Exploring the relationship between materialistic values and low subjective wellbeing. What are the mediating and moderating variables?

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Thesis Declaration Form

UCL Doctorate in Clinical Psychology

I confirm that the work presented in this thesis is my own. Where information has been delivered from other sources, I confirm that this has been indicated in the thesis.

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Overview

1: Conceptual Introduction: Contains a review of the literature on the relationship between materialistic values and low wellbeing, with a clear examination of gaps in said literature. Following this the aims for the empirical paper are set out and key constructs in the empirical paper are defined. Lastly the chosen methods for the empirical paper are described, with clear justifications for and considerations of these choices

2: Empirical Paper: Briefly details the literature which was considered when conceiving of the thesis project. The research aims are stated clearly, namely to investigate the potential moderating and mediating variables of the relationship between materialism and wellbeing. Clear hypotheses are stated, followed by a detailed account of the method, a secondary data analysis, and statistical analyses used, a structural equation model. The results are discussed in terms of the wider literature with particular attention paid to the novel finding that universalistic values moderate the relationship between materialism and low wellbeing.

3: Critical Review: I reflect on my process of conducting the thesis project and how it has affected my thinking of research as a whole. I discuss the parallels between materialism and the world of research and discuss how the statistical method I had chosen often times made me feel disconnected from the participants I was researching.

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Impact Statement

Academic Research: The findings described below provide a significant addition to the literature on the study of materialism and wellbeing. In addition the work provides interesting avenues for future research. It has demonstrated for the first time that the association between materialistic values and poor wellbeing is moderated by conflicting values, a concept which could be explored in greater depth. This confirms previously hypothesised, but never tested, concepts in the materialism literature while also challenging a hypothesis in the value literature; namely the hypothesis that conflicting values would lead to lower wellbeing.

Future research may way want to examine more closely the relationship between materialistic values and other value systems to see if they interact in a way that may be helpful or damaging to wellbeing. Furthermore, the Millennial Cohort Study (MCS), where this present project accessed its data, may now want to include specific measures of materialism as the data described below has demonstrated the potential the MCS has for research in this area.

Outside Academia: Practitioners who support and treat people suffering from depression may find the results of this project useful. It provides support that an individual's wellbeing is improved with engagement with intrinsically motivated behaviours i.e. attempts at spiritual growth over material gain. When using behavioural activation (BA), an existing intervention for depression, it may be useful to hold these concepts in mind when helping a person re-engage with their activities of daily life.

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I would like to thank my two supervisors for this project, Dr. Stephen Butler – who gave me the confidence to do something a bit odd and different, and Dr. Marc Tibor – whose insightful comments and encouragement were invaluable in keeping me focussed.

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Part 1: Conceptual Introduction

Reviewing the Literature on the Association between Materialism and Subjective Wellbeing: What might mediate and moderate that relationship?

Section 1: Introduction:

The values held by individuals in Western society have, according to generational research, become increasingly materialistic (Kasser, 2011; Twenge & Kasser, 2013). It has been argued that this shift in value orientation has resulted from an increase that society places on the importance and value of achieving financial success (Kasser & Kanner, 2004). These messages in society come from a variety of places that socialise an individual to be materialistic including parents, peers and the media (Lachance, Beaudoin & Robitaille, 2003). The last sixty years has seen a large increase in research interest in materialism, a trend occurring in tandem with the growing importance and presence of materialism in our everyday life (Ger & Belk, 1996). The findings of this research have consistently shown that holding materialistic values is associated with poorer mental health and poorer wellbeing; see Dittmar, Bond, Hurst & Kasser (2008) for a review. The mechanisms underlying this relationship, however, are not well understood. Although a number of explanatory mechanisms and theories have been posited to explain the reported association, there is a relative paucity of literature that systematically tests these theories. In particular, to the author's knowledge, no research has -to date- examined the potential moderators or mediators of the association between high materialism and poor wellbeing.

This project aimed to answer some of the questions raised by previous research, namely what, if anything, moderates and mediates the relationship between materialism and low wellbeing. Secondary analyses of a pre-existing data-set were undertaken to explore potential moderating and mediating variables of the association using structural equation modelling (SEM). Specifically, the role of that conflicting value systems may have in moderating the materialism/wellbeing relationship and if materialism may partially mediate the known relationship between life stressors and poor wellbeing. This review will begin by discussing the relevant literature on the relationship between wellbeing and materialism. It will also discuss a number of theories that may explain this relationship, and further describe how these theories informed the development of the model tested by the research project,

namely the hypothesised mediator and moderator. The terms and variables used throughout the study will be clearly defined and the review will conclude with a discussion of the projects chosen methodology, Structural Equation Modeling, focusing on the strengths and weakness of said method.

To effectively review the literature several search terms were used that captured research that investigated; the development of research into materialism, the definitions used by the literature of materialism and wellbeing and the relationship between materialism and low wellbeing. The data base PsychInfo was used with the following search terms: (Materialism) AND ('Materialism wellbeing) AND (Materialism well*) AND (Materialistic).

Section 2: Hypothesised Mechanisms Underlying the Association between Wellbeing and Materialism

The negative relationship between wellbeing and materialistic values is likely to be a complex one with numerous mediators and moderators. It is outside the scope of the current project to investigate all these possibilities however a reading of the wellbeing and materialism literature provides two clear avenues of investigation namely; the role of conflicting values on wellbeing (moderator) and the use of materialistic behaviours as a coping strategy (mediator). Discussed below is the relevant literature on wellbeing, the hypothesised link with materialism and the various theories that informed the hypothesised mediator and moderators.

2.1Wellbeing and Materialism

Research consistently demonstrates that people who judge themselves to be materialistic and lead lives in concert with materialistic values are more likely to be depressed, self-report lower wellbeing and are generally more dissatisfied with life than those with differing values

(Mueller et al. 2011; Burroughs & Rindfleisch, 2002; Lambert Fincham, Stillman, & Dean 2009). This finding has been seen across the literature and cross culturally. In a recent longitudinal study conducted in China, the authors found that those who reported higher levels of materialistic values met significantly fewer basic psychological needs and experienced significantly higher rates of depression (Wang, Liu, Jiang & Song, 2017). A meta-analysis examining the relationship between holding materialistic values and individual wellbeing, which included 175 studies, overwhelmingly supported the relationship discussed above, reporting an effect size of -.19 (Dittmar, Bond, Hurst & Kasser, 2014). The focus on self-interest and consumption has also been shown to damage the quality of interpersonal relationships where relationships become shorter term and higher in conflict (Kasser and Ryan, 2001). It has been suggested that a perceived gap between a person's aspirational or idealised future and their actual current living status may account for this relationship (Kasser & Kanner, 2004). The 'perceived gap' hypothesis is supported by research that has examined materialism in people from lower socioeconomic status (SES). There is a consistent finding that adults and children from a lower SES report higher levels of materialism and lower levels of wellbeing, suggesting that individuals with the largest gap between themselves and an idealised image are most affected (Nairn et al. 2010). Inglehart (1990) describes how psychological needs become more "salient" to an individual when they feel unable to meet these needs. If an individual with financial difficulties also highly values materialism they may struggle to meet their 'needs' and as such their wellbeing may suffer. Yet if the 'perceived gap; hypothesis was true we would expect to see people from a higher SES, i.e. individuals who can consistently achieve their financial needs and material desires, to suffer no impact to their wellbeing as a result of their values. The research however finds the opposite. Despite materialists from higher SES backgrounds generally achieving their goals of continually consuming and acquiring more objects than people lower SES backgrounds their success in this domain this does not translate into a greater sense of worth or life satisfaction. For example, Martoss and Kopp (2012) found that people who were driven by traditionally materialistic aims and who subsequently achieved them reported

lower life satisfaction than people who had less financially driven aspirations. Kasser and Ahuvia (2002) investigated if an environment that outwardly encourages people to achieve their materialistic aims may mediate the relationship between low wellbeing and materialism. They investigated the association between attitudes and wellbeing in business students', hypothesising that this environment would produce materialistically driven people with higher degrees of life satisfaction. However, they found that those who held the strongest values towards wealth and power acquisition reported significantly lower self-actualisation and happiness and higher rates of psychopathology (Kasser & Ahuvia, 2002). In contrast a study that investigated over 12,000 individuals who had entered university in 1976 found that, overall, those who had reported higher levels of financially driven values and behaviour reported significantly higher overall life satisfaction (Nickerson Schwartz, Diener & Kahneman, 2003). When specific domains of life-satisfaction were investigated, however, a different picture emerged. Measures that recorded job satisfaction consistently showed significantly higher levels of satisfaction and were associated with higher incomes. Other life satisfaction measures were consistently negatively correlated with higher financially driven behaviour. Social and romantic relationship satisfaction was significantly lower, as were reported physical health and overall family life. Thus, in summary, the findings of this study suggested that whilst people who had jobs that allowed them to achieve their materialistic aims were greatly satisfied with their work, they nonetheless experienced detrimental effects to many other areas of life.

Given the research discussed above a clear idea emerges; there is something about the nature of materialistic values themselves that is damaging to wellbeing. Discussed below in more detail as these ideas and how they informed the current projects research aims.

2.2 Potential Moderator - Conflicting Values

2.2.1 Valuing Materialism

Materialistic values emphasise that the path to a satisfying and happy life is through acquiring material goods and personal wealth and they focus primarily on the increase of self-status through financial or object acquisition (Kasser, Ryan, Couchman & Sheldon, 2004). These materialistic values lead people to behave in a way that increases opportunities to acquire said wealth and material goods (Richins & Dawson, 1992). For example one may choose a career based on the potential financial reward over choosing a career that allows more time to be spent with their family as an individual feels they will derive more satisfaction from well-paid employment. Schwartz (2012) argues that there are ten value types, and individuals have a complex and dynamic value system, where behaviour that allies with one type of value may then conflict with another. For example, valuing power and engaging in behaviours that aid a person in achieving power may conflict with behaviours that align with benevolence.

As the research discussed above suggested having materialistic values appears to be damaging to wellbeing. At face value such a consistent finding may seem surprising as there exists a wealth of existing literature that suggests living a life in line with one's values results in improved well-being and mental health, with Acceptance and Commitment Therapy developing out of this concept (Hayes, Luoma, Bond, Masuda & Lillis, 2006).An individual's value system influences how a person acts, makes decisions and orientates them to what Schwartz (1992) described as 'goal directed behaviour'. It is by examining the resulting behaviour of holding materialistic values, and the consequences of said behaviour, that we may start to understand the link between materialism and poor wellbeing.

2.2.2 Self-Determination Theory and Wellbeing

Within the wellbeing literature Self-Determination Theory (SDT) provides a conceptual framework to understand the possible antecedents of positive and negative wellbeing (Ryan & Deci, 2017). SDT posits that, alongside basic physical needs, positive psychological

wellbeing requires the meeting of basic psychological needs (Deci & Ryan, 1985). SDT termed these needs 'growth tendencies' and have been identified as; a sense of autonomy over behaviors and goals, competence through learning and mastering new skills and connection to other people through social relationships (Ryan & Deci, 2000). Growth tendencies, SD theorists argue, are achieved through intrinsically motivated behaviours, behaviours which are internally motivated and allow for spiritual growth and development (Ryan & Deci, 2017). Intrinsically motivated behaviors contrast with extrinsically motivated behaviours which seek a tangible reward for their completion such as wealth or recognition (Deci & Ryan, 1985; Ryan & Deci, 2000). Deci and Ryan (2000) argue that it is through intrinsically motivated behaviours an individual can achieve their growth tendencies which in turn results in positive psychological wellbeing. In contrast extrinsically motivated behaviours undermine, or prevent, an individual's ability to meet their basic psychological needs therefore leading to poorer psychological wellbeing. Materialistic values, which drive a person to achieve wealth and status, result in purely extrinsically motivated behaviours (Richins, 2017).

Research into the relationship between wellbeing and intrinsic/extrinsic motivators appears to support the concepts described by SDT. A meta-analysis found that people driven by extrinsic motivators reported significantly less enjoyment, and interest in their activities (Deci, Costner & Ryan, 1999). Furthermore, the life satisfaction and positive wellbeing associated with intrinsic motivation for work has shown to greatly diminish when greater financial, i.e. extrinsic, rewards are offered for the same role (Kasser et al. 2007). Extrinsic motivators appear not to provide basic psychological needs and even diminish the positive benefits associated with any task. Furthermore, research has shown that the preponderance of extrinsic motivators may cause an individual to neglect several important psychosocial needs (Tsang, Carpenter, Roberts, Frisch & Carlisle, 2014). An individual motivated largely by the promise of extrinsic rewards either places less importance on, or has less time to develop, their growth tendencies (Tsang et al. 2014).

While extrinsic motivations may fulfil some basic needs in the short term research suggests they ultimately lead to poorer wellbeing through two mechanisms. 1) They are inherently less fulfilling than intrinsic motivators and do not achieve the necessary growth tendencies and 2) they prevent, or lessen, engagement with behaviours that would achieve the necessary growth tendencies.

2.2.3 Motivation and Materialism

An individual's value system informs how a person behaves as it orientates them to goal directed behaviour which reflects their values (Schwartz, 1992). If an individual values wealth, for example, they may choose a job that grants additional money over greater leisure time. As such a person's values will largely influence if their behaviour is intrinsically or extrinsically motivated and, as argued by SDT, will therefore affect their wellbeing. Materialistic values can be conceptualised as prioritising power, wealth and status (Inglehart, 1981, see section 3.1 for a detailed discussion of this conceptualisation). Materialistic values, therefore will lead to behaviours which seek to enhance the self and are by their nature extrinsically motivated (Richins, 2007). Therefore it could be argued that materialism results in poorer wellbeing due the inability of materialistic behaviours to meet an individual's basic psychological needs. Research into the relationship between materialistic values and SDT's proposed 'growth tendencies' supports this hypothesis. Individuals who self-report highly valuing materialism will respond to a lack of autonomy, competence and relation to others with increased materialistic behaviours, which counter intuitively, depresses their ability to meet these basic needs (Kasser, 2003; Norris, Lambert, DeWall & Fincham, 2012; Tsang et al 2014). Norris et al. (2012) found that behaviour driven by materialistic values were related to a deficit in perceived social relationships. They found that while, in the short term, mood improved with the acquisition of goods it quickly returned to baseline levels with the basic need, relation to others, remained unmet.

Intrinsically motivated behaviours, however, are borne from universalistic values (Schwartz, 1992) and refer to values which focus on "self-transcendence" (Koltko-Rivera, 2006). Values which endorse "self-transcendence" encourage behaviours that seek self-development and greater connection with others, otherwise described as 'growth tendencies' (Deci & Ryan, 2017). If materialistic values do not lead to behaviours which allow a person to achieve their 'growth tendencies' but universalistic values do it is possible that having both materialistic and universalistic values may moderate the negative impact observed in the materialism/wellbeing relationship. To this author's knowledge no research has yet investigated this.

A person's value system influences the way in which they seek to achieve their needs and materialistic values appear unable to achieve basic psychological needs be. From this three predictions can be made: (1) people who have high rates of materialistic values will have unmet psychological needs; (2) the use of materialistic values to meet said needs creates a vicious circle as a person is unable to meet their needs and therefore becomes increasingly materialistic as a solution; (3) values which encourage intrinsically motivated behaviour, such as those endorsed by universalism, are needed to achieve basic psychological needs. It is currently unclear how these differing value systems may interact.

2.2.4 Materialism, Religion and Competing Values

Little research exists that has specifically examined how universalistic values may impact wellbeing and no research on how universalistic values may interact with materialistic ones (although such an interaction has been hypothesised, see Richins & Dawson (2002)). However the research on Religion, which shares many similar value concepts with universalism, provides an interesting parallel for this review.

Religious belief, it can be argued, necessitates an adherence to a particular doctrine or value system (Hunt & Vitell, 2006). While an individual may interpret and practise this

doctrine in an idiosyncratic way, at their core, religions inform and guide people in ways to live their life. Although it is beyond the scope of this introduction to summarise and group every religion's value system it is possible to examine the four largest religious systems, Christianity, Islam, Hinduism and Buddhism (Pew Research, 2017), and describe their general approach to life values. All consider the core elements of materialism, i.e. self-enhancement, to be against the core of their value system and over the last 50 years various religious leaders from all the major religions have criticised materialistic values (Pace, 2013). As such examining how religious values interact with materialistic values may give an insight into the impact of conflicting value systems on wellbeing.

Schwartz and Huismans (1995) conducted a meta-analysis of research that investigated the relationship between religiosity, measured by simple yes or no questions, and an individual's value system, using Schwartz's (1992) value circumplex. Religious values, they argued, emphasised community, selflessness and conservatism. As such, they predicted that religiosity would negatively correlate with values focusing on self-enhancement (power, wealth, hedonism) and more positive correlations would be seen with self-transcendence and conservation values (universalism, tradition, security) and this was their finding. For conservation, a value which endorses safety, conformity and tradition, they found a .59 correlation with religiosity and a -.39 correlation for hedonistic values. Schwartz and Huisman's (1995) study lacked cross-cultural validation, however, as their sample was purely on western religions, namely three variations of Christianity and Judaism. Since their initial publication however, the findings have been replicated cross-culturally in various religious samples. Kusdil and Kagitcibasi (2000) investigated Turkish Islamic teachers and found a similar sized correlation and a meta-analysis of studies examining the relationship between religiosity and Schwartz's value circumplex found that individuals from Christian, Islamic and Jewish communities around the world endorsed conservationist values and placed low importance on hedonistic values (Saroglou, Delpierre, & Dernelle, 2004).

The literature on religion and values appears to support the theory that religious belief provides a value framework that people adhere to and operate within. Of particular interest is that while each religion differs in the importance they place on specific values there appears to be some consistency with religious beliefs conflicting with hedonistic values. Of additional interest is the relationship between religion and subjective wellbeing. As discussed above, materialism and wellbeing are negatively correlated, such that high materialism predicts poor wellbeing whilst religion and wellbeing show a reversed pattern of association. Thus, whilst interest in this field has dwindled in recent years, there is large body of literature that purports to show a positive association between wellbeing related to religiosity. In a review of the factors associated with wellbeing Dolan, Peasgood and White (2008) examined the literature on religion and wellbeing. They suggested that religion can act as a protective factor to stressful life events such as bereavement or job loss, mitigating some of their negative impact on a person's wellbeing. The authors noted that the category of religion (monotheist, eastern etc) had little impact on the benefit to subjective wellbeing, suggesting there is a general benefit to religious belief that is independent of the religion's specific doctrines. Contemplating the mechanisms of this protective aspect, Ellison (1991) argued that religion acts as a protective factor against stressful life events through increased social integration spiritual growth, a definition similar to those of "self-transcendence" and the concept of 'growth tendencies' (Koltko-Rivera, 2006) .

The values associated with materialism, those of self-enhancement, contrast with those espoused by religion, those of self-transcendence (Schwartz, 1992; 1995). As discussed above western society in particular has become more materialistic and as such religious values, once holding a dominant position in Western culture and influencing societal norms has come into direct conflict with materialism's value doctrine (Roccas, 2005). Religion's socialising and the various teachings are no longer the dominant social force in society with a materialistic culture arguably having greater influence. These competing, and, arguably, diametrically opposed, value systems may offer insight into the

relationship between materialism and poor wellbeing. Not all who hold materialistic values suffer lower wellbeing. It is possible that people with strong competing values, such as those provided by religion, are protected from the negative impact of materialism. In a study examining the impact of Buddhist beliefs on materialistic values Pace (2013) found that stronger Buddhist values mediated the strength of materialism, i.e. the stronger you held Buddhist principles the less materialistic you were overall. This study provides an interesting insight into the relationship between materialism and religion; however, it presented values as static and unchanging, in conflict with the Rockeach's (1972) values theory, which suggests values are fluid.

Materialistic values result in behaviours which seek to achieve materialistic goals and it has been argued these goals are inherently unsatisfying and lead to poorer wellbeing (Deci & Ryan). If materialistic values are indeed damaging to wellbeing due to their inability to meet basic psychological needs then it is possible that holding conflicting values, which allow a person to achieve their basic psychological needs, will moderate the negative impact materialistic values has on wellbeing. To this author's knowledge there has been no research that has examined the impact of conflicting values on the relationship between materialistic values and subjective wellbeing.

2.3 Materialism as a Mediator between Life Stressors and Low Wellbeing

To date all research exploring materialistic values and the impact on wellbeing has utilised either cross sectional or simple correlational studies. Materialism has not been explored as a potential mediator between wellbeing and other variables. In the following section I will discuss the potential of materialism to act as mediating variable between a known relationship, that of low wellbeing and on-going life stressors. I will start with a discussion of the existing literature on the known relationship, focussing on the experience of low income and experiences of deprivation. I will then go on to discuss the mechanisms

with which materialism may form a part of this relationship, namely the way it influences social comparisons and how it alters individual's response to stress.

2.3.1 Low Income and Wellbeing

Income inequality in the Western world is a well-recognised economic phenomenon that has been worsening over the last 60 years (Piketty, 2008). Wealth and capital is increasingly pooling in an ever decreasing number of hands, which in turn increases the disparity between the wealthiest members of a nation and the poorest. In the UK the top 20% of earners (with an average wage of £88, 800) are earning twelve times more than the poorest 20% (Office for National Statistics, 2018). Interest in the relationship between Income inequality and subjective wellbeing began in earnest in the 1970s with the publication of two Israeli communities that differed substantially in their income (Morawetz et al. 1976). One community had developed an egalitarian economic structure while the other had a more traditional hierarchical structure. The authors reported that the two communities reported significantly different rates of wellbeing stating that the more unequal community reported lower scores on measures of life satisfaction and happiness. The authors stated that more research was needed and since that time a wealth of literature has been produced finding similar results (Schneider, 2016). Research has consistently shown that individuals who judge themselves to be financially worse off than friends or society at large report lower wellbeing (Usui, Keil & Durig, 1985; Tommes, 1986; Blanchflower and Oswald, 2004; Ferrer-i-Carbonell, 2005), known in the literature as the reference income effect (Boyce, Brown & Moore, 2010). The relationship, however, is a complex one with some research finding a positive impact on wellbeing of inequality a negative impact, and no impact (see Ngamaba, Panagioti, & Armitage, 2018 and Howell & Howell, 2008 for reviews). The research over the last 50 years suggests there are factors that appear to mediate the relationship between economic deprivation and wellbeing. In a study of low income neighbourhoods in America Ludwig and colleagues (2012) found that environments with

high crime rates, low levels of education and health care was a much stronger predictor of low wellbeing than low income. Ludwig et al. (2012) also found that when people re-located to a neighbourhood with more social supports i.e. less socially deprived but with the same median income as the area they left, the impact on wellbeing vanished.

2.3.2 Managing Stress with Materialism

It has been hypothesised that materialism may be used as a way of coping with difficult life events that cause personal disruption and unpleasant emotions (Burroughs & Rindfleisch, 1997). Consumption and materialistic behaviours have been shown to increase when a person experiences a sense of powerlessness in their environment and may be used as way of mitigating anxiety or as a method of exerting some form of control (Daun, 1983; Arndt, Solomon, Kasser & Sheldon, 2004). In addition research has found that materialistic behaviours are used as a way for people to reduce their feelings of uncertainty or self-doubt (Chang & Arkin, 2002). Adolescents in particular show much higher incidences of materialistic values and behaviour if their parents have divorced (McAlexander, Schouten & Roberts, 1993). Furthermore adolescents appear to use material goods as way of reducing their experience of loneliness (Gentina, Shrum, & Lowrey, 2018). In a direct example Zhou & Gao (2008) found that money acquisition was used by people to reduce experiences of both psychological and physiological pain. It's clear that materialism can be used as a way to mitigate the pain felt from difficult experiences. However, research has suggested that while materialistic values may reduce stress in the short term it fails to combat the source of the problem, leading to long term difficulties such as problems forming relationships and higher incidence of psychopathology (Gentina et al. 2018; Zhou & Gao, 2008; Somer, & Ruvio, 2014).

Research has shown that individuals from lower income backgrounds report higher rates of materialistic values then people with higher incomes (Belk, Ger, & Askegaard,

2003). In a study of low income families in Sau Paulo, Ponchio and Aranha in Brazil (2008) found that families would place themselves in considerable levels of debt, and as a result endure psychosocial distress, in order to achieve their materialistic aims. Thus, holding materialistic values predicts engaging in materialistic behaviour irrespective of income (Watson, 2003). Nonetheless, the impact of holding such materialistic values may differ according to the extent to which the individual is able to achieve materialistic goals (Roberts & Clement, 2007; Nickerson et al. 2003). Research on materialism in adolescents showed that life satisfaction was negatively affected if the adolescents were less financially able to acquire the items they wanted, relative to wealthier adolescents (Fournier & Guiry, 1993). In a study incorporating people from a range of SES backgrounds La Barbara and Gurhan (1997) found that high income moderated the impact of materialistic values on wellbeing.

Considering the research discussed above is possible materialistic values impacts the way an individual reacts to, and copes with, ongoing life stressors. More materialistic people respond to stress with materialistic behaviours e.g. purchasing objects as way of soothing themselves. Given the increased rate of materialistic values in people from lower SES it is possible that they use materialistic strategies at higher rates as a way of coping with increased negative life events. As discussed materialistic behaviours may offer brief benefits to a person but ultimately, due to their extrinsic nature, result in lowering of wellbeing. As such it may be expected that materialistic values partially mediate the relationship between the experience of on-going life stressors and low wellbeing.

Section 3. Defining the Research Project's Constructs

3.1 Materialism

3.1.2 Materialism as a personality Structure

The literature on materialism has conceptualised materialism in two distinct ways; namely either as a personality trait or as part of a person's value system. Materialism existed as purely philosophical concept until concept the early 1980s. Materialism research developed by Russel Belk and had its theory rooted in personality development and self-conceptualisation. Belk (1985) considered materialism to be a second order personality trait constructed from four distinct personality traits: possessiveness, non-generosity and envy (Belk, 1985), with preservation of the status quo i.e. conformity added following cross-cultural research (Ger & Belk, 1996). Materialism was defined by Belk as the degree of importance the individual placed on their possessions. It was hypothesised that item and wealth acquisition were driven by the need to further develop an individual's identity and Belk (1988) proposed that the objects owned and sought by an individual represented an extension of the self, forming a core part of their identity. Through object and wealth acquisition, Belk theorised, a person is able to present an image of themselves through their possessions, a process named 'the extended self' (Belk, 1984). 'The Materialism Scale' (MCS) (Belk, 1984; Ger & Belk, 1984) was developed as an attempt to measure these traits. Although initially used widely in materialism research the validity of the MCS was questioned (Rumdin, 1990; Richins & Dawkson, 2002). Although testing demonstrated determined adequate convergent and discriminant validity (Rahman, 2018), the construct validity of the MCS was less clear, with researchers suggesting it simply measured broader personality traits. Sharpe and Ramaniah (1999) suggested in their research that Belk's (1984) materialism scale was simply a measure of different personality profiles as opposed to a measure of a unique construct. They found that those who scored highly on the materialism trait also scored highly on Neuroticism from the five-factor model of personality. Those who scored lowly on materialism were significantly more agreeable and open, as measured by the five-factor model (Sharpe & Ramaniah). In a study that conducted a factor analysis on the MCS found that it did not meet any "goodness of fit" indicators and determined it was not measuring a unique construct (Ellis, 1992). Importantly, Belk's conceptualisation and

measurement of materialism as a personality trait lacks construct validity. As such Belk's conceptualisation has fallen out of use in the literature as has the MCS.

3.2.2 Materialism as a Value

More recent research has conceptualised materialism as a learned value as opposed to an innate personality trait (Richins & Dawson, 1995). Values, as they relate to human behaviour, are learned constructs that apply across situations, orient and direct our behaviour to specific goals and are internally ranked by importance (Rokeach, 1973; Schwartz & Bilsky, 1987). Values, and their relevance to the research question, are discussed in greater depth later in this review. Conceptualised within the framework of values, materialism can be described as a collective term for a subset of a person's value system and personal ambitions (Richins & Dawson, 1995). It is defined in the literature as a focussing of one's energy and time on goals that seek to achieve money, objects and status (Inglehart, 1981) and there has been a large increase in research supporting this conceptualisation.

Western economies increasingly place importance on encouraging economic growth through consumption and this importance is mirrored in Western media which tends to endorse a materialistic lifestyle (Piketty, 2014; Goldberg, Gorn, Peracchio & Bamossy, 2003). As a result, the values associated with materialism have permeated nearly every aspect of western life such that the pursuit of happiness and self-satisfaction are encouraged through status increase and object ownership (Brewer, 2013; Elphinstone & Critchley, 2016). Researchers have argued that the influence of a consumption based economy combined with a material focussed media has socialised people to be more materialistic (Lachance et al. 2003). As western economies have grown, greater emphasis has been placed on the importance of these values and this has led to changes in citizen's views towards, and relationship with, materialism. Previous research has demonstrated that the last 60 years has seen a shift in people's values with increasing importance placed on

accumulating wealth. For example, a study that interviewed over nine million university students' regarding their attitudes from 1960 to 2009 demonstrated a sharp increase on the importance placed on finance acquisition (Twenge, Campbell & Freeman, 2012). From 1972 to 1984 being "very well off financially" increased in ranking of importance to individuals by over 30%. When published these attitudes were measured again with the same increase of 30% being observed. The authors noted that simply being "comfortable financially" was outranked by being "very well off", suggesting an increase in importance of having money for more than the basic needs (Twenge et al, 2012). This finding was replicated by Twenge and Kasser (2013) who examined if the temporal changes in materialistic values were associated with cultural shifts in society. They found that the frequency with which materialistic values were endorsed and the strength of importance placed on materialistic values rose substantially in the 1970s, peaking in the early 1980s and remaining consistently high until the late 2000s after which data collection halted. The increase in materialistic attitudes was argued by the researchers to be due to societal changes (Twenge et al, 2012). They noted that a combination of economic instability with a large proportion of a nation's economy focussed on consumption resulted in individuals endorsing more materialistic values (Twenge et al. 2012). As the societies economy, over the 40 years studied, became more attenuated to consumption so did the populace. In addition they found that materialistic role models, and increased exposure to advertising encouraging consumption, significantly increased the likelihood that a child would place a high priority on materialistic values. In a review of materialistic influences on adolescents Lachance et al. (2013) found that peer and media socialisation most strongly predicted materialistic values. As generations have become socialised to materialistic values they have since become parents and passed these values to their children through socialisation (Rindfleisch, 1994). This socialisation circle has led to a situation where one might argue that it is impossible, in western society, to avoid the influence of materialistic values.

High levels of consumption are available to nearly everyone, of varying degrees, on the economic spectrum and people are exposed every day to thousands of adverts encouraging consumption (Burroughs & Rindfleisch, 2002). A process of 'standard normalisation' where people's relative experience of wealth and success becomes normalised, resulting in people feeling dissatisfied with the status quo drives further consumption (Ritzer & Jurgenson, 2010). The research discussed above supports the conceptualisation of materialism as value that is learned through socialisation. This definition is the one used by this review throughout the research project. The Material Values Scale (MVS) (Richins, 1994) is considered the gold standard for measuring materialistic values. It measures the strength of materialistic values through an 18 item self-rated, five point Likert scale questionnaire. Richins and Dawson (1992) identified three key components of materialism that are measured by the MVS. First, acquisition centrality, the relative life importance that an individual places on acquiring possessions. Second, acquisition as the pursuit of happiness, referencing how closely linked a person believes their personal happiness and owning goods to be. Thirdly, possession-defined success, where a person indicates how successful they believe themselves to be based on the possessions they have accrued (Richins and Dawson, 1992). Although over two decades old the MVS has repeatedly been shown to be a valid and reliable measure of materialism across a number of settings and importantly for the current research project the MVS has been validated for use with children and adolescents (Dittmar et al. 2014, Cole, Wright, Sirgy, Kosenko, Rahtz & Meadow, 2015; Opree, Buijzen, van Reijmersdal & Valkenburg, 2011). Multiple shorter versions of the MVS have been developed including three and six item measures with each demonstrating high construct validity (Richins, 2004). This project uses the definition first established by Richins and Dawson (1992) of materialism as a value and when designing the statistical analysis was heavily informed by the MVS.

3.2 Subjective Wellbeing

Wellbeing is a loosely defined concept within the literature and is often used as an umbrella term to capture subjective feelings of mood, physical and mental health and general feelings towards life (Diener, Suh, Lucas & Smith, 1999). Recent work has attempted to be more specific, describing wellbeing as the "quality and state of a person's life" a description now widely used in the literature (Maggino, 2015). Despite these advances in describing wellbeing there is no agreed gold standard measure within the literature resulting in large variability in the ways researchers measure and describe wellbeing (Layard, 2010; Linton, Dieppe & Medina-Lara, 2016). In their review of 99 self-report wellbeing measures Linton et al. (2016) found there was considerable heterogeneity in how wellbeing was measured with many overlapping yet distinct constructs. Linton et al. (2010) concluded that, amongst the measures they reviewed, no one measure was superior to another and the choice of measure should be dependent on which construct a researcher is trying to examine, experiences of affect or life satisfaction for example. However research into the various posited constructs of wellbeing have demonstrated a lack of discriminant validity (Goodman, Disabato, Kashdan & Kauffman, 2018). Factor analysis of various latent wellbeing constructs have determined a high correlation between them reporting effect sizes ranging from .76 to .90 (Goodman et al. 2018). As such while there is a large variety of wellbeing measures, informed by various theories and descriptions of wellbeing, they tend to measure largely the same constructs despite ostensibly appearing to measure different ones (Goodman et al. 2018). The main variability that is of concern to researchers, therefore, is the strength of the measure being used and the quality of research being conducted as opposed to the validity of the term "wellbeing." For the purposes of the present review wellbeing will refer to an individual's overall feelings towards their life, unless otherwise specified.

Section 4: Consideration of Methods:

4.1 Research Aims

The present project had one distinct aim, namely to better understand the association between materialistic values and low wellbeing. As such it was decided that examining potential mediators and moderators of the association would expand the knowledge of that relationship (see review above). In addition it was decided that a simple correlational study would not suitably add to the literature and therefore a statistical approach which would allowed for more complex associations to be explored was chosen.

4.2: Method Overview

The research project will use structural equation modelling (SEM) in order to test its hypothesised models. It will use a confirmatory factor analysis, known as a 'Strictly Confirmatory' approach, to determine construct validity of several proposed variables, known as the measurement model, and will then estimate hypothesised relationships between said variables, known as the structural model. Regression coefficients variables will be generated to estimate how much variance seen in one variable can explain variance in another. Following identification of the variance between said variables the hypothesised moderating and mediating impact of additional variables will be estimated through regression.

4.3 Strengths of Structural Equation Modelling

SEM use has seen a large increase in usage in psychological and other social science research over the last 20 years primarily due to ability of SEM to examine relationships between unobservable variables termed latent variables (Tomarken & Waller, 2005). For the purposes of this present project it is able to confirm the existent and validity of a latent variable through factor analysis of multiple measures. The present project proposes several latent variables namely; materialism, universalism and wellbeing. The proposed variables are unlikely to be captured by a single measure due to, as discussed above, comprising of

multiple, interrelated constructs (Richins, 1994; Schwartz, 1992). Following this SEM allows for complex relationships between these latent variables to be estimated in a way that simple regression would be unable to do (Tomarken & Waller, 2005). These complex relationships are able to be estimated within a single model that would otherwise require multiple regression analyses and therefore reduces the chance of type 1 error.

SEM generates several statistics termed "model fit indices" which indicate how well the estimated model "fits" to the data. While no clear consensus exists on the threshold to which these indices must meet to be considered a "good" fit there are recommendations which the literature attempts to follow (Barret, 2007; Bentler, 2007). These model fit indices allow for clear comparisons between models i.e. several explanatory models using the same variables can be tested with varying structural pathways and model fit indices can be compared to determine which model is superior and for the purposes of this project will allow for a way to interpret the efficacy of the proposed models (West, Taylor & Wu, 2012).

The data set used by this present project is taken from a longitudinal study and as such participant attrition and missing data are to be expected. SEM allows for the analysis of missing data, through full likelihood estimation for example, reducing potential bias (Finkbeiner, 1979).

SEM and factor analysis allows the research project to take advantage of a much larger participant pool than any previous research that has examined materialistic values despite the lack of a specific materialism measure.

4.4 Weaknesses of Structural Equation Modelling

Limitations of SEM primarily concern the interpretation of the results. SEM, like any statistical model, represents an estimation of reality in so much as there are potentially

many other unknown influencing variables which are not measured or included in a model (Meehl & Waller, 2002). The "goodness for fit" indices which are reported account, to some degree, for omitted variables however caution must be taken when drawing any conclusions from SEM (Tomarken & Waller, 2005).

One issue described in the literature with SEM is over interpretation (Tomarken & Waller, 2005). SEM can be estimated with relatively small sample sizes, produced excellent model fit statistics yet relatively small effect sizes and are vulnerable to over generalisations. Similarly, model fit and effect sizes are meaningless without clear a prior hypothesis and clear theoretical underpinnings for the estimated relationships. Two competing models, using the same variables, may return identical model fit indices and effect sizes and therefore it is essential there is a clear theory which guides the structure of any SEM that is run.

Section 5: *Aim and Hypotheses*

Currently in the literature there exists several hypothesised explanations for the relationship between materialism and wellbeing. Few of these explanatory models have been tested and to this author's knowledge none have examined the potential impact of conflicting values. Furthermore no study has used such a large population. SEM allows for a thorough testing of a specific model that incorporates several variables in a complex and dynamic system.

The aim of this thesis was to test several proposed models of the association between materialistic values and low wellbeing. Specifically, the following two hypotheses were

> *Hypothesis One: The strength of the association between materialism and wellbeing*
> *will be negatively moderated by conflicting universalistic values*

Hypothesis Two: Materialistic values will partially mediate the relationship between life stressors and low wellbeing

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Part 2: Empirical Paper

Living in a Material World: Using Structural Equation Modelling to

explore the mediators and moderators of the relationship between

materialistic values and wellbeing.

Abstract:

Research consistently finds an association between materialistic values and low wellbeing. The mechanisms behind this relationship, however, are not well understood. As such the present project undertook the following aims.

Aims:

1) To determine if the association between materialistic values and low wellbeing is moderated by holding conflicting, universalistic, values

2) To determine if materialistic values serve as a partial mediator between on-going life stressors and low wellbeing

Method:

The project utilised a secondary data analysis design using structural equation modelling to perform confirmatory factor analyses and moderation and mediation analyses.

Results:

The results of the analysis found that conflicting values moderated the relationship between materialism and low wellbeing, finding a positive association between holding both materialistic and universalistic values and wellbeing. Materialism also partially mediated the relationship between life stressors and wellbeing.

Discussion:

The results are discussed in relation to social determination theory and the human values literature noting in particular the novel finding that the interaction of conflicting values reduces the impact of materialism on wellbeing. Issues with the methodology are discussed and the potential for future research is highlighted

1. Introduction:

1.1 Materialism, Society and Wellbeing

1.1.1 Materialism

Materialism is defined as the tendency to focus one's energy on goals that seek to achieve money, objects and status (Inglehart, 1981). The values associated with materialism have permeated nearly every aspect of western life meaning the pursuit of happiness and self-satisfaction is encouraged through status increase and object ownership (Brewer & Porter, 2013; Elphinstone & Critchley, 2016). People are exposed every day to thousands of adverts and media that encourage consumption and endorse the benefits of a materialistic lifestyle (Burroughs & Rindfleisch, 2002, Reeves, Baker & Truluck, 2012). Research has shown that people are increasingly materialistic demonstrated by younger generations who endorse materialistic values at significantly higher rates than their parents and grandparents (Inglehart & Flanagan, 1987, Korton, 1999). The research into the impact of such a dynamic shift in values remains in its infancy; however the literature on materialism consistently returns one key finding, namely the negative association of materialistic values and an individual's wellbeing (Dittmar, Bond, Hurst & Kasser, 2014)

1.1.2 Materialism and Wellbeing

There is a growing body of research which suggests that endorsing, and living in accordance with, materialistic values is associated with poor subjective wellbeing (SWB), psychopathology and overall life satisfaction (Mueller et al. 2011; Burroughs & Rindfleisch, 2002; Lambert Fincham, Stillman, & Dean 2009). Of note is the consistency of this finding. A meta-analysis by Dittmar et al. (2014) found an overall negative ($r = -.19$) correlation between materialistic values and subjective wellbeing. Their meta-analysis also revealed that this relationship was not weakened based on; ethnicity, country of study or income stability,

findings which have since been replicated in various research papers (see Wang, Liu, Jiang & Song, 2017 and Chatterjee, Kumar & Dayma, 2019 for examples). In addition, research has shown, perhaps counter intuitively, that achieving materialistic goals i.e. acquiring goods that allow for a display of wealth, power and status, does not mitigate this negative relationship (Martoss & Kopp, 2012). These findings suggest that it is an intrinsic element of materialistic values that results in negative outcomes for the individual. Despite the consistency, and wide agreement in the literature, of these findings the relationship is not well understood. Several explanatory theories have been posited but have not been empirically tested. To date research into materialism and SWB has been largely cross sectional with explanatory theories of the relationships provided *posteriori* (Dittmar et al. 2014; Solberg, Diener & Robinson, 2003; Burroughs & Rindfleisch, 2002). Described below are several of these explanatory theories which informed the aims of this project.

1.2 Social Determination Theory and Basic Psychological Needs

1.2.1 Extrinsic Rewards and Materialism

*S*elf-determination theory (SDT), a theory of motivation, posits that for psychological wellness an individual must consistently achieve a set of higher order needs; namely a sense of autonomy, competence and relation to others, in addition to the basic needs as identified by Maslow (Maslow, 1954; Ryan & Deci, 2000). If an individual is unable to achieve these basic needs, or engage in actions which provide these needs, they will struggle to achieve positive wellbeing (Ryan & Deci, 2000). It is through this mechanism, it has been argued, that materialism results in lower SWB.

Materialistic values encourage goal directed behaviour that is inherently extrinsically motivated as they drive to obtain something tangible such as money or status (Richins, 2017; Kasser, Ryan, Couchman & Sheldon, 2004). Extrinsically motivated behaviours are, generally speaking, experienced as less satisfying than activities which are intrinsically

motivated with extrinsic rewards even lessening the enjoyment from otherwise intrinsically motivated behaviours (Burroughs & Rindflesch, 2002; Kasser et al. 2007). A meta-analysis that collated research examining the impact of extrinsic motivators found that people driven by extrinsic factors reported significantly less enjoyment, and interest in their activities (Deci, Koestner & Ryan, 1999). SDT researchers have argued that behaviours that are extrinsically motivated do not provide any of the three posited basic needs (autonomy, competence and relatedness). Although the results of engaging in extrinsic behaviours may allow for engagement in other, more rewarding behaviours, paying for a holiday with the family for example, the behaviour itself is not rewarding (Deci & Ryan, 2008). Behaviours driven through materialistic values are themselves extrinsically motivated in nature which is why, it has been argued, they result in low SWB (Deci & Ryan, 2010). In theory, a balance between intrinsic and extrinsic behaviours may result in positive SWB as it would allow for the three basic needs to be achieved. It has been posited that it is the preponderance of materialistic goals and behaviours that precludes engagement with more intrinsic behaviours which are inherently beneficial to SWB (Frey & Oberholzer-Gee, 1997).

1.2.2 Intrinsic Rewards and Universalism

Intrinsic goals, as conceptualised by SDT, are those which seek to improve an individual's growth tendencies, namely the three basic needs (Van Hiel, Cornelis & Roets, 2010). They orientate an individual inwards and encourage spiritual growth over accruing objects or status (Deci & Ryan, 2000). Intrinsic motivations include: seeking to improve relationships with others, spiritual growth, and concern for the community and research has shown that achieving intrinsic goals is inherently beneficial to one's wellbeing (Ryan, Huta & Deci, 2008; Ryan, Patrick, Deci & Williams, 2008). A value system which endorses and encourages intrinsic behaviours are universalistic values (Deci & Ryan, 2000).

Universalistic values describe a specific get of ideas and goals that seek to enhance the community, achieve social justice and value equality (Schwartz, 1994), all intrinsic aims. They can be broadly understood as "unselfish" values which seek to support the group over the individual. They operate in direct contrast to materialistic values, which are defined predominantly by the benefit one can receive for themselves (Schwartz, 1994; Richins & Dawson, 1992).

There is a paucity of research that has directly examined the relationship between universalistic values and wellbeing; however, research that has examined general value orientation suggests that universalistic values are associated with greater life satisfaction, engagement in life activities and general wellbeing (Oishi, Diener, Suh & Lucas, 1999; Kasser & Ahuvia, 2002; Sagiv & Schwartz, 2000).

1.2.3 Value Interactions and Wellbeing – Living in a material world

Given the frequency and quantity of materialistic messages people are exposed to everyday it is likely that the majority of the population have some materialistic values to varying degrees. However, not everyone is affected by this exposure in the same way. An individual's values represent a dynamic and flexible system where people will prioritise different values at different times (Scwartz, 2012). As such, stating that materialistic values are harmful to an individual's wellbeing is a reductionist perspective as people can hold multiple, seemingly conflicting values (Burroughs & Rindfleisch, 2002). It is conceivable that holding materialistic values, in conjunction with seemingly conflicting values, may promote a variety of behaviours, both intrinsically and extrinsically motivated, which could result in positive wellbeing. For example, a person who takes a high paying job so that they can afford to invest in their community may score highly on both materialism and universalism value scores.

There is literature to suggest that positive wellbeing is possible with high materialistic values. In a study of business students at a University in Singapore SWB was

found to be higher in individuals that valued universalistic values in conjunction with the materialistic values compared to those who placed less importance on them (Kasser & Ahuvia, 2002). Myers (2007), who combined a series of case studies, demonstrated that when businesses place community and self-transcendence at the core of their business ethics their workers reported significantly higher SWB and in general more commitment to their work. It could be argued that these environments were not materialistic however in both cases materialistic values were encouraged either by the University or the businesses themselves. It appears that the combination of universalistic values with materialistic values reduced the impact on SWB.

There is a wealth of literature that has examined the SDT and individual values however to this author's knowledge no research has been conducted that examines the impact of the interaction of conflicting values on subjective wellbeing. Given the research discussed above it is possible that such an interaction would reduce the negative impact observed between materialism and SWB.

1.3 Materialism and Wellbeing – a mediated relationship

1.3.1 Materialism, Wellbeing and Life Stress

The majority of research into the relationship between materialism and wellbeing has been cross-sectional and the literature has generally assumed a causal relationship where materialistic values lead to poorer wellbeing (Dittmar et al. 2014). There is a body of literature, however, which suggests the association is not a simple causal one. Research has described how materialistic behaviours can be used to reduce levels of stress and improve overall mood (Roberts, Tanner & Manolis, 2005, Burroughs & Rindfleisch, 1997). As such it raises the possibility that one does not necessarily cause the other but that they may be both associated with other causal variables.

1.3.2 Materialism as a Coping Mechanism for Low Wellbeing

It has been argued that materialistic behaviours can act as coping strategies for stressful life events and can operate as distractions from existential fears (Mandel & Smeesters, 2008). In particular, they offer respite from sources of stress which may have no clear solution (Arndt, Solomon, Kasser & Sheldon, 2004). For example, children whose parents had divorced displayed high rates of object acquisition which was reported as a way to manage their stress (Rindfleisch, Burroughs & Denton, 1997). In a study examining people suffering from post-traumatic stress it was noted that those experiencing the highest levels of stress were those who utilised materialistic behaviours as a coping strategy (Somer & Ruvio, 2014). Similar findings have been observed in people suffering from depression, experiencing feelings of isolation and have also been associated with poorer intimate relationships (Mueller et al. 2011; Pieters 2013; Dean, Carroll & Yang, 2007). It seems unlikely that materialism could cause post-traumatic stress or *vice versa*. However, the research discussed suggests that people who are more materialistic use materialistic strategies to cope with life stressors and that the low wellbeing people reported result from these, ineffective, coping strategies (Burroughs & Rindfleisch, 2002).

1.3.3 Materialism and Deprivation

The relationship between living on a low income, deprivation and low wellbeing is already well understood. Research has consistently demonstrated that those from lower income families or those experiencing deprivation perform significantly worse on outcomes of wellbeing, psychopathology, life satisfaction and physical health (Murali & Oyebode, 2004). Due to the decreased ability of people from deprived or low income families to live materialistic lives it is somewhat surprising that they tend to display higher rates of materialistic values (Richins, 1992, Watson, 2003). While it is unlikely that, given the range of issues individuals from lower SES face, that materialism is a key driver of the experience

of low wellbeing there does appear to be a relationship. Materialistic behaviours are, as discussed above, inherently unsatisfying and incapable of achieving basic psychological needs. If an individual with high materialistic values attempts to use materialistic behaviours to cope with their various life stressors it may prove to be ineffective and result in poorer wellbeing. An individual who 1) experiences consistent life stressors such as deprivation or experience of parental ill mental health and 2) has high materialistic values may report poorer SWB as they utilise materialistic strategies to manage their mood. In that way materialism may partially mediate the relationship between life stressors and wellbeing

1.5 Aims and Hypotheses

1.5.1 Aims

The present study has two distinct aims. Firstly, to determine if the interaction of materialistic values with universalistic values moderates the negative relationship between materialistic values and low SWB. Secondly, the project aims to investigate if materialism acts as partial mediator between life stressors and low wellbeing.

1.5.2 Hypotheses

Hypothesis 1: The strength of the association between materialism and SWB will be negatively moderated by conflicting Universalist values.

If, as posited by value researchers, values operate as part of a dynamic and complex system (Scwartz, 1992) and that psychological wellbeing is associated with intrinsic motivators, as per SDT (Deci & Ryan, 2010), then it is possible that if a person holds both materialistic and universalistic values their SWB should be higher than a person who holds predominantly materialistic values

Figure 1:

A structural model showing the hypothesised moderating impact of the known negative impact of materialistic values on

subjective wellbeing, the black dot represents the hypothesised interaction effect.

Hypothesis 2: Materialism will partially mediate the association between life

stressors and SWB.

As discussed, materialistic values can operate as a coping strategy for difficult life events. In

addition, people who experience deprivation and relative inequality may make material

based upward social comparisons. Materialistic values may, therefore, partially mediate the

relationship between life stress and poor wellbeing. See figure 2 for the proposed model.
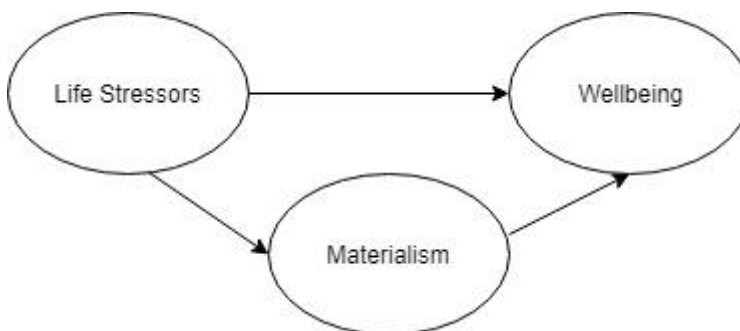

Figure 2: A Structural Model showing the hypothesised partial mediation of the relationship between life stressors and low

subjective wellbeing.

2. Method:

2.1 The Millennial Cohort Study

The Millennial Cohort Study (MCS) known as the "child of the new century" is an ambitious, longitudinal study of over 18,000 families (Joshi & Fitzsimons, 2016). Children and their families are asked a large battery of questions every five years and, at the time of writing, data collected at six time points has been published (Hawkins, Cole, Law, & Millennium Cohort Study Child Health Group, 2009; Lai, Wickham, Law, Whitehead, Barr & Taylor-Robinson, 2019). The study has collected huge swaths of data on a wide range of topics including physical health, development, mental wellbeing, schooling and education and general attitudes and values. In addition, it has information on familial income, family structure and parental wellbeing. The MCS was selected for this present study due to the combination of a large sample which had already been recruited and a variety of social and psychological data which had already been gathered. It allowed for a much larger scope and detailed statistical analysis that has otherwise been conducted in research on these topics. The MCS, however, is not without flaws. The data gathering procedure is constantly in flux and changes year on year. Many questions are altered or removed altogether, which hampers the ability for a well-controlled comparison over time periods. Where this is an issue for the present study it will be discussed. In addition there is, as with any longitudinal research, participant attrition. The reasons for this attrition are not followed up and as such it is difficult to make predictions, assumptions or control for this attrition in the analyses.

2.2 Participants:

The MCS recruited 18,552 children and their families since their birth in the year 2000. Data has been gathered on these families at six time points or "sweeps." The present study utilised data from the two most recent time sweeps, where the children were aged 11 and 14. Two data sets were chosen so that change across time could be measured. These two data sweeps

were selected as they included measures relating to the projects hypotheses and stated aims. With each sweep of the MCS there has been attrition of the participants and in the sixth and most recent sweep there remains 11,872 children in the study. Children and families drop in and out of the MCS and as such each data sweep has varying numbers of participants. This study only used participants who had responded to the MCS at both data sweeps and in total had 11,622 participants. For the purpose of analyses that utilised parental data (see results section) where more than one care giver provided data, the self-identified primary caregiver data was used.

The MCS recruited from the entire UK and utilised a stratified cluster sampling method with the purpose of over-representing ethnic minorities and families from disadvantaged backgrounds. The population was stratified into the four UK countries; England, Scotland, Wales and Northern Ireland and each country was then further stratified into ethnic minority, disadvantaged economic background and advantaged economic background. Participants were recruited through opportunity sampling following stratification. A list of all eligible children was generated from the Child Benefits Register. All families of said children were then sent an information leaflet about the study requesting their participation.

For the purpose of this study any participants with complete data were considered eligible. Participants were excluded where data on all relevant measures was missing (see Data Handling in Results and Analyses section). The inclusion and exclusion criteria for the MCS are provided below.

Eligibility Criteria:

Born between 1st September 2000 and 31st August 2001

Full time resident in the UK nine months after data collection

Exclusion Criteria

UK residency status is temporary (e.g. asylum seekers, member of foreign armed

forces)

If a child was deemed a "sensitive" case for one (or more) of the reasons listed.
There had been a child death in the family in the last five years. The family
was in correspondence with the Department of Work and Pensions (DWP). The
child was in another person's award. The child had been taken into care. The family
had previously been selected for the DWP-sponsored Families and Children Survey
(FACS). There was an unknown exclusion code entered on the Child Benefit
Register noncustomer record.

Recruitment and questioning was conducted by the Institute of Education (IOE). Ethical
approval for the study was sought and received from the NHS Research Ethics Committee
(REC) for all sweeps of the MCS. Written consent is sought from all participants, and care
givers of participants, with each interview. Every participating family is also given an
information leaflet as per the MREC's request. See table 1 for participant demographics.

Table 1

Participant Demographics (n = 11622)

Sex	n	%
Male	5842	50.26
Female	5780	49.74
Ethnicity		
White	8918	76.73
Mixed	527	4.53
Indian	303	2.61
Pakistani or Bangladeshi	807	6.94
Black/Black British	359	3.09
Other	274	3.36
Did not know	56	0.48
Did not say	29	0.25

2.3 Data Analysis Plan:

Data from two sweeps of the MCS were selected for analyses, known in this project as time point one and time point two. The same analyses was conducted at each time point and allowed for comparison of analyses over time. Described below are the analyses procedures conducted at each time point. A longitudinal analysis was also conducted to examine if change at time point 1 was associated with change at time point 2.

2.3.1 Structural Equation Modelling

For all data analyses the statistics package Mplus was used (Mplus version 8, 2017). To test the proposed hypotheses the present study utilised a Structural Equation Modelling (SEM) method. Structural Equation Modelling is a form of data analysis that allows for the testing of hypothesised causal relationships and the testing of pre-specified directed links between variables. It can then infer causal relationships given five basic assumptions are met; the hypothesised cause occurs before the outcome, there is an observed co-variation between the predicator and outcome variables, no other alternative explanations or confounders can be determined and the relationship holds when variables are controlled for, data distribution is known and the direction of the relationship is correctly specified (Kline, 2012). The present study combined factor analysis and multiple regression, core parts of SEM, in order to test the validity of various hypothesised constructs and relationships. The use of SEM involves several preparatory steps before the model can be tested which are described below.

2.3.2 Latent Variables

Latent variables are those which are not directly observed or measured but which can be inferred from regressing several indicator, or manifest, variables against one another. Manifest variables are selected based on *a priori* hypotheses with the assumption that they

represent the underlying latent variable. The use of latent variables in data analysis allows for the testing of an underlying phenomenon or construct that cannot be directly measured.

To use latent variables in a SEM their existence must first be confirmed through confirmatory factor analysis (CFA), where each potential indicator, manifest variables, for the hypothesised latent variable is regressed against one another. Manifest variables are selected based on the hypothesis that they are measuring a distinct, unobservable, construct. This is done for each latent variable within the same model and is known as the measurement model. The measurement model ensures the construct validity of each latent variable and that a single indicator does not share too much variance with more than one latent variable.

To determine if the proposed factor model is valid model fit indices are produced for the CFA. These fit indices are compared against "nested" models where the same manifest variables are used but differing number of latent variables are proposed i.e. the CFA is run where there are three latent variables, and again for two and one latent variables. Each analysis produces model fit indices and the model which best "fits" the data is confirmed for the SEM.

This present study hypothesised the existence of several latent variables: materialism, universalism and subjective wellbeing (see measures section for the aggregated observed variables used). The measurement model results are described in the results section.

2.3.3 Model Fit Indices:

To report the findings produced by the CFA and SEM the guidelines suggested by Schreiber, Nora, Stage, Barlow and King (2006) on how to report CFA and SEM were followed. Mplus produces multiple model fit indices which indicate how well the proposed structural model 'fits' the data, i.e. how accurate the reported effects sizes are. While there is

large variance in the literature on which model fit indices are reported in SEM, Schreber et al. (2006) recommend that several should be reported to give a clear indication of the fit of the model. For single analyses SEM and CFA the authors recommend reporting chi-square, non-normed fit index (TLI) comparative fit index (CFI) and root means square error of approximation (RMSEA). There is no definitive threshold that each score must reach for the proposed model to be considered a "good fit" for the data with the exception of chi-square which provides a p value. However, Hu and Bentler (1999) suggested cut offs for each, CFI $\geq .90$, TLI $\geq .95$ and RMSEA < 0.08; where a model achieves these thresholds the model is considered to be a "good fit" to the data. These cut-offs are broadly considered to be *de facto* cut-offs although they are not always treated as such in the literature. For each model proposed the above fit indices are provided.

Model fit indices are not available for SEMs that examine an interaction effect, as per one of this projects aim. However, if model fit indices are acceptable for the model without the interaction effect, the standardised coefficients remain significant once the interaction effect is calculated, it is then assumed the model remains a "good fit" for the data (Muthén, 2012).

2.3.4 Data Reporting

As suggested by Schreber et al. (2006) model fit indices are reported along with the standardised coefficients for each regression pathway. For the CFA factor loadings are reported in addition to the regression coefficients for each manifest variable.

2.3.5 Data Entry

Descriptive statistics were generated using the statistical package SPSS with the data then transferred to the statistical package Mplus to run the CFA and SEM.

2.3.6 Mediation Analyses:

Mediation analysis seeks to understand if a relationship between two variables, the direct effect, is mediated by a third variable, an indirect effect. It assumes a causal relationship between the three variables with the purpose of the analysis to determine the direct and indirect effect sizes which can then encompasses the overall effect of the predictor and mediator variables on the outcome.

To assess for mediation effects with latent variables the total effect (Y) is the sum of the direct effect (a) with the indirect effect (bX). The regression equation for this interaction can be calculated thusly.

$Y = a + bX$

2.3.7 Moderation Analyses:

This present study utilised the approach to calculate latent variable interactions described by Little et al. (2006). To determine the influence of a continuous latent variable on the relationship between two other continuous latent variables, a new variable is modelled that is the product of the predictor (X) and moderator variables (W). This interaction effect (XW) is incorporated into the regression equation between the outcome (Y) and predictor (X). If XW produces a significant effect then the regression of Y onto X is influenced, in some way, by XW. The regression equation for this interaction can be calculated thusly

$Y = b0 + b1X + b2W + b3XW + e$

where e represents the error. Mplus automatically mean centres any latent variable interactions, a process which controls for any correlation between the predictor variables.

2.4 Measures

To test the hypothesised model several 'latent' variables needed to be constructed through confirmatory factor analyses (CFA). CFA determines if the hypothesised indicator variables of the hypothesised latent variable share enough variance which would indicate they are measuring part of the same construct (see appendix for all measures utilised). In addition, the project utilised several standard measures as either outcome measures or moderating measures in their own right. Each measure is listed in the appendix. Table 2 showcases the measures selected for the latent variable compared against the existing validated measure.

2.4.1 Materialism

The MCS does not contain a distinct materialism measure. There are many measures within the MCS, however, which were hypothesised to load onto the materialism construct as first described by Richins and Dawson (1992). The literature on materialism as a value considers it to be constructed from three core constructs. First, how central materialistic goals and aims are to an individual's life termed 'Centrality.' Second, how much an individual's success is measured by their possessions, termed success. Third, how much an individual believes they will be happy due to achieving materialistic goals, termed 'Happiness' (Richins & Dawson, 1992). These factors were generated and validated by Richins and Dawson (1992) and are measured by the materialism values scale (MVS) a multiple item questionnaire. The MVS has three distinct versions, one with 12 items, and another with nine and the shortest which contains three items. For this project questions from the MCS with similarity to questions from the three-item MVS were selected to estimate the latent variable of materialism (see table 2). The MVS has been shown to have good convergent and construct validity and consistent reliability (Richins, 2004) and as such represented a good comparisons measure for this projects aims.

A confirmatory factor analysis was executed to determine the existence and construct validity of the hypothesised materialism measure within the MCS data. It is not possible to determine the criterion validity of the hypothesised construct as the MVS was not utilised with this data set to enable a comparison however attempts have been made to ameliorate this weakness. The selected measures appear to give the hypothesised latent construct good face validity as they measure similar constructs to those measured by the MVS (see table 2). In addition an attempt has to been made to cover the three criterion of materialism as identified by the MVS, granting a degree of content validity.

Two sweeps, or time points, from the MCS were utilised for the analysis. At time point two of the MCS one of the questions had been removed which was initially used as one of the indicator variables. The variable that was removed loaded onto 'Success' on the MVS which may impact the validity of the materialism variable at time point two.

2.4.2 Universalism

Universalism as a value is posited to be constructed from two core concepts, namely importance of equality and social justice (Schwartz, 2007). The Schwartz Values Survey (SVS) (Schwartz, 1992) is the most widely used measure of human values. It is cross-culturally validated and is considered the gold standard for human value measurement. The MCS did not contain the SVS; however, several measures within the MCS appeared to measure similar facets to the SVS. These measures were selected based on their similarity to questions in the SVS that measure universalism and were included in the CFA to assess for construct validity (see table 2). It is worth noting that the construct of universalism is a nebulous one and is not well researched. While the SVS has shown good cross cultural reliability and validity (Schwartz, 2012) the criterion validity of the measure has not been thoroughly examined. This issue is compounded in the present study by utilising measures which rely on face and construct validity as there is no way to test for criterion validity. As

with the materialism construct an attempt was made to ensure good content validity by choosing measures which represented the facets identified by Schwartz (1992). The author acknowledges, however, that this is a weakness of the study.

2.4.3 Wellbeing:

Wellbeing was defined as an outcome measure for the present project and several measures were combined to construct an overall 'wellbeing' latent variable. Within the literature wellbeing is often loosely defined; there is no gold standard 'wellbeing' measure with many measures in the literature often asking both overlapping and esoteric questions. For the present study the definition of wellbeing described by Medvedev and Landhuis (2018) was used. They collated several wellbeing measures and found that physical wellbeing, affect, life satisfaction and social connection most consistently predicted overall wellbeing, as such the present study selected measures from the MCS which purported to record these domains.

As with the other hypothesised latent constructs the questions selected from the MCS were not from existing validated measures and instead relied on face and content validity initially with construct validity ascertained through CFA. Each question selected from the MCS was in the form of a Likert-style questionnaire which asked the participant's happiness across a range of life domains (see table 2). Responses ranged from 1 "not happy at all" to 7 "completely happy."

2.4.6 Life Stress

The hypothesised construct of life stress was constructed from two known predictors of poor wellbeing; familial financial difficulties and parental mental health difficulties (Bradshaw, Hoelscher & Richardson, 2007; Waldfogel, Craige & Brroks-Gunn, 2010). Financial

difficulties were measured by the number of financial aids or 'benefits' claimed by each family, ranging from 1 to 23. Child tax credit was excluded due to this being available to all families regardless of income. In total 23 financial aids were considered. Measures of financial aid were only available at time point 2. Parental mental health issues were measured using the Kessler Psychological Distress Scale (KPDS) (Kessler, 2001) a 10-item Likert style questionnaire which asks the participant 10 questions about various psychopathological symptoms. Answers range from 1 "none of the time" to 5 "all of the time".The KPDS has been shown to have good construct validity and reliability in screening for mental health issues (Andrews & Slade, 2001; Slade, Grove & Burgess, 2011).

Table 2

A List of the measures used to generate the latent variables. All questions were answered on a likert scale from either 1-7, 1-5, or 1-3. Scores were reversed where necessary

Materialism Construct		
MCS Measure	Factor of Construct Measured	Previous research with validated measure
"I wish my family could afford to buy more things that I want"	Desire to be wealthy	
"It bothers me if my friends have things that I don't"	Envy of others material wealth	Richins & Dawson (1992)
"I like clothing with popular labels"	Goods valued due to the status it infers on owner or the raw cost of the item	
Universalism Construct		
"Do you believe it is right to help others?"	Social Justice	
"I don't like to vandalise"	Appreciation of role in community	Schwartz (2007)
"It is less important for women to work than for men"	Equality	
Wellbeing Construct		
"This week I felt miserable"		

This week I didn't enjoy anything at all This week I felt so tired I just sat around and did nothing	Affect	
How happy are you with your.. Family Friends I have people I am close to	Social Connection	Medvedev and Landhuis (2018)
I feel physically good	Health	

3. Results and Analyses:

To report the findings produced by the CFA and SEM the guidelines suggested by Schreiber et al. (2006) on how to report CFA and SEM were followed.

3.1 Analyses

The analyses described below are separated into three sections. The first section considers an SEM which examined the interaction effects of materialistic and universalistic values on wellbeing. The second section considers a SEM which sought to examine if materialistic values partially mediated the relationship between life stressors and poor wellbeing. The third and final section considers several sub-analyses, as highlighted in the introduction, which sought to answer three sub-hypotheses: (i) are any reported associations observed between materialism and universalism on wellbeing hold for emotional difficulties, (ii) is an interaction effect between social media use and materialistic values observed in wellbeing and (iii) are materialistic and universalistic values consistent across time.

As discussed in the method section the analysis has taken data from two sweeps of the MCS: when the children were aged 11 and when the children were aged 14, henceforth referred to as time point one and time point two. The purpose of using two time points was to determine whether any reported effects are consistent across time / throughout this developmental period.

3.1.1 Missing Data

Participants were automatically removed from the analysis if their data were missing for every measure. In total 33 participants were excluded from the analysis for this reason. Participants were also removed from the analysis if data were not available for both time-points / sweeps analysed. Multiple participants gave partial responses across the range of questions asked in the MCS. It is unlikely non-response is random; however, it was not possible to determine the potential cause of non-responses. As such, full information likelihood estimation (FIML) was utilised to calculate the proposed models. FIML allows for use of all participants including those with missing data; further, data are not assumed to be missing randomly. FIML estimates the parameters for each participant based on the existing data (Allison, 2003). For each item where data are missing the most likely response is estimated based on the responses from other participants with complete data. Correlations are conducted between those with complete data against those with missing data with the highest correlated, with complete data, used to estimate the missing data.

3.2 Interaction of Materialistic and Universalistic Values on Wellbeing

To test if there was an interaction effect between materialistic and universalistic values on wellbeing three SEMs were estimated. Two cross-sectional analyses for time point one and two and one longitudinal analyses.

3.2.1 Interaction of Values Measurement Model - Time Point One

A CFA was conducted to confirm the validity of the proposed three latent variables: materialism, universalism and wellbeing (see figure 3). The proposed model was compared against two nested alternative models for each time point. The model fit indices are shown in

table 1 and demonstrates that the hypothesised three factor model provided the best fit of the data for both time points. The measurement model for time point 1 demonstrated an acceptable fit ($\chi 2$ = 1181.887, P<0.001; CFI = 0.90, TLI = 0.95, RMSEA =0.05). All *a priori* factor loadings of the latent constructs were significant demonstrating convergent validity. To assess for discriminant validity the three factors were first collapsed into two factors and then one factor (see table 3). The model fit indices for the two factor and single factor model were worse as were the factor loadings and therefore the three factor model for time point 1 was used for the structural model. See table 4 for standardised factor loadings and errors of the three latent variables.
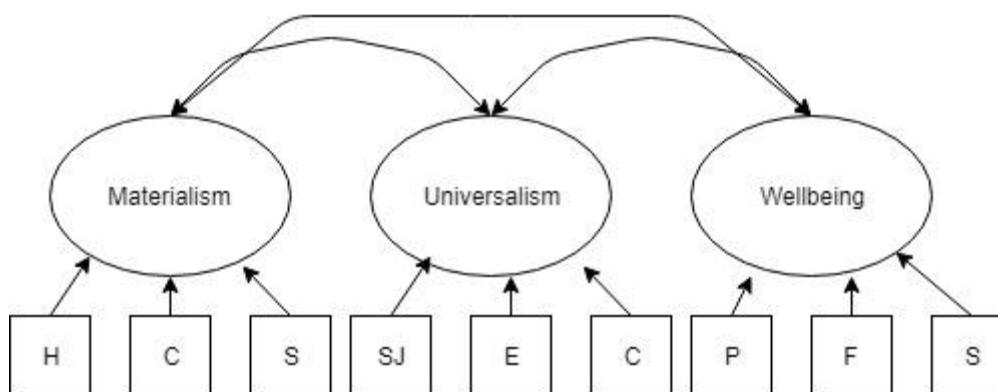

Figure 3: A diagram demonstrating the confirmatory factor analyses that estimated the latent variables used in the structural model. Boxes represent the manifest variables; H =happiness, C = centrality, S = success, SJ = social Justice, E = equality, C = community, P = physical wellbeing, F = feelings, S = social connection

Table 3

Confirmatory Factor Analysis Results for children age 11

Models	$\chi 2$	df	CFI	TLI	RMSEA	P- Value
Three Factor	1181.89	41	.090	0.95	0.05	P<0.001
Two Factor	3179.18	43	0.73	0.66	0.07	P<0.001
Single Factor	6769.72	44	0.43	0.29	0.11	P<0.001

Table 4

Confirmatory Factor Analysis Correlations between Manifest Variables

Measure	1	2	3	4.	5.	6.	7.	8.	9.
1. Centrality	1								
2. Happiness	.42	1							
3. Success	.40	.38	1						
4. Equality	-.12	-.60	-.70	1					
5. Social Justice	-.09	-0.5	-0.6	.40	1				
6. Community	-.01	-.10	-0.3	.20	.50	1			
7. Self-Esteem	.12	-.02	.15	-.10	-.80	-.08	1		
8. Mental Health	.19	.03	.15	-.10	-.09	-.04	.32	1	
9. Social Support	.16	-0.2	.16	-.09	-.08	-.04	.40	.50	1

3.2.2 Interaction of Values Structural Model – Time Point 1

To calculate the moderating impact of a latent variable on a relationship between two other latent variables a SEM must be first estimated without the moderator effect / interaction effect. The interaction effect is then calculated in a separate SEM by regressing the two predictor latent variables, in this case materialism and universalism, and regressing that interaction term on the outcome variable, in this case wellbeing, and adding this to the model. Below are reported statistics of the SEM without the interaction effect (Direct Effect Model; Figure 4) and with (Interaction Effect Model; Figure 5).

The direct effects of the latent variable of wellbeing were regressed on to the latent variables of materialism and universalism (see figure 4). Both paths produced significant regression coefficients. Higher materialistic values predicted poorer wellbeing ($r = -0.24$, $p<0.001$) and higher universalistic values predicted positive wellbeing ($r = 0.9$, $P<0.001$).
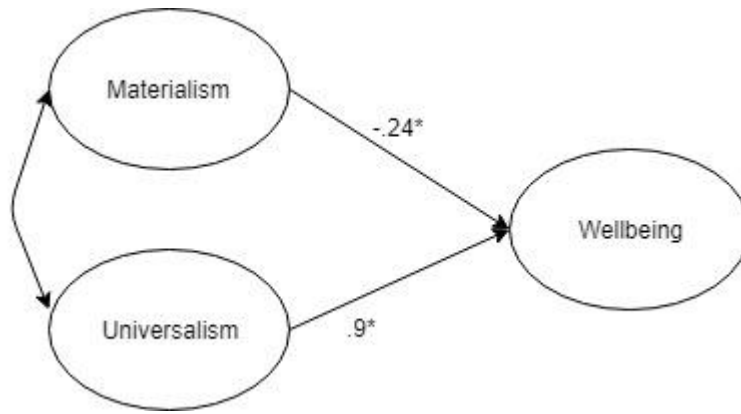
Figure 4: A diagram demonstrating the regression coefficients for the direct effect model at time point 1. * denotes significance at the 0.001.

To examine if universalistic values moderate the negative impact of materialistic values on wellbeing an interaction SEM was estimated. The direct effects of materialism predicated a lower score on the wellbeing latent variable and was unaffected by the inclusion of an interaction term in the model with, r = -0.24 (p<0.001). Similarly, high universalistic values still predicted *higher* scores on the wellbeing measure, r =0.25 (p<0.001). The interaction of materialism and universalism predicted higher scores on wellbeing, r =0.07 (p<0.001). See figure 5 and figure for structural model with regression coefficients for time point 1.
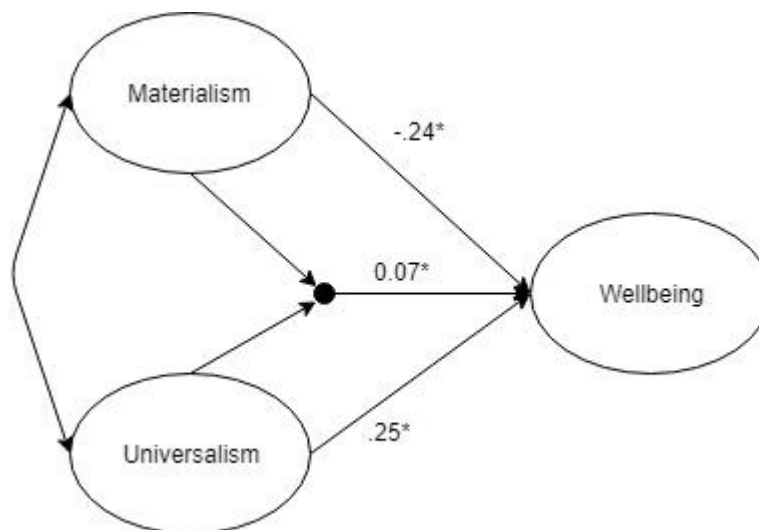

Figure 5: A diagram showing the regression coefficients for the mediation SEM at time point 1. * denotes significance at the 0.001 level and the black circle shows the interaction effect.

Table 5

A table showing the chi-square, degrees of freedom, comparative fit index, Tucker Lewis index, root mean square error of approximation and p value for time point 1

Model	$\chi 2$	df	CFI	TLI	RMSEA	P Values
Direct Effect	82.868	12	0.99	0.98	0.02	P<0.001

3.2.3 Interaction of Values Measurement Model - Time Point Two

As discussed in the methods section, the same analyses described above were repeated for a second time point within the MCS, children aged 14, i.e. time point two. As with time point one a CFA was run to test the validity of the three hypothesised latent variables: wellbeing, materialism and universalism. The proposed model was compared against two nested alternative models. The model fit results are shown in table four and demonstrates the hypothesised three factor model provided the best fit of the data.

The measurement model for time point two demonstrated an acceptable fit ($\chi 2$ = 137.212, P<0.001; CFI = 0.96, TLI = 0.96, RMSEA =0.05). All *a priori* factor loadings of the latent constructs were significant demonstrating convergent validity. To assess for discriminant validity the three factors were collapsed into two factors and then into a single factor and the CFA was run again (see table 6). The model fit indices provided were worse as were the factor loadings for the one variable model and therefore the three factor model for time point two was used for the structural model. Table 7 shows the s correlations amongst the indicator variables used to estimate the latent variables. See figure 6 for a diagram of the measurement model.

Table 6

Confirmatory Factor Analysis Fit Indices for children age 15

Models	$\chi 2$	df	CFI	TLI	RMSEA	P- Value
3 Factor	137.212	3	0.96	0.96	0.05	P<0.001
2 Factor	482.078	4	0.91	0.71	0.09	P<0.001
1 Factor	581.059	5	0.83	0.67	0.10	P<0.001

Table 7

Confirmatory Factor Analysis correlations for time point 2

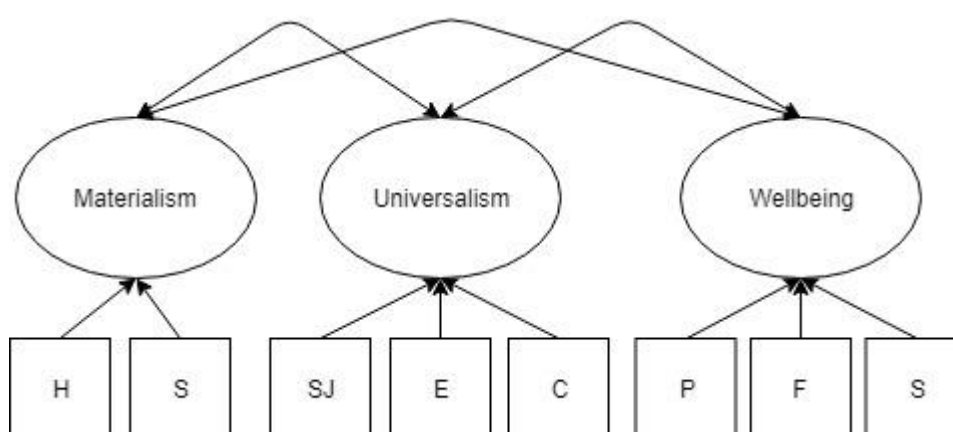| Measure	1	2	3	4.	5.
1. Happiness	1				
2. Success	.42	1			
3. Equality	-.03	-.07	1		
4. Social Justice	-.13	-.09	-.31	1	
5. Community	-.04	-0.5	-0.21	.57	1

Figure 6: A diagram demonstrating the confirmatory factor analyses that estimated the latent variables used in the structural model. Boxes represent the manifest variables; H =happiness, S = success, SJ = social Justice, E = equality, C = community, P = physical wellbeing, F = feelings, S = social connection

3.2.4 Interaction of Values Structural Model – Time Point 2

As in time point one, an initial model was estimated without the interaction effects. The direct effects of materialism and universalism on the latent measure of wellbeing were significant. Higher materialism scores predicted lower subjective wellbeing and with r = -09 (p<0.001) and higher scores on universalism values predicted *higher* wellbeing r = .25 (p<0.001). Model fit indices indicated a good fit for the data (see table 8 for model fit indices). See figure 7 for the regression coefficients of the direct effects.
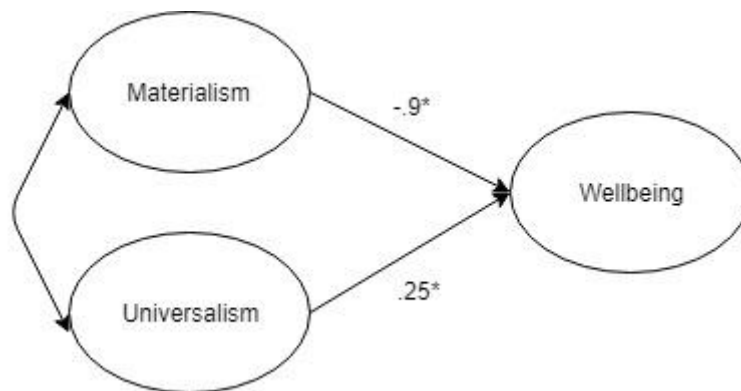

Figure 7: A diagram demonstrating the regression coefficients for the direct effect model at time point 2. * denotes significance at 0.001 level
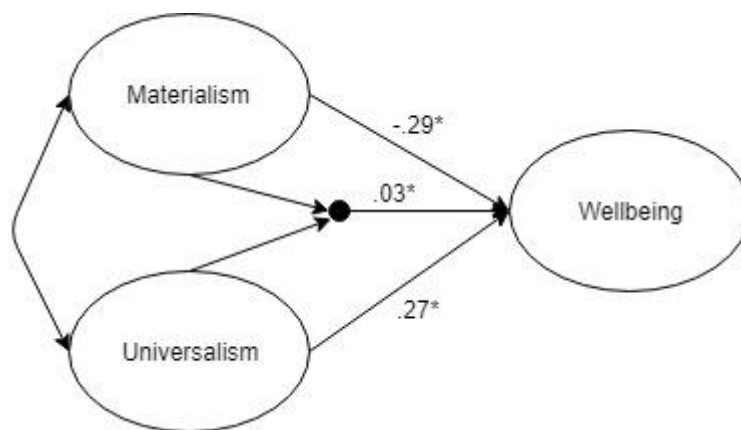

Figure 8: A diagram showing the regression coefficients for the mediation SEM at time point 2. The black circle shows the interaction effect. * denotes significance at 0.05 level

As in time point one an interaction SEM was estimated to determine if there was an interaction effect between universalistic and materialistic values on wellbeing. Direct effects were calculated by regressing the latent variable of wellbeing against universalistic values and materialistic values. The interaction effect was calculated by regressing wellbeing against the interaction variable. As in the measurement model, and time point one, materialistic values predicted poor wellbeing and universalistic values predicted positive wellbeing, with s of r = -.29 (p<0.001) and r =.27 (p<0.001) respectively. The interaction effect of materialism and universalism again had a positive impact on wellbeing, r = 0.03 (p <.001). As in time point one, including the interaction effect changed the regression coefficients, with both direct effects producing larger effect sizes, but leaving the sign of the association unaffected. See figure 8 for structural model with regression coefficients for time point two.

Table 8
A table showing the chi-square, degrees of freedom, comparative fit index, Tucker Lewis index, root mean square error of approximation and p value for both models at time point 2.

Model	χ^2	df	CFI	TLI	RMSEA	P Values
Direct Effect	82.868	12	0.99	0.98	0.02	P<0.001

3.3 Longitudinal Analysis

To examine if the effects observed in the cross-sectional analysis above also occurred across the two time points a longitudinal SEM was estimated. Wellbeing scores at time point two (henceforth denoted as T2) were regressed onto materialism and universalism scores at time point one (henceforth denoted as T1) in one analysis. Wellbeing scores at T1 were included in the model as a predictor variable to control for possible confounding effects. Prior to estimating the structural models associations between the confirmed latent variables were examined (see Table 9). The results demonstrated an association between the wellbeing latent variables at T1 and T2 and the universalism and materialism variables at T1.

As such two longitudinal SEM were estimated, a direct effect model and an interaction effect

model.

Table 9
A table showing the correlations between latent variables across time points one and two. *
denotes significance at the 0.05 level

Measure	1	2	3	4.	5.	6.
1. Materialism (T1)	1					
2. Universalism (T1)	.-32*	1				
3. Wellbeing (T1)	-.54*	.09	1			
4. Materialism (T2)	.03	.05	.01	1		
5. Universalism (T2)	.11	.26*	-0.02	.04*	1	
6. Wellbeing (T2)	-.09*	.01*	.05	-.11*	.14*	1

3.3.1 Direct Effect Model

As with the prior cross-sectional analyses, an initial model was estimated that did

not include the hypothesised interaction effect (see Figure 9). The direct effects of

materialism (T1) and universalism (T1) on wellbeing (T2) were significant. High

materialistic values predicted poor wellbeing and high universalistic values predicted

positive wellbeing, $r = -.01$ ($p<0.001$) and $r =.07$ ($p<0.001$) respectively. Several of the

model fit indices did not meet the proposed threshold, namely TLI and RMSEA (see Table

10). An interaction model was estimated and the potential meaning of the model fit indices

results can be found in the discussion section below.

Table 10
A table showing the chi-square, degrees of freedom, comparative fit index, Tucker Lewis
index, root mean square error of approximation and p value for both models at time point 2.

Model	$\chi 2$	df	CFI	TLI	RMSEA	P Values
Direct Effect	83.766	12	0.96	0.89	0.08	P<0.001

3.3.2 Interaction Effect Model

Direct effects were calculated by regressing the latent variable of wellbeing (T2) on universalistic (T1) and materialistic (T1) values. The effect of the interaction between universalism and materialism calculated by regressing wellbeing (T2) on the calculated interaction variable. As in the measurement model materialistic values predicted poor wellbeing and universalistic values predicted positive wellbeing, $r = -.06$ ($p<0.001$) and $r = .08$ ($p<0.001$) respectively. The interaction effect of materialism and universalism again had a positive impact on wellbeing, $r = 0.04$ ($p <.001$). Including the interaction effect reduced the size of the direct effect but the sign of the association was unaffected and they remained significant. See figure 10 for structural model of the longitudinal analysis with the interaction effect. Figure 11 plots the interaction effect. It demonstrates that the negative impact of materialism on wellbeing is more pronounced when universalism is low.
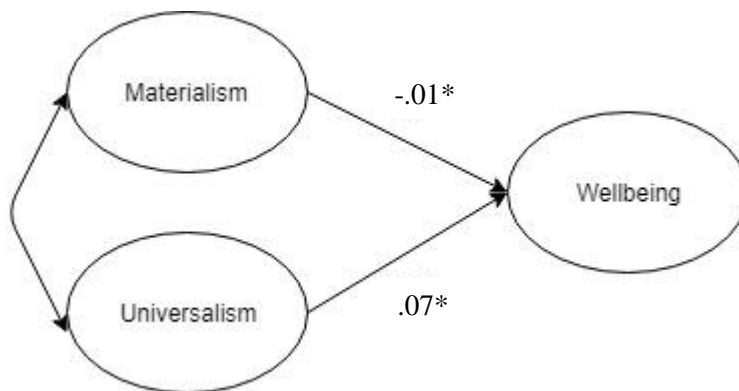

*Figure 9: A diagram showing the regression coefficients for the longitudinal moderation SEM. * denotes significance at 0.05 level*
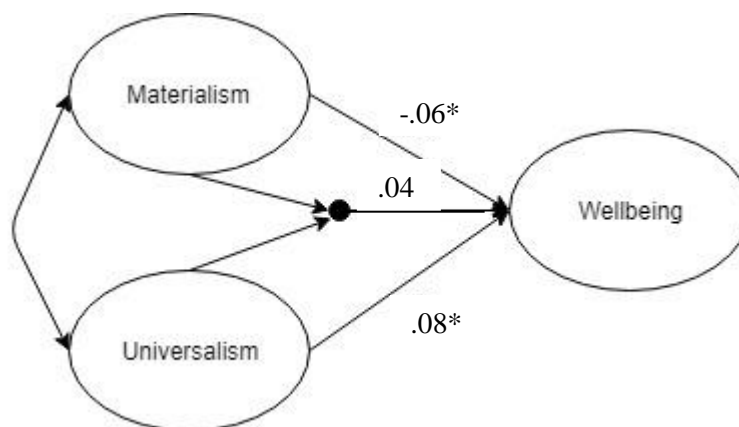

*Figure 10: A diagram showing the regression coefficients for the longitudinal moderation SEM. The black circle shows the interaction effect. * denotes significance at 0.05 level*
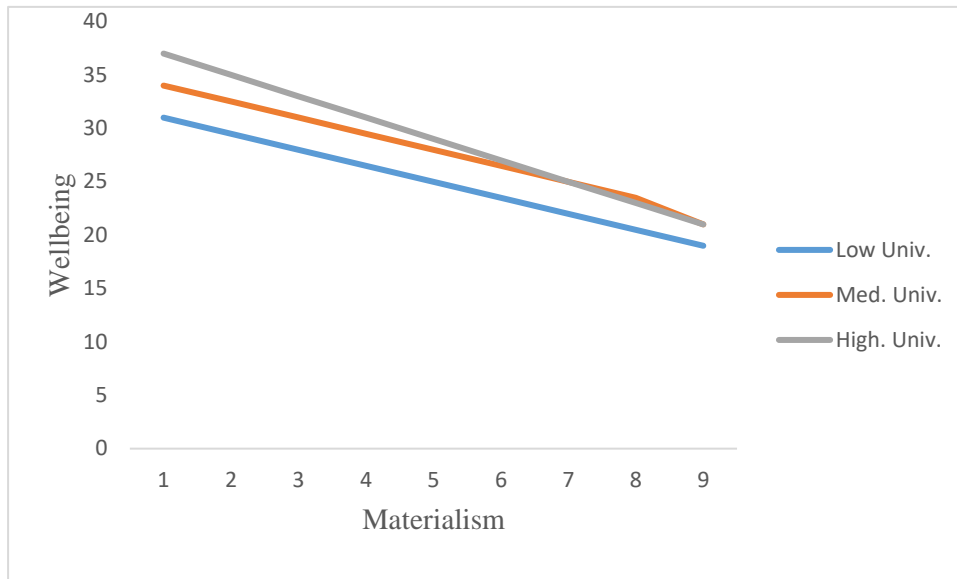
Figure 11: A graph showing the interaction effect of materialistic and universalistic values on wellbeing. Universalism is separated into -1SD score, average score and +1SD score

3.4 Early Life stressors and Materialism

To test the hypotheses that materialistic values may partially mediate the relationship between life stressors and poor wellbeing a mediation SEM was estimated.

3.4.1 Life Stressor Partial Mediation - Measurement Model

Unlike previous analyses the following model was only estimated at time point two. This was due to the change in measures used by the MCS as there was no reliable measure of deprivation or parental mental health at time point one.

A CFA was run to test the validity of the three hypothesised latent variables: wellbeing, materialism and life stress. The proposed model was compared against two nested alternative models. The model fit results are shown in table nine and demonstrate that the hypothesised three factor model provided the best fit of the data.

Table 11

Confirmatory Factor Analysis Fit Indices for the Partial Mediation Model

Models	χ^2	df	CFI	TLI	RMSEA	P- Value
Three Factor	131.11	3	0.95	0.95	0.05	P<0.001
Two Factor	499.01	4	0.82	0.91	0.20	P<0.001
Single Factor	532.02	5	0.79	0.82	0.14	P<0.001

The measurement model for three factors demonstrated an acceptable fit (χ^2 = 131.11,

P<0.001; CFI = 0.96, TLI = 0.96, RMSEA =0.07). All *a priori* factor loadings of the latent

constructs were significant demonstrating convergent validity. To assess for discriminant

validity the three factors were collapsed into two, and then again into a single factor and the

CFA was run again (see table 11). The model fit indices provided were worse as were the

factor loadings for the one and two variable model and therefore the three factor model was

used for the structural model.

3.4.2 Life Stressor Partial Mediation - Structural Model

Following the CFA, a path analysis was estimated to examine the mediating role of

materialism between wellbeing and life stressors. A direct effect was calculated by

regressing wellbeing on to life stressors. The mediating role of materialism was calculated

by regressing wellbeing against materialism and then materialism against life stressors (see

figure 12 for pathways and regression coefficients). The model produced a good model fit

(see table 12 for model fit indices). Each pathway produced a significant result. Thus, life

stress had a significant direct effect on wellbeing with, r = -.10 (p<0.001). The mediating

role of materialism was calculated by calculating the product of the two regression

coefficients seen by regressing wellbeing on to materialism (r =0.5) and materialism on to

life stressors (r =0.8). Life stress had a significant indirect effect on wellbeing with

materialism as a mediator with, r = -.01 (p<0.001). Figure 12 shows the structural path and
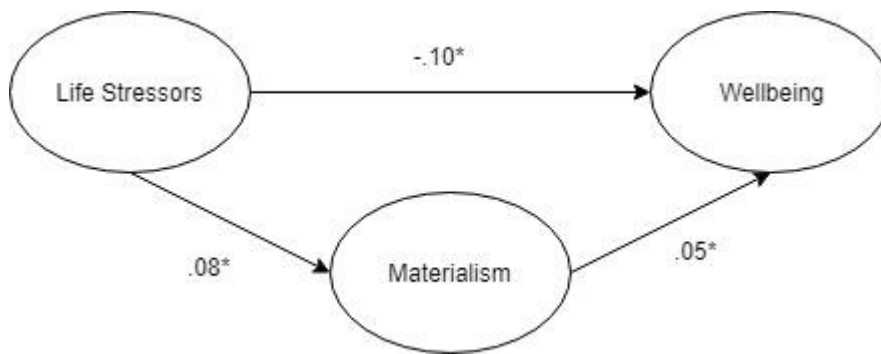
regression coefficients.

*Figure 12: A diagram showing the regression coefficients for the mediation SEM. * denotes significance at 0.05 level*

Table 12
A table showing the chi-square, degrees of freedom, comparative fit index, Tucker Lewis index, root mean square error of approximation and p value for the mediation model

Model	χ2	df	CFI	TLI	RMSEA	P Values
Direct Effect	131.11	3	0.95	0.95	0.05	P<0.001
Mediation Effect	125.87	4	0.98	0.96	0.03	P<0.001

4. Discussion:

4.1 Summary of findings

The analyses of the data taken from the MCS produced several significant findings which both replicated and added to previous findings in the literature. Below is a summary of the analyses separated by the project's initial aims.

4.1.1 The interaction between materialism and universalism on wellbeing

In the two cross-sectional SEMs a clear direct effect was observed where   where high materialistic values predicted poor subjective wellbeing (SWB) with a similar effect size to that reported in Dittmar et al's (2014) meta-analysis, -.21 at time point one and -.29 at

time point two compared to -.19 in Dittmar et al (2014). In addition, a direct effect of high universalistic values predicting positive SWB was observed, a previously hypothesised but never directly measured finding. The longitudinal SEM also returned significant direct effects albeit with smaller effect sizes. Scoring highly on materialistic values and universalistic values was associated with poorer or more positive wellbeing respectively. A further novel finding was the interaction effect of universalistic and materialistic values. Universalism moderated the negative effect that was observed between materialistic values and poor wellbeing. Thus, an individual who scored highly on both universalistic values and materialistic values predicted a small, but significant, benefit to their wellbeing. Interestingly this finding was consistent across both time points, with children aged 11 and 14 years old. The longitudinal SEM returned similar results to the cross-sectional analysis. Universalistic values had a moderating impact on the negative association between materialistic values and wellbeing. The moderating impact, however, appears to be one of diminishing returns and was dependent on the strength of materialistic values held by an individual. As individuals scored higher for materialism the moderating effect of conflicting universalistic values became weaker, even when an individual scored highly for both universalism and materialism.

4.1.2 The mediating role of materialism in life stress and wellbeing

The role that materialistic values play in the association between life stressors and wellbeing was also investigated with the hypothesis that materialism would partially mediate the relationship. Materialistic values did appear to play a partial, mediating role in the relationship between life stressors and low wellbeing. Life stress was significantlyassociated with poor SWB and materialism accounted for a small, but significant, part of the variance in that relationship. Parental mental health issues and deprivation, significant life stressors, were associated with higher rates of materialism in children. These higher rates of materialism were then also associated with poorer wellbeing.

4.2 Discussion of findings

4.2.1 Interacting Values

The finding of the interaction effect between materialistic and universalistic values, and the nature of that interaction effect, is a novel one. As hypothesised, the relationship between materialistic values and poor SWB was moderated when an individual also held universalistic value, weakening the association. The moderating effect, however, had a diminished effect when an individual scored highly on materialism, suggesting a complex interaction. The consistency of the finding, that a moderating effect was seen cross-sectionally at both time points and longitudinally, strengthens the concept that materialism is damaging to wellbeing and can be moderated with conflicting values. The longitudinal analysis in particular suggests that materialistic values can be harmful to wellbeing across an extended period of time.

The nature of the moderating effect, however, implies that the negative impact on wellbeing associated with the highest levels of materialism cannot be solely mitigated with conflicting, more universalistic, values. The moderating effect of universalism on the materialism/wellbeing association was weaker, although still present, when an individual scored highly on the materialism scale. It is possible that universalism was not directly related to the association between materialism and wellbeing and instead an additive effect was observed i.e. scoring highly on universalism may simply preclude someone from also scoring as highly on materialism and thus have less of an impact on wellbeing. Prior research has shown that endorsing materialism at higher rates has a greater impact on wellbeing then endorsing them weakly (Dittmar et al. 2014, Wang et al. 2017) and perhaps being universalistic prevents an individual from being overly materialistic. An individual who highly endorses materialistic values will spend a greater amount of their time pursuing materialistic goals and by default will have less time to focus on intrinsically motivated goals and vice versa. Schwartz's (2012) value cirucmplex supports this possibility

as it suggests materialism and universalism are diametrically opposed, with other value researchers suggesting it is not possible to hold such opposing values without consequences to wellbeing (Burroughs & Rindfleisch, 2002). While this may partially explain the moderating effect it does not account for where a moderating effect was observed for individuals who scored highly on both materialism and universalism. An alternative explanation is that neither universalism nor materialism is able to fully achieve the 3 growth tendencies discussed by SDT; autonomy, mastery and connection (Deci & Ryan, 1985). There is very likely a limit to the benefit that universalistic values can have on a person's wellbeing, they are not panacea to difficulties faced in life. As Peason and Goodal (2008) highlighted there are many facets that are needed to develop and maintain positive wellbeing and the present finding suggests that materialism may preclude engagement with other, more positive elements of life that lead to positive SWB. Engagement with universalism is just one, of many, ways that wellbeing can be improved.

The finding contradicts a theory posited by Burroughs and Rindfleisch (2002) who argued that value conflict may be the cause of poor SWB in high materialistic people. Universalism and materialism are opposing concepts, as defined in values research (Schwartz, 2012) and yet valuing both appeared to have positive impacts on SWB. The finding adds to the value literature and suggests that universalism and materialism are both part of a wider value system, first discussed by Rockeach (1973), and that people are able to hold conflicting values without detrimental effects. Given the large present that materialism holds in modern life, and the difficult ethical questions it sometimes raises, it would seem important that people are able to hold seemingly contradicting values without damaging their wellbeing. It is hard to argue that materialism is inherently bad but perhaps a singular focus can be damaging, an idea that is supported by the findings of this study.

The finding is consistent with the theory of SDT which suggest intrinsically motivated behaviours are necessary to achieve the three basic psychological needs and therefore positive SWB (Deci & Ryan, 2008. The largest detriment to an individual's wellbeing was

observed in people with high materialistic and low universalistic values, suggesting they were least able to achieve their growth tendencies as a result of a value system which predominantly encouraged extrinsically motivated behaviour.   Although the direct and interaction effects were significant across all analyses good-model fit indices were only returned for the cross-sectional SEMs. As such the findings of the longitudinal analyses should be judged with caution. There are several reasons why the fit indices for the longitudinal model were worse when compared to the cross-sectional analyses. Firstly, the changing in measures across the time points impacted the latent variable quality, as the factor loading was weakened which may have resulted in a poor representation of the data. A more likely reason is that the model was poorly optimised and was missing several other potential associated variables. Given the non-linear nature of the interaction effect, and the issue discussed above regarding several additional facets affecting wellbeing, it may be that the relationship between the latent variables was more complex then implied by the hypothesised structural model. A more detailed SEM, which may have included several other variables, may have resulted in model which returned a better "fit" for the data.

4.2.2 Materialism and life stress

It appears that children may be using materialistic strategies as a way of coping with ongoing stressful life events. The mediating pathway showed that those who experienced ongoing financial difficulties and parents with mental health difficulties were more likely to hold materialistic values which were associated with poorer wellbeing.

Given the extrinsic nature of materialistic goals these findings are not surprising. According to SDT Individuals seeks to improve their wellbeing as a fundamental human drive with the method individuals choose to approach this endpoint leading to either positive or more negative wellbeing (Ryan & La Guardia, 2000). Extrinsic goals, by their nature, are inherently less able to provide positive wellbeing. Previous research has shown that people

from lower socioeconomic backgrounds are more likely to be materialistic, a finding supported by this study as lower income predicted materialistic values (Wattson, 2003). On the surface this finding may seem counterintuitive as people with lower income and higher levels of deprivation are less able to achieve materialistic aims. It must be considered, however, that achieving psychological basic needs may be secondary when other basic needs are not being met. Maslow's hierarchy of needs (1954), whose work informed much of Deci and Ryan's social determination theory work, posits that internal growth can only be prioritised and achieved when other basic needs are met such as food and shelter. Considering the majority of people who receive benefits in the U.K live from paycheque to paycheque, and a substantial proportion live below the poverty line it is conceivable that more materialistic aims are valued. Goals which seek to achieve money, status and power will theoretically help these individuals achieve their basic needs even if at the cost of their psychological ones. This also suggests that materialistic values are reactive, developing as a way of coping with ongoing stressful life events or a specific life situation, a view supported by some researchers that hypothesise that materialism value orientation develops as a response to stress (Chang & Arkin, 2002; Gentina, Shrum & Lowrey, 2018)

4.4 Evaluation of Design

4.4.1 Strengths

The large sample size of the project is a major strength. It allowed for the study to have the power to observe even small effects and multiple interacting variables. Furthermore, the sample, as it was stratified, represented large swaths of the U.K population including more deprived areas, which traditionally are underrepresented in research. The longitudinal nature of the data is also a major strength as it allowed, for the first time in materialism research, to observe change, and consistency of findings, over time. In particular the finding that the interaction of universalistic and materialistic values moderates the materialism wellbeing and

negative relationship is more robust given it occurred across two time points. Arguably, the studies greatest strength is the variety of measures used and the wide topics covered by the data collection. Information on psychopathology, parental and children, income, value systems and social media use in a single study is rare. It allowed for specific analyses and hypothesis testing that has proven difficult in previous research.

4.4.2 Limitations

One of the key issues with this project was the construction of latent variable analysis for materialism and universalism over existing validated measures. Although construct validity was tested and confirmed within the analysis the measures used to construct the latent variables do not map directly onto previously validated measures (see table two in methods section). Although the measures used to generate the latent variables were chosen based on their similarity to other validated measures and CFA was used to provide construct validity this remains an issue.

A further issue concerns the changing questions within the MCS across the two time points used. The MCS is a fluid, expansive longitudinal study and as such the questions it chooses to include, or exclude, have changed significantly over the years. Unfortunately this affected the present study as it resulted in different measures being selected at different time points to try and generate measures of a single construct. While all effort was made in the analyses to account for this, it undoubtedly affected the validity in comparing the latent variables across the two time points.

Over the course of 15 years more than 7,000 participants have dropped out of the MCS. The issue of drop out is additionally complex for this project as it involved comparing data across two time points and while there was drop out between time point one and time point two there were also people who responded at time point two but not at time point one. Furthermore, many participants had missing or partial data. There are many possible reasons

for this including; refusing to answer, data had been lost or damaged etc. however it is impossible to know this for sure. Attrition and missing data is typically not random, potentially systematically biasing the data. Reasons for drop out or missing data were not included within the MCS. Efforts in the analysis were made to account for missing data by using FIML however accounts for potential attrition bias were not made. It would be interesting if more data on participants who dropped out was available so a fuller evaluation of attrition could be examined.

4.4.3 Future Research

The present study has provided several interesting avenues for future research, namely in the interaction of value systems. Firstly, it is the author's hope that the MCS chooses to include a validated measure of materialism in their future data sweeps. Considering the findings of this present study it would allow for a more thorough investigation of the impact of materialistic values with a large data set. Throughout the 15 year history of the MCS many measures have been added or altered and it seems the MCS researchers have attempted to record issues of materialism and universalism. The 3-item MVS (Richins & Dawson, 2002) could easily replace the existing materialism based questions with the same said for the values questionnaire (Scwartz, 2007).

Research which examines additional moderating factors of the materialism/wellbeing relationship and the ways in which people could hold materialistic values and have positive wellbeing would be interesting. Finally, the impact of social media, and how that interacts with materialistic values, is an area yet to be fully researched. This present project initially attempted to examine this; however, the measure on social media was not detailed, measuring only hours spent per day, instead of examining *how* people use social media, as such the measure did not appear detailed enough to use for an in-depth analysis. The effect of social on mental health, particularly in adolescents, is not yet well

understood with research often making large conclusions based on small cross-sectional studies (Orben et al. 2019). However there does appear to be some association between social media use and mental health with the way in which it used potentially moderating the association (Ferguson, 2017). Given the abundance of materialistic messages in social media the interaction of wellbeing, social media use and materialism would be an interesting avenue to explore perhaps with a focus on how materialistic values influence individuals use of social media.

4.5 Conclusion

The finding that the universalistic values moderate the negative impact of materialism on wellbeing is a novel one. Taken in combination with the finding that materialism partially mediates the relationship between life stressors and poor wellbeing suggests that materialistic values in and of themselves may not be harmful to wellbeing. Instead, it supports the concepts posited in social determination theory that positive wellbeing is achieved through engagement with activities which provide basic psychological needs. Materialistic values, and the behaviours which result, are extrinsic and fail to achieve these basic needs. Exclusive engagement with these activities seems to prove harmful to wellbeing and it is a combination of intrinsic and extrinsically motivated behaviours which seems to beneficial to wellbeing. This has implications for the way in which materialistic messages are conveyed through a variety of media. A materialistic lifestyle may appear beneficial and desirable to those from disadvantaged backgrounds but ultimately this is not helpful to their wellbeing.

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Part 3: Critical Appraisal

Introduction:

The reflections discussed below represent my thoughts not just on the research process for the present project but also how my thoughts on research in general were shaped and changed by my experience of conducting this research project. My reading of the materialism literature has undoubtedly shaped the way in which I am now reviewing my work and perhaps forever changed the way in which I will review future research. I conclude with a discussion around where my research might fall in the larger picture of scientific publication and I paint a rather pessimistic, almost cynical view. I hope that, as my career continues, my ideas and beliefs around research and materialism can continue to change and grow and hat I become less pessimistic.

1. Research and Statistics

> *"If you torture data long enough it will confess to anything" – Darrell Huff*

Due to the nature many of psychological phenomena being directly unobservable statistics are seen as vital for making inferences and drawing conclusions. Throughout my training in Psychology, which is culminating with this present thesis project, I have been taught about the necessity of statistics, effect sizes and regressions to make sense of human behaviour. At no point during these past ten years did I question that. As such when it came to choosing a project I opted for a secondary data analysis and utilised Structural Equation Modelling (SEM) in order to test my hypotheses. SEM is seen as a rigorous and effective method for examining relationships between unobservable, or latent, variables and when I first learnt about it I felt as if an entire avenue of research was opening up for me. However, as I worked on the analyses for my project Darrell Huff's quote above kept returning to my mind. I looked on endless streams of numbers, correlations, significant regressions, model parameters etc. and I started to wonder what exactly was I looking at and was it actually telling me anything?

SEM, by design, allows for a great deal of interpretation. As such it is vital that any model that is run has a sound theoretical underpinning. I chose my measures carefully and tried to ensure that every statistical choice I made was guided by sound statistical theory and based on methods that have been utilised for decades. Furthermore, as is the standard, each model I ran was hypothesised *a priori* and justified based on previous research and an understanding of the literature. However I did wonder if, because of the large data set, I could theoretically make any number of assumptions or hypotheses and SEM would confirm these for me in a "rigorous" statistical way. It highlighted to me the importance of having well justified and researched hypotheses to avoid erroneous conclusions based on statistics. However it's interesting to think that, given the acceptable type 1 error rate in the social sciences is set at five percent, yet when something is found to be significant that 'small' chance is never really considered.

The social sciences have been struggling recently with the issue of "p hacking" a process where collected data is analysed several times until a significant result is found (Head, Holman, Lanfear, Kahn & Jennions, 2015). "P hacking" seems to have developed from a combination of two things. Firstly the ease in which statistics can be used in telling any story researchers want and secondly the need to find novel, significant findings (Head et al. 2015). I noticed as I ran each model and read the model statistics that I was desperate for a positive finding, that I myself felt the pressure to produce a "novel" result for my thesis. Perhaps fortunately for me I did but I wonder what role the statistical methods I used played in that finding. I also wonder how I might have reacted had my results have been negative. I would certainly have been disappointed. It seems a shame that I, and many other researchers, react with disappointment when no finding in science can tell us just as much as a novel one. In age where social sciences, in particular psychology, has substantial problems with replication and with previously highly regarded studies failed more recent replication attempts the result of "no finding" should be equally celebrated (Klein et al. 2018).

During my work on this project I sometimes felt that the complex statistical methods I had chosen to test my hypotheses might be moving me further from the truth rather than closer to it. Epistemologically I tend towards objectivism and as such my selected research methods sought to bring me as close to the "objective" truth as possible. I noticed that I was questioning my objectivism and if, as a result, I was missing key elements of the human experience which, while perhaps more subjective, may be more pertinent to real life. In addition to this I often thought how far removed I was from the participants and the phenomena I was studying. The described feeling was compounded by a large data set in which I had no role in recruiting and only saw seemingly endless stream of Likert-type scales reportedly representing human experiences.

In the "Glass Bead Game" by Herman Hesse a cabal of academics live in a literal ivory tower, divorced from the "real" world in which they continue to study and have little to no connection to the world they, theoretically, are trying to improve and learn about. As a researcher I must ask who this research is for and what ultimately what am I hoping to achieve? Theoretically all research serves the purpose of improving society through the acquisition of knowledge and divining a greater understanding of the world. But I often felt that my work seemed so far removed from reality, behind complicated statistical methods, it was hard to see how I could benefit any individual.

Statistical methods have become increasingly more accurate, complex and demanding in regards to the data assumptions required for them to be considered valid to use. It does not feel to me, however, that an increase in statistical rigour is a more valid way of producing research or of accessing the 'truth'. Considering the issues of replication discussed above this seems especially pertinent as perhaps more vigorous and comprehensive statistical methods do not make for better research but instead a more useful tool for constructing and justifying a narrative. Qualitative research serves as the obvious example in which individual experience is held in high regard yet it is not valued nearly as highly as quantitative research. It is considered to have poor generalisability due to the

limited scope and sample sizes and is often criticised for the lack of methodological control. As such quantitative research, such as mine, is seen as the gold standard.

Although I understand and appreciate the need for well controlled experimental studies my experience working on a large secondary data analysis has given me a greater appreciation for small n design studies and qualitative study. Although less generalisable and arguably producing less novel findings there is a direct human element that perhaps large studies like mine lack. It is easy for experimenters and researchers to become removed from their participants and their field of study. I wonder if that, in part, explains the use of "p hacking" as people become devoid from other individual's experience and use statistics to tell any story they wish.

2. Materialism and Research

There exists an interesting parallel with the field of study of this project and nature of scientific publication. The concept of "publish or perish" where researchers are inclined to seek as many publications as possible has much in common with the materialistic ideals that have shown to be harmful. By achieving money, power and status does this make us happy? Is science improved by publishing as much work as possible? Recent research into the "publish or perish" phenomena would disagree. Due to the pressures of needing to publish science journals are filled with novel findings, as opposed to vital replication studies, and large swaths of research goes unpublished due to negative findings (Earp & Trafimow, 2015, Francis, 2012). There is also data to suggest that the quality of research has not improved in line with quantity, with many studies being published with flawed designs (Carrell & Simoni, 2018; Sarewitz, 2018). Perhaps most paralleling is the emotional impact this has on researchers who report finding the pressure to publish damaging to their mental health and wellbeing (Bell, Rajendran & Theiler, 2012; Kinman & Jones, 2008). As I previously noted I was keen to see a "novel" finding for my thesis perhaps feeling it represented my capabilities

as a researcher, and that a non-significant finding would in some way represent a failure on my part.

Similar feelings are expressed by people with materialistic values who, for one reason or another, are unable to achieve wealth, status and power. Indeed through a process of normalisation they became dissatisfied with their current levels of wealth status and power and seek to continuously "improve" their relative achievements. In many ways it can feel as if scientific research has been largely influenced by these ideas. One only needs to look at how scientific publishing has changed over the years. Reportedly the quantity of scientific journal articles published doubles each year with over 2.5 million published in 2016 alone. As society's drive to consume has increased so has its capacity to produce, a process paralleled in the scientific community evidenced by the explosion in scientific publications.

There are undoubtedly huge benefits to an increase in scientific output. The increase in our capacity to learn and move science forward has arguably never been better. Yet the materialisation of science seems to have had some unfortunate, unforeseen consequences. Firstly it is simply not possible to consume all the information in one given area. It is arguable that my particular area of study is a relatively niche one however there are still thousands of research articles that it would be impossible for any one person to read and absorb. From this, meta-analyses and systematic reviews developed in order to collate this research. However they are not without flaws, with publication bias and quality of research meaning many studies are often not included. Furthermore the quality of scientific output rated can be rated and judged on the number of citations it receives and the impact factor of the journal it is published in. In theory such an approach ensures that only the "best" research is considered and remembered yet novel findings draw more citations and as such are more likely to be published (Calnan, Smith & Sterne, 2006). Certainly not all research is created equal and it is important to find a way to distinguish well produced and conducted research with poorly controlled or thought out research. Yet combining the benefits of citations and

impact factors with the "publish or perish" approach to research has resulted in a narrowing of the type of research which becomes published and a narrowing of the work which is cited.

As I researched and read for my project there were hundreds of articles I overlooked which may have had relevant information for my thesis and almost certainly would have had interesting information. They may have shed a new light on my hypotheses and yet there mostly served as background noise. I had this constant feeling that there were large areas of materialism research I had not read or covered. I often wondered with the findings of my project if I was simply adding to the noise. I also found myself wondering if my finding was interesting enough to merit publication or a citation. Does it only hold value in a material sense, with the tangible reward of citations and a publication? Considering how much I feel I have learnt and gained from this process it is strange that I found myself thinking of an extrinsic reward to validate it. Then the question is raised who is the research for, what purpose does it serve? Ostensibly this work was for myself, to demonstrate I have a capacity to produce research commensurate with the requirements of a doctoral thesis. And as much as I tried to hold this in mind I could not stop myself for hoping for a novel finding with a view to seeking a publication.

3. Personal Engagement

I entered into this research project with some pre-conceived beliefs about the nature of materialism and its impact on society. I've always felt uncomfortable with the way materialistic lifestyles are ensconced and encouraged through various media and I've often personally felt alienated by the ubiquity of social media and the materialistic messages it conveys. There were several reasons that I undertook this project, one was a personal interest and a hope one day of being able to inform societal change through policy. Perhaps another reason I undertook this project was to confirm my own biases towards materialistic values and I found myself worrying if I risked biasing the study because of them. To compensate

for this I endeavoured to read as broadly as possible on the subject matter in a way that I hoped might challenge some of these beliefs. On reading the materialism literature there I was struck by the unanimous consensus in the literature that materialistic values are harmful to an individual's wellbeing.

In a way that is rare in scientific study the wide agreement of researchers of the negative relationship between materialism and wellbeing is almost stunning. The relationship was observed in research conducted as early as 1972 and it is difficult to find research that espouses the benefits of materialistic values and behaviours. The research that does claim there is a benefit to a materialistic lifestyle also highlight that such benefits are either short lived or come at the cost of other metrics such as life satisfaction or even quality of intimate relationships. I'm perhaps naïve in my hopes that my personal bias and feelings towards materialism, and the research I and others produced, might one day be coalesce into policy changes that would reduce society's materialistic focus. As I discovered there was already a huge body of research describing this negative impact which has resulted in very little social or political change. I was disheartened by this finding. It seemed strange to me that research into this relationship is not discussed more frequently and is not a larger issue amongst social psychologists and people hoping to inform political policy. Since 1972 materialism in society has increased and yet little has been done or even suggested, that might help mitigate some of the more negative impacts of a materialistic society.

There is perhaps a sense of inevitability felt by researchers about materialism in society that might explain their silence. I've found myself wondering if it reflects a sense of powerlessness to enact change. Certainly that's how I felt multiple times throughout the process of the study. Learning about how younger generations have become increasingly materialistic and with the advent of social media, essentially an advert for a materialistic lifestyle, there is a feeling reminiscent of what King Canute might have felt trying to hold back the tide. A complete shift in culture and a broader discussion about the problems with materialism seem unlikely. In a world where Donald Trump, materialism made manifest, can

become one of the most powerful men on the planet I wonder if we, as a culture, are ready for this discussion. Perhaps the approach of ethnography where culture is merely observed with no attempt at intervention is the best one can hope for.

My initial aim for this project was to try and understand how one can live in a materialistic world without experiencing some of its more damaging effects. The finding that a balance of values can reduce that is hopeful but further steps as to how this knowledge can be utilised will require a great deal more work. As a society research suggests we are becoming more materialistic not less. An understanding of how to mitigate the potential negative impacts is more important than ever.

The recent surge in research examining the impact of social media on mental health, and the ways in which it can used be healthily, reflects an understanding that as society adapts we need to be cautious how we adapt with it. Social media has been an incredible broadcasting machine for materialistic values and lifestyles and as a communication tool it has tremendous power. Social media is representative of a material world and the understanding that this may not be helpful, particularly to young people, is an encouraging one. As discussions increase about unhelpful media images and the damaging impact materialistic messages can have on people it opens the way for researchers to influence and inform policy. Policy changes into how social media operates have already begun and it seems an ideal opportunity to spark the conversation about materialistic values and the damage it can cause.

One of the potential barriers for any significant change is the current trend of materialism research that is being published. It is perhaps ironic that the majority of work is published in journals of consumer behaviour which themselves are attempting to find the best way to encourage people to consume. With western economies based on one of continuous consumption it is not in the interests of government to change this approach. Furthermore a change in individual behaviour is not necessarily in the best interests of the individual. Large swathes of society enjoy seemingly unlimited consumption; being able to

buy what you want when you want appears on the outset to have no downsides. Why would someone want to eat less meat each week? Why would I want to limit my access to any number of clothing items? Perhaps a fundamental shift is only possible through a global crisis such as climate change, an issue ironically created through over consumption. If "necessity is the mother of invention" perhaps crisis is the mother of change. A fundamental change in the way we interact with our world, both ecologically and socially, appears to be needed but with materialism so ingrained in so many facets of society it is hard to imagine where this conversation will come from.

My reading and conducting of this project has done little to assuage my pre-held conceptions about materialism, which perhaps says more about me than I would like. Instead it has solidified them which I acknowledge is not the ideal way of conducting a scientific project. It has also left me feeling disheartened about the potential benefits that can be gleaned from this kind of research. I worry that when it comes to materialism it may be too little too late as culture moves inextricably towards a more materialistic one. In the 50 or so years that materialism has seriously been studied little has been said or done to try and influence policy or social change and any research conducted, mine included, feels like a drop in the plastic filled ocean.

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