the attainment of socio-demographic milestones of adulthood conflicts with our other results which showed that marriage and parenthood were not endorsed as markers of adult status. This disparity between expectations of adulthood (i.e., characteristics endorsed to define adulthood) and the experience of adulthood (i.e., the predictors of subjective adult status) could be explained by underlying factors which were not measured in these studies. For example, entry into parenthood is associated with increased responsibility, which could lead people to feel more grown-up, even if they do not consciously associate their entry into parenthood with feeling more like an adult.

Third, our studies did not replicate previous findings that people from non-WEIRD countries felt more adult than those from WEIRD countries. Previous research showed that

participants from India, Ghana, Nigeria, and China reported feeling more adult than participants from the US, explained by variation in traditional cultural beliefs (e.g., Badger et al., 2006; Obidoa et al., 2018; Seiter & Nelson, 2011). However, in our markers of adulthood meta-analysis (paper 1) we found no effect of country type (WERID or non-WEIRD) on subjective adult status. This could reflect global trends, as rates of marriage and childbirth are declining across the globe (Ortiz-Ospina & Roser, 2020; Stone, 2019). This globalisation in the delay of attaining the traditional socio-demographic milestones of adulthood could mean there are fewer cultural differences in how adulthood is perceived than there were in the past.

A novel finding in this thesis was the effect of attitudes towards adulthood on subjective adult status. Attitudes towards adulthood – whether a person views adulthood as a positive or negative time of life – have not been investigated in any previous studies to my knowledge. Having a positive attitude towards adulthood significantly predicted subjective adult status after age, income, education, and the attainment of socio-demographic milestones had been accounted for. The strength of this prediction was notable – attitudes towards adulthood explained 10% of the variance in subjective adult status, a similar magnitude to the variance explained by chronological age (11%). The fact that age predicts adult status and older people feel more grown-up is relatively intuitive and supported by previous research (e.g., Arnett, 2001; Sirsch et al., 2009). However, positive attitudes towards adulthood predicting subjective adult status, independent of age, is a novel finding. Attitudes towards adulthood represent a malleable predictor of adult status– we could manipulate and change people's attitudes towards adulthood to alter their subjective adult status, which cannot be done with someone's age. Subjective adult status has previously been associated with well-being (Kim et al., 2022), and albeit requiring replication and additional data, this finding suggests an avenue for interventions to improve well-being through boosting subjective adult status.

5.4. Adulthood as a positive time of life

Adulthood was once regarded as life's pinnacle but has come to be seen as a time of routine, stagnation, and dissatisfaction by many (e.g., Hoare, 2020; Mehta et al., 2020). The culmination of work and family responsibilities in adulthood has been referred to as the 'career-and-care-crunch' (Mehta et al., 2020), or the 'rush hour of life' (Knecht & Freund, 2016), bringing connotations of stress, burden, and unhappiness. However, research shows that adulthood is also seen as a rewarding time of identity exploration, evolution, and self-actualisation (e.g., Arnett, 2015; Mehta & LaRiviere, 2022). In the perceptions of adulthood study (paper 3), I developed the attitudes towards adulthood scale to assess whether people viewed adulthood as a positive or negative time of life. Results indicated that people had a positive attitude towards adulthood overall, and that attitudes towards adulthood varied by age and the attainment of socio-demographic roles.

Older people felt more positive towards adulthood compared with younger people. This could be self-protective, as feeling positive about one's current situation and life phase is likely to boost well-being and promote successful ageing (e.g., Ingrand et al., 2018; Jenull et al., 2023). Alternatively, these variations by age could represent cohort effects. Older adults in the perceptions of adulthood study – those aged 60-77 at time of assessment – were born between 1944-1961, a time of stability and prosperity for many (Blatterer, 2007). This older cohort likely had a very different experience of adulthood compared with the youngest cohort who were born from 1992-2003 and were 18-29 years of age at time of assessment, The younger cohort, the emerging adults in our study, entered adulthood between 2010 and 2021, amidst economic and political uncertainty, cost of living crises, and a global pandemic. These events surely impacted the younger cohort's experience of, and expectations of, adulthood, and could contribute to emerging adults having more negative views of adulthood compared with older adults. From these data we cannot know for sure whether any age differences

reflected true age effects or cohort effects, but it is likely that these two cohorts had vastly different experiences of adulthood.

We also found an effect of the attainment of socio-demographic roles on attitudes towards adulthood. Namely, people who worked in full-time employment, were married, and had children had more positive attitudes towards adulthood after controlling for income and education levels. This finding suggests that even those who are experiencing the career-and-care-crunch have a positive attitude towards adulthood, aligning with recent qualitative findings where participants described established adulthood as a "prime time" of life and reported that they felt "really good" and "solidly happy" during this time (Mehta & LaRiviere, 2022). In short, the career-and-care-crunch is not all negative. However, we cannot speculate from these cross-sectional data the direction of this relationship – in other words, we do not know whether people feel more positively towards adulthood as a result of working full-time, marrying, or having children, or whether people who feel more positively towards adulthood are more likely to work full-time, marry, or have children. It could be that there are underlying individual differences not measured in these studies which explains the association between positive attitudes towards adulthood and the attainment of full-time work, marriage, and parenthood, for example personality, intelligence, or individual beliefs and values.

5.5. Strengths and Limitations

This thesis has several strengths, including a robust meta-analysis of the past 30 years of research on the markers of adulthood scale, as well as a strong primary data collection and analysis of 722 individuals in the UK using multiple statistical methods. The perceptions of adulthood study (paper 3) was the first to explore the defining characteristics of adulthood across a wide age range, from 18-77 years, where previous research rarely assessed

individuals over the age of 30. Our results revealed that the pattern of endorsement of psychological characteristics to define adulthood holds for all age groups and is not unique to emerging adults.

Another strength is that three scales were developed and validated as part of this study – the subjective adult status scale, the attitudes towards adulthood scale, and the CARES scale – showing how this programme of research has improved measurement for the psychology of adulthood. These scales are now available on the Open Science Framework (OSF) for other researchers to use.

Throughout the PhD I have adhered to open science practices: I preregistered papers 1 and 3 ahead of data collection, pre-printed all manuscripts, and made all data and analysis scripts publicly available on the OSF to promote accessibility, reach, and impact of this research. Finally, and perhaps most importantly, this thesis produced the CARES taxonomy, a comprehensive description of contemporary adulthood mapping the cognitive, emotional, social, motivational, and physical elements of contemporary adult development and providing a new perspective on psychological development in adulthood.

However, this thesis is not without its limitations. Here I describe five limitations of this body of work. First, this research was cross-sectional: the data available for the markers of adulthood meta-analysis (paper 1), and the data collected for the perceptions of adulthood paper (paper 3) were cross-sectional in nature. Longitudinal data would be ideal for exploring change and stability in perceptions of adulthood over time and answering burning questions such as whether the observed variations in perceptions of adulthood by age represent age effects or cohort differences. Longitudinal data would also allow for the investigation of the impact of life events such as marriage and parenthood on perceptions of adulthood. However, longitudinal data is extremely costly both in terms of money and time and is well outside of the scope of a PhD project.

Second, there are limitations regarding to cross-cultural research in this thesis. In paper 1, the distinction between WEIRD and non-WEIRD countries, while common in psychological research (e.g., Henrich et al., 2010; Hendriks et al., 2019), is largely arbitrary and does not represent the best way to assess cultural differences. By grouping by country type, countries with distinct social and cultural norms, such as China, Ghana, and Poland, were grouped together under the label of non-WEIRD countries. This classification results in a loss of clarity and lack of detail (Anedo, 2012). The countries that were classed as non-WEIRD in paper 1 have unique cultures and likely have different expectations and experiences of adulthood. Unfortunately, the amount of available data by country provided insufficient statistical power for country-level grouping in the meta-regression. Therefore, classifying countries as WEIRD or non-WEIRD was the best option in this case to provide a broad cross-cultural comparison.

Paper 3 also had limitations regarding cross-cultural research pertaining to generalisability. Because the sample was focused on UK residents, results are not necessarily generalisable. However, multiple concepts were investigated for the first time in the perceptions of adulthood study, including attitudes towards adulthood and the CARES taxonomy. Future research could investigate these concepts in different populations and compare those reported in the perceptions of adulthood study.

Third, there is so far little empirical evidence for associations between perceptions of adulthood and well-being. One study exists which shows that subjective adult status predicts well-being in a sample of 1,166 cancer patients aged 18-39 years in the US (Kim et al., 2022). This study represents evidence that subjective adult status was associated with one measure of well-being in one specific population. This study used the Mental Health Continuum short form scale (Keyes, 2002) to assess psychological, emotional, and social well-being. However, research needs to replicate these findings using (a) alternative measures

for well-being and mental health and (b) large, generalisable samples, to elucidate the relationship between subjective adult status and well-being.

Fourth, in the perceptions of adulthood study (paper 3) I assessed subjective adult status and attitudes towards adulthood, but both of these measures are likely to be confounded by factors that were not captured in this study such as trait well-being, mental health, intelligence, and personality. For example, subjective adult status could be influenced by the personality trait of conscientiousness. Conscientiousness is defined by dutifulness and achievement striving (Costa & McCrae, 1995), so those who are conscientious may be more likely to identify as adults, especially if they view this as an achievement or a socially acceptable response. There could also be an association between attitudes towards adulthood and well-being, with those who have more positive trait well-being feeling more positively towards adulthood. The relation between perceptions of adulthood and other constructs is unknown and requires further research.

Finally, this thesis was limited by not measuring the attainment of psychological characteristics of adulthood. Psychological characteristics were endorsed most frequently to define adulthood in the perceptions of adulthood study (paper 3) – characteristics such as "Taking responsibility for the consequences of my actions" and "Being able to look after myself" were endorsed by more than three-quarters of participants. In contrast, the socio-demographic roles of marriage and parenthood were endorsed by less than a quarter of participants in both the perceptions of adulthood study and the markers of adulthood meta-analysis. However, our results showed that despite the lack of endorsement as defining characteristics of adulthood, marriage and parenthood significantly predicted subjective adult status. Considering that psychological characteristics were highly endorsed to define adulthood, it is reasonable to assume that if a person believes they have attained characteristics such as "Taking responsibility for the consequences of my actions", they may

report feeling more adult. However, we did not measure the attainment of psychological characteristics in the MoA or CARES scales, which could explain more of the variance in subjective adult status than the attainment of socio-demographic milestones.

The attainment of psychological characteristics is less tangible and varies more by context compared with the attainment of socio-demographic roles. For example, if you become a parent, you will be a parent for the rest of your life – such socio-demographic roles lend themselves to dichotomous binary measurement (e.g., "Are you a parent?" "Yes/No"). In contrast, psychological characteristics of adulthood are vague, variable, and difficult to capture. For example, the extent to which an individual thinks that they take responsibility for the consequences of their actions may vary depending on where they are (e.g., at work or at home), or who they are with (e.g., with colleagues or with their parents). Thus, the attainment of psychological characteristics of adulthood is difficult to quantify and was out of the scope of this thesis. However, this represents a key area for future research on the psychology of adulthood.

5.6. Future Directions

Following this PhD project, I aim to continue investigating the psychology of adulthood and expanding this body of research. Over the past three years while I have been working on this PhD, I have presented aspects of my work at five conferences: Research Students in Education Conference, 2021; American Psychological Society (APS), 2021; British Society for the Psychology of Individual Differences, 2021; European Conference on Personality, 2022; and most recently APS 2023. I have also engaged in public outreach through the university of York's PhD Spotlight competition, for which I won the first place and people's choice awards. I am in the process of publishing the three papers presented in

this thesis, and have made all data and materials, including scales and measures, publicly available on the Open Science Framework.

Through my outreach work, there is research currently underway which will extend this thesis. First, following my presentation at the APS conference in 2023, I have collaborated with Shao-Chun Chuang, a PhD student from National Chung Cheng University in Taiwan, and we are working together to translate the CARES scale into Chinese to collect cross-cultural data and assess whether the CARES qualities are considered important for adult status in a non-WEIRD sample. Second, my supervisor Sophie von Stumm and I have been in touch with the research team of E-Risk, a longitudinal cohort study in the UK (https://eriskstudy.com/). We have pitched the CARES scale to be included in the age 30 data collection sweep for the E-Risk dataset which takes place in 2024. This would provide a wealth of data using the CARES scale, from which we could map the nomological network of CARES – that is, the associations between the CARES qualities and related constructs such as personality traits and intelligence. We would also be able to assess whether age, gender, education, or income impact endorsement of the CARES qualities.

In addition to these ongoing investigations, I have identified three areas for future research which would enrich and inform understanding of the psychology of adulthood.

First, future research should assess how perceptions of adulthood vary in different populations. As well as increased research on cross-cultural perceptions of adulthood, research could explore perceptions of adulthood across social classes. How people perceive adulthood – whether they feel like adults, whether they consider adulthood to be a positive time of life, and what characteristics they associate with adulthood – are likely influenced by socio-economic status (SES). Young people from advantaged, high-SES backgrounds likely have many choices and resources available to them as they enter adulthood, so they will be able to take advantage of the flexibility and freedom of emerging adulthood and explore

many opportunities as they move through this life phase. On the other hand, individuals from low-SES backgrounds not only have fewer choices available to them, but they also have fewer resources which makes adulthood more challenging and further exacerbates existing inequalities (Schoon, 2010; Settersten, 2007). For example, emerging adults from low-SES backgrounds spend less time in further education, and are less likely to receive financial support from their parents, compared with those from high-SES backgrounds (Schoon et al., 2004; Schoon, 2010; Pensiero & Schoon, 2019), meaning that those from a low-SES background are likely to enter the workforce earlier and have more responsibilities and less security, stability, and support to deal with the uncertainty of adulthood. People from different backgrounds have different experiences of adulthood, and likely perceive adulthood in vastly different ways. Empirical research is needed to quantify these differences and identify populations that would benefit from support with the transition to, and journey through, adulthood.

Second, future research should investigate associations between perceptions of adulthood and well-being and mental health in adults using empirical data. Assessing how subjective adult status, attitudes towards adulthood, and the CARES qualities, are correlated with measures of well-being and mental health would identify targets for future interventions to improve well-being in adults by altering their perceptions of adulthood. If an association between perceptions of adulthood and mental health and well-being is identified, further research could assess the predictive power of perceptions of adulthood for mental health and well-being. Understanding the extent to which perceptions of adulthood impact well-being in an empirical sample is invaluable for research into the psychology of adulthood. The current PhD project did not have the scope to also investigate well-being and mental health associations, but this will be one of the first avenues I pursue in future research.

Finally, qualitative research would enrich our understanding the psychology of adulthood. Asking adults to describe what is important for adult status in their own words could facilitate the identification of further qualities of adulthood to add to the CARES taxonomy. Also, qualitative research could tease apart the conflict identified in this thesis between the expectation and experience of adulthood by interviewing people and enquiring about whether socio-demographic characteristics were important for their status as an adult before and after life events such as marriage and parenthood.

5.7. Conclusion

Adulthood is the longest phase of life that brings about rich and dynamic development: adults' decisions, experiences, and responsibilities shape their identities and in turn, adults shape their communities, advance society, and nurture the next generation. At present, the psychology of adulthood is understudied in developmental psychology, which as a field has largely focused on growth in childhood and decline in old age. Previous psychological models of lifespan development defined adulthood through the attainment of a set of socio-demographic milestones such as career, marriage, and parenthood. But these milestones, and the models built upon them, have lost relevance for young people today who increasingly delay or forego traditional 'adult' social roles.

This thesis by publication showed that the socio-demographic milestones of marriage and parenthood, once thought to be the cornerstones of adult life, do not define adulthood for the majority of people today (paper 1). The CARES taxonomy (paper 2) provided an alternative description of contemporary adulthood based on psychological development across five qualities: *C*ognitive maturity, sense of *Ageing*, self-*R*eliance, *E*udaimonia, and *S*ocial convoy. Finally, this thesis demonstrated that attitudes towards adulthood are positive

overall, and that perceptions of adulthood vary systematically by age and the attainment of traditional 'adult' socio-demographic milestones (paper 3).

Overall, this thesis provides a new taxonomy to study the psychology of adult development and explores individual differences in perceptions of adulthood. Future research building on the current findings could help to support emerging adults during the transition to adulthood and improve adults' well-being and identity development. By introducing a new perspective on adult development, I hope to inspire future research on the psychology of adulthood and emphasise the value and importance of this area of research for developmental psychology.

6. References

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