ACCOUNTING FOR INDIVIDUAL DIFFERENCES IN FINANCIAL
BEHAVIOUR: THE ROLE OF PERSONALITY IN INSURANCE CLAIMS AND
CREDIT BEHAVIOUR

A thesis submitted to the University of Manchester for the degree of
Doctor of Philosophy in the faculty of Humanities

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ABSTRACT

A thesis submitted to the University of Manchester for the degree of Doctor of Philosophy in September 2013
Candidate: David J Hughes
Title: Accounting for Individual Differences in Financial Behaviour: The Role of Personality in Insurance Claims and Credit Behaviour

The current thesis examined the relationships between personality and attitudes and behaviours related to insurance claims, insurance fraud, and credit use.

The thesis incorporates a systematic literature review of Impulsivity-related personality traits. This review led to the identification and development of a six factor framework of Impulsivity-related traits (Impetuousness, Self-Regulation, Deferred-Gratification, Consideration of Future Consequences or CFC, Attention, and Sensation Seeking). The framework was subsequently used to classify existing “Impulsivity” measures so that coherent review of research linking “Impulsivity” to financial behaviour could be undertaken. The framework guided review revealed that four Impulsivity-related traits (Impetuousness, Self-Regulation, Deferred-Gratification, CFC) appeared to be influential across a number of financial behaviours and as a result could be considered somewhat ‘central’ to financial behaviour. Accordingly, these four traits were assessed in each of the three empirical studies. In addition, each study also included a number of outcome specific traits. These were traits likely to be of importance to the specific outcome variables in each study but were unlikely to be related to economic behaviour across multiple domains.

In Study 1 (n = 377), the central Impulsivity-related traits and the outcome specific traits of Compulsivity, Oppositionality, Risk-Taking, and Sensation Seeking were assessed in relation to Attitudes Towards Insurance Claims and the number of previously submitted motor and home insurance claims. The results revealed that Deferred-Gratification, CFC and Self-Regulation accounted for 36% of the variance in Attitudes Towards Insurance Claims, whilst a combined demographic, attitude and personality model was able to correctly classify participants as previous claimants or non-claimants in 84% of cases for motor claims and 66% of cases for home claims.

In Study 2 (n = 475), the central Impulsivity-related traits and the outcome specific traits of Callousness, Conduct Problems, Dishonest-Opportunism, Integrity, Machiavellianism, and Pessimism were assessed in relation to Attitudes Towards Insurance Fraud and previously submitted motor and home insurance claims. The results revealed that Dishonest-Opportunism, Consideration of Future Consequences, Pessimism, Age and Educational Attainment accounted for 58% of the variance in Attitudes Towards Insurance Claims, whilst a combined demographic, attitude and personality model was able to correctly classify participants as previous claimants or non-claimants in 78% of cases for motor claims but did not predict home claims.

In Study 3 (n = 611), the central Impulsivity-related traits and the outcome specific traits of Anxiety, Compulsivity, Insecure Attachment and Narcissism, were shown to be differentially predictive of five self-report financial behaviour factors (Irresponsible Spending, Financial Planning, Emotional Spending, Impulsive Credit Use and Poor Credit Management; 30-50% variance explained), the number of credit cards and loans owned (~22% variance explained), and debt (11-15% variance explained). Finally, the personality traits were seated within a meditational model of: Personality → Credit Acquisition and Financial Behaviour → Debt. This model was strongly supported and accounted for 26% of the variance in loan debt and 31% of the variance in credit card debt.
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DEDICATION

To June
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Chapter 1

Introduction

1.1 Thesis Overview

Individuals exhibit substantial heterogeneity in financial behaviour, which can be loosely defined as “any human behaviour that is relevant to money management” (Xiao, 2008, p. 69). Some of the variance in financial behaviour can be attributed to demographic differences in variables such as age, gender, education, occupation and socioeconomic status. However, these variables typically account for a surprisingly modest proportion of the variance (often less than 10%). There is now growing evidence that individual differences in personality are closely related to individual differences in financial behaviour. Continuing such work, the current thesis will empirically examine the extent to which personality accounts for the variation exhibited in individuals’ financial attitudes and behaviours in two domains: insurance and credit. Though the aims of the thesis are detailed, and consideration of the debate surrounding the relevant issues is recent, under-researched and complex, they can be understood broadly through the following questions:

1. Is personality related to credit use and insurance related behaviour?
2. If so, which personality traits?
3. Can personality be used to predict the variance exhibited in financial behaviour?

The principal aim of this thesis was to address these questions. Drawing on extant research relating personality to financial behaviours and other related behaviours, likely personality correlates of credit and insurance use were identified. Having identified the key personality traits, three studies were conducted to empirically test the relationships between these traits and insurance claims behaviour and credit usage, with the ultimate aim of building predictive models of insurance and credit use.
The following sections of this introduction will specify the remit and scope of this thesis by: (i) defining the outcome variables of interest, namely, credit and insurance usage, (ii) demonstrating the social significance of the topic and (iii) explaining why financial behaviour is being considered from a psychological perspective, particularly, why it is thought that personality traits influence financial behaviour.

1.2 Defining the Outcome Variables: Insurance and Credit Usage

1.2.1 Insurance

The insurance industry has become entrenched in the financial world in which we live and is at the heart of the financial risk management strategies employed by individuals, groups, organisations and societies. Insurance is essentially a legal contract designed to protect financial wellbeing in the event of a potential future loss. Insurance is defined specifically here as the equitable transfer of the risk of a loss, from one entity to another, in exchange for regular payments. In other words, in exchange for regular payments from the insured (premiums), an insurer will commit to compensate the policy holder upon the occurrence of a specific predefined event. The current thesis is concerned with two main types of insurance: automobile and home. A full discussion and justification for this decision follows in section 1.3.2.

Insurance contracts can be considered broadly to have four main phases. The first phase is the pre-insurance phase, in which a customer will engage in a range of decisions including whether to take out insurance at all and if so, which policy to apply for. The second phase is the product allocation phase, whereby the insurer will decide whether or not they wish to insure the customer and if so, on what terms. For some this is where contact between the insured and the insurer will end. However, in some cases, the customer will need or choose to claim against their insurance policy; this the third
phase, the claim submission phase. The fourth and final phase concerns an insurer’s decision regarding whether to compensate the claimant or not.

Insurance contracts are complex and each varies markedly, as do the factors that influence each of the four phases outlined above. A handful of studies have considered the factors that influence the pre-insurance decision (Curry, Robison, Shugrue, Keenan, & Kapp, 2009; DeDonder & Hindricks, 2006; Hemenway, 1990) however this is not the focus here. The focus for the current thesis lies with phase three: claiming against an insurance policy. More specifically, this thesis will investigate whether personality affects (i) the occurrence of the opportunity to claim (e.g. if a driver does not crash their car, they have no need to lodge a claim), (ii) the subsequent decision to lodge a legitimate claim and (iii) the decision the lodge a fraudulent insurance claim.

Throughout the remainder of the thesis, behaviours relating to both the occurrence of the opportunity to claim and the decision to lodge a claim will be referred to as “insurance claims behaviour” and behaviours relating to the submission of fraudulent insurance claims will be referred to as “fraudulent insurance claims behaviour”. Whilst the research is primarily focused on fraudulent and legitimate insurance claims behaviour, the knowledge generated also has potential implications for phase two of the insurance process. If, as hypothesised, personality accounts for significant proportions of the variation exhibited in insurance claims behaviour, personality assessments may be useful to insurers during product allocation.

1.2.2 Credit

Credit is defined by the Oxford English Dictionary as “the ability of a customer to obtain goods or services before payment, based on the trust that payment will be made in the future”. Of direct interest here is unsecured credit borrowed from a financial institution in the form of either a credit card or loan, and thus credit in the context of the current thesis can be considered a contractual agreement whereby a
borrower receives a sum of money *now* and agrees to repay the lender at a *later* date (Lea, 1999). Credit is in essence debt: “*money owed or due*” (Oxford English Dictionary, 2004). The amount paid back to the lender by the borrower will be greater than the sum originally borrowed. This is the cost or premium attached to the credit, and is commonly termed interest.

Credit in the form of a loan or credit card serves an important function in modern economies: it allows one to make financial purchases without the need for the required money upfront. Resultantly, people are able to buy *now* and pay *later*, allowing individuals to purchase items that in essence they cannot afford; items such as houses, cars but also less essential items such as clothes, holidays and mobile phones.

Research interest in credit has been abundant for decades, certainly since the proliferation of the credit card approximately twenty years ago (Campbell, 2004; Kamleitner, Hoelzl & Kirchler, 2012). Much of the research attention initially focused on answering the questions: who uses credit cards and why? However, changing attitudes toward money have seen (especially within western countries) people go from cherishing savings to revering spending (Ritzer, 1995). These changing attitudes have seen the spread of consumer culture, growing acceptance of debt and widespread uptake of credit based products (Cambell, 2004; Dittmar, 2004; 2007; Elliot, 2005; Kasser & Kanner, 2004; Watson, 2003).

As will be discussed in greater detail in the following section, the increase in available credit has been accompanied by an increase in the accrual of unmanageable debts. Accordingly, research focus has changed from questions of who uses credit and why? To, why do individuals use credit differently? With the key question being who is unable to effectively manage their credit use and is thus, at risk of accumulating unmanageable debts? This is one of the questions that this thesis seeks to address.
1.3 Significance of the Topic

1.3.1 Credit and Debt

Individuals’ use of money and financial products impacts not only upon themselves and their families, but on organisations, societies and whole nations. Specifically, individual level financial behaviour has been shown to affect both microeconomic conditions such as individual financial hardship (Valins, 2004) and macroeconomic conditions such as decreased gross domestic product (May, Tudela, & Young, 2004). Beyond financial outcomes, financial behaviour, particularly financial mismanagement and the accrual of large, unmanageable debts, can result in a wide array of negative individual outcomes such as decreased mental and physical health (Valins, 2004), well-being (Brown, Taylor, & Price, 2005) and self-esteem (Dawson, 2003). Such states have in turn been linked to a range of other problematic behaviours, from excessive drinking (Kempson, McKay, & Willitts, 2004), to poor performance at work (Ryan, 1992) and even suicide at the very extreme (Valins, 2004).

When considering the wide ranging impact of unmanageable debt, it is worrying to note that since 1990, consumer consumption, debt and bankruptcy rose annually and reached historically record levels in 2008 (Credit Action, 2013). Following 2008 and the “credit crunch” consumption and consumer debts began to reduce. However, this trend lasted only a short while and since early 2011, consumption and debt has been back on the increase. The total personal debt in the UK currently stands at £1,451 billion, only slightly less than the UK’s GDP for the whole of 2010. Average household debt in the UK is £55,803 a sum that is far more than the average £31,000 (pre-tax) household income. Of particular interest to the current thesis, levels of unsecured debt (i.e. credit card and loans) average at £8,144 per household. This figure increases to £15,507 when the average is based only on households with unsecured credit (Credit
In the UK there are now more credit cards than people and debts related to credit cards now total approximately £210 billion (Credit Action, 2013).

Irresponsible financial practices and debt accrual also impacts upon savings, with 25-30% of adults having no financial savings or investments and most of the remaining population acknowledging that they possess insufficient savings to cope should there be an unexpected stoppage of their income (Talbot, 2007). The lack of financial planning and savings is evident in figures that show that the equivalent of 337 people every day are declared insolvent or bankrupt (Credit Action, 2013).

The aforementioned figures illustrate the astonishingly high levels of personal indebtedness, the role that unsecured credit plays, and the significant problems that such debts can cause. The magnitude of the debt problem within the UK and beyond makes for sober reading and emphasises the significance of the current thesis’ goal to understand the antecedents of individual level financial behaviour.

1.3.2 Insurance

The second outcome of concern for this thesis is insurance claims behaviour. As disposable income and ownership of valuable possessions has increased, so too has insurance uptake. Insurance has become an essential component of modern day financial life; motor insurance is even a legal requirement within the UK. Almost all adults now own some form of insurance.

The current research focuses on two types of insurance, namely, motor and home insurance. The rationale underlying this choice of focus is threefold. Firstly, it is suspected that personality will have a greater influence on motor and home insurance claims than it would in areas such as pet and disaster insurance. Driving and home care are part of everyday life, thus general styles of behaviour are more likely to impact upon claims in this area in comparison to say claims resulting from the illness of a pet. Secondly, motor and home insurance are the most widely owned policies and both are
renewed annually, meaning that the resources (e.g. time and money) expended by both insurers and customers are unrivalled. For instance, over 25 million people in the UK hold a motor insurance policy and an estimated 22 million homes are covered by home insurance. Thirdly, the economic impact of these policy types to both customers and insurers – as will be discussed in the following paragraphs – is huge.

The average cost of car insurance for customers as of June 2011 was £923.90, whilst home insurance (combined buildings and contents) costs an average £244.46 (British Insurance Premium Index, 2011). In essence the average person with a car and home will spend around £1,000 per annum on insurance; this figure can only increase if there are multiple cars per household. A two-car household with drivers in their mid-thirties will pay on average £1,600 on car and home insurance, drivers in their mid-twenties will pay almost £3,000 for the same policies, whilst a household with a couple in their forties with one child driver will pay around £4,400 every year for car and home insurance. When considered alongside the average household income discussed above (£31,000), households can spend around 5-15% of their pre-tax income on household and motor insurance.

Despite the widespread uptake of insurance and the significance of its cost, relatively little is known about what influences our decisions to take out policies in the first place and of direct relevance here, our insurance claims behaviour. Insurers note an increase of 44% in the number of insurance claims between 1999 and 2009 (ABI, 2009). The ABI (2009) report that in the calendar year of 2008, one in six motorists and one in ten households filed an insurance claim. In financial terms this translates to the payment of £18.4 and £9 million every day in private motor and home insurance claims respectively (ABI, 2009).

Alongside the increasing number of genuine insurance claims, the insurance industry is coming under pressure from ever increasing fraudulent claims behaviour. In
2009, detected fraudulent claims in the UK totalled £840 million, whilst undetected insurance fraud is estimated to stand at around £1.9 billion (ABI, 2009). This criminal activity impacts not only upon insurers, but also genuine customers, as fraudulent activity adds 7% to premiums on average.

These figures alone reveal the large scale financial importance of insurance to our society. Given that almost everybody is part of an insurance contract, premium costs are continuously increasing, and insurers are facing growing pressure from both genuine and fraudulent claims activity, the value of understanding the antecedents of our decisions to submit genuine and fraudulent insurance claims should not be overlooked.

**1.3.3 The Business Case: Should Financial Institutions Care?**

Question three, stated in the thesis overview (Can personality be used to predict the variance exhibited in financial behaviour?), directly relates to one of the potential business applications of the knowledge generated by this thesis. Financial institutions such as banks and insurers have obvious vested interests in predicting the financial behaviour of their customers. Indeed, decisions concerning the allocation of financial products are currently based largely on tentative predictions of customers’ future behaviour and the level of risk that customers pose (Clarke, 1989). The predicted level of risk is used to devise an interest/premium/repayment strategy that should: minimise risk, maximise profit and please the customer. Financial institutions’ ability to accurately predict whether a customer is a risk, whether they are likely to repay their loan, claim against their insurance policy, or submit a fraudulent insurance claim, is essential for two major reasons. Firstly, to ensure customers receive fair terms when applying for financial products and secondly, as the insuring of, or lending to, the ‘wrong’ person directly impacts upon bottom line profit.

In generating a risk profile and attempting to predict customer behaviour, financial institutions consider a range of demographic characteristics such as age, sex,
occupation, income, marital status, and post code. Yet, given that each customer is an individual, with individual circumstance and character, little effort is made to measure the defining characteristics of a person’s behaviour. The models of risk used to assign financial products make the assumption that individuals of similar demographic status (e.g. age, sex, occupation) will behave alike and pose similar levels of risk. Whilst this assumption holds in some cases (e.g. the inverse correlation between age and motor accidents), it fails in many more.

It is the hypothesis of this thesis, that personality traits will offer incremental predictive validity of individual’s financial behaviour over and above demographic variables, and thus improve the prediction of behaviour and the estimation of risk. The potential outcome of the improved risk modelling is twofold. First, customers will benefit from fairer financial product allocation. Second, financial institutions can reduce risk and maximise profit.

1.4 A Psychological Approach to Economic Variables

One of the most pertinent questions to address in this introductory section is: why personality psychology and financial behaviour? When one thinks of either insurance or credit, the first association is rarely, if ever, personality. However, consideration of both personality psychology and financial behaviour lead to the conclusion that they are indeed related. Put simply, psychology is the science of human behaviour, and therefore, naturally, encompasses the study of financial behaviour (Fiedler & Wänke, 2001). More broadly, personality is seen as a partially heritable, relatively stable, causal force which manifests through human emotion, motivation, cognition and behaviour (e.g. Allport, 1961; Funder, 2001; Pervin & John, 2001; Carver, & Scheier 1996). Thus, if personality influences cognition, decision making and ultimately behaviour, then it should be expected that certain personality traits will
influence financial behaviour. Personality and the trait approach taken to personality within the current thesis are discussed in greater detail in Chapter 2.

Despite the obvious overlap between personality psychology and economic outcomes, economists and psychologists’ paths traditionally did not cross, with psychologists seemingly unconcerned by economic variables and economists preferring to study groups or agents whose behaviours were considered the outcome of choice equations and decision making heuristics (e.g. Von Neumann & Morgenstern, 1947; Kahneman & Tversky, 1979). However, the observed lack of interest in the relationship between psychology and financial behaviour approximately three decades ago has now changed into an awareness of the increased explanatory power that can be obtained by aligning both research agendas (Almlund, Duckworth, Heckman, & Kautz, 2011; Borghans, Duckworth, Heckman, & ter Weel, 2008; Brändstatter, 1993; Lea, Webley, & Levine, 1993; Lea, Webley, & Walker, 1995). This is most evident in the fields entitled economic psychology and behavioural economics. For economic psychology, the following definition was agreed upon when the International Association for Research in Economic Psychology was founded:

“Economic psychology as a discipline studies the psychological mechanisms and processes that underlie consumption and other economic behaviour. It deals with preferences, choices, decisions and factors influencing these, as well as the consequences of decisions and choices with respect to the satisfaction of needs. Furthermore, it deals with the impact of external economic phenomena upon human behaviour and well-being. These studies may relate to different levels of aggregation: from the household and individual consumer to the macro level of whole nations”

(Wärneryd, 1988, p. 9).
The research documented within the current thesis draws upon the psychological mechanism of personality in order to understand behaviour in the economic domains of credit and insurance, and thus, sits firmly within the paradigm of economic psychology. The thesis will add to the growing body of research evidence documenting the psychological correlates of economic and financial variables such as money attitudes (e.g. Furnham, 1984; Tang, 1992; Tang & Thomas, 1993; Yamauchi & Templer, 1982), money management (e.g. Baumeister, 2002; Hershey & Mowen, 2000), spending and saving behaviour (e.g. Farkas & Johnson, 1997; Hayhoe, Leach, & Turner, 1999; Mowen, 2000; Vohs & Faber, 2004;), and most recently, credit card spending and debt accumulation (e.g. Lea, et al., 1993; 1995; Norvilitis, Merwin, Osberg, Roehling, Young, & Kamas, 2006; Nyhus & Webley, 2001; Pirog & Roberts, 2007; Tokunaga, 1993; Wang, Lu, & Maholtra, 2011).

Despite the growing acceptance of the importance of psychological variables in understanding financial behaviour, research in this domain is still young and has received relatively little attention in comparison to similarly important areas such as personality and job performance. Further, research in this domain has predominantly been undertaken by economists with an interest in psychology whose familiarity with personality traits and other important individual differences is perhaps not as nuanced as would be desired. Resultantly, the research amassed is somewhat sporadic and difficult to assimilate. Equally, a number of important areas of investigation remain heavily under researched. For instance, to the current author’s knowledge (following extensive literature searches), there has not been a single investigation considering the psychological correlates of financial behaviour in the domain of insurance. That is to say, there is no publicly available research that concerns personality and insurance claims behaviour. Similarly, there has been only one study of personality and insurance fraud (Ganon & Donegan, 2006). Research concerning credit and debt is less sparse. A
number of studies have used psychological variables to aid understanding of credit use and debt accrual. However, there remains a significant gap in knowledge concerning which personality traits, and what combination of these traits, offer the greatest explanation of credit usage (Kamleitner, et al., 2012; Norvilitis, et al., 2006). Further, little work has been conducted to model personality within the process of credit use. The current thesis aims to address these shortfalls.

1.5 Summary

The current thesis will seek to identify the personality traits that are influential in insurance claims behaviour and credit use. Having identified the key personality traits, the thesis will assess the relative importance of these traits and build models that explain the greatest proportion of variance in insurance claims behaviour and credit usage. To achieve this, a series of exploratory correlational studies will be conducted examining what is the broadest range of personality constructs which have been considered to date. The research will employ a range of advanced quantitative methodologies including Structural Equation Modelling which have been under utilised in economic psychological research. The field of economic psychology remains embryonic and as such, there is still a great deal to learn. It is the contention here that, whilst previous studies have considered personality with credit use and debt and have made notable contributions, much of that extant research is bound by limitations in both design and methodology. Often, studies have omitted important variables and all too often the procedural nature of credit use has not been addressed (Kamleitner & Kirchler, 2007; Kamleitner et al., 2012). Resultantly, there remain many questions to address before we can achieve definitive models that adequately account for variation in financial behaviour (Kamleitner et al., 2012; Norvilitis et al., 2006); whilst economic psychological research concerning insurance is virtually non-existent.
This first chapter has set the thesis parameters, defining the outcome variables of interest. The chapter also introduced the main questions that this thesis aims to address and discussed why these research questions are considered significant. Finally, the chapter outlined the economic psychological approach taken to answer the key research questions.

The remaining six chapters of this thesis are geared towards the ultimate goal of improving our knowledge of the personality–financial behaviour relationship. To this end, there are two literature review chapters, three empirical chapters, and a final concluding chapter. The first review, Chapter 2, examines questions of what is personality and how can it best be measured, with a view to explaining and predicting financial behaviour. The chapter considers which approach to trait and measure selection is likely to offer the most fruitful form of personality assessment. The second review, Chapter 3, examines existing literature concerning personality and financial variables. Within this chapter, there is a thorough analysis of the personality construct ‘Impulsivity’. This analysis provides the basis for some consistent personality trait selection throughout the remainder of the thesis. Following the reviews which provide a solid rationale for the selection of the personality traits to be measured, there are three chapters which present empirical analysis of the relationship between the selected personality traits and insurance claims (Chapter 4), insurance fraud (Chapter 5), and credit use (Chapter 6). Finally, there is a general discussion chapter which concludes the thesis and considers the limitations and contributions of the thesis.
Chapter 2

Personality

Personality is central to the aims of this thesis. In this chapter, the approach taken to understanding and measuring personality is discussed. The emergence of the trait and psychometric approaches to personality assessment will be briefly documented and the principal available frameworks and measures that could be used to predict financial behaviour will be considered. The chapter will draw upon a rich body of extant literature in order to address the following questions: What is personality and how is it conceptualised? How do we best measure personality with a view to explaining and predicting financial behaviour?

2.1 Personality

“Why is it that while all Greece lies under the same sky and all Greeks are educated alike, it has befallen us to have characters variously constituted?” (Theophrastus)

Personality is one of the most widely researched subject matters within psychology and over the past three decades, the ability of personality to predict and explain a wide range of human behaviours has been acknowledged. Subsequently, personality has been widely adopted in other areas of academic enquiry such as medicine, business and management, marketing, education and of course, economics.

Interest in personality itself is not particularly modern. Approximately 2400 years ago, the Greek philosopher Theophrastus posed the question which opens this section: why is it that given relative similarities in upbringing, society, culture and education do people show often marked differences in their behaviour, emotion and cognition? In the years since Theophrastus’ observations, and particularly over the past seventy years, the systematic study of personality has evolved into a sophisticated and
exciting field of enquiry which now addresses some of the most compelling questions concerning human behaviour, emotion and cognition.

2.1.1 What is personality?

Personality has been variously defined as “One’s habits and usual style” (Cronbach, 1984, p.6); “a dynamic organisation, inside the person, of psychophysical systems that create the person’s characteristic patterns of behaviours, thoughts and feelings” (Allport, 1961, p.11); “an individual’s characteristic pattern of thought, emotion and behaviour” (Funder, 2001, p.1-2); “a person’s unique pattern of traits” (Guildford, 1959, p.5); “relatively stable, internal factors, which produce consistent individual differences at the emotional and motivational level” (Pervin & John, 2001, p.4). Consideration of many or just several personality definitions would, seldom, if ever, result in the production of a uniform definition that could serve to satisfy all stakeholders. However, from just the few abovementioned definitions, it is clear that certain features of personality appear to be inherent in almost all thinkers’ views.

Personality is seen to be a relatively stable and consistent causal force which manifests itself through emotion, thought and behaviour. Such theoretical views are supported by empirical evidence showing that personality demonstrates rank-order consistency across the life span (Roberts & DelVecchio, 2000) and can be used to explain and predict a wide range of outcomes both cross-sectionally (Roberts et al., 2007) and longitudinally (Chamorro-Premuzic & Furnham, 2003).

Personality has historically been approached from many theoretical angles and is considered “unique in psychology by being based upon several different widely encompassing paradigms: psychoanalytical, trait, behaviourist and humanistic” (Funder, 2001, p.198). Each school has contributed to current conceptualisations of personality. For instance, the Humanistic perspective (e.g. Maslow, 1954) initiated the emphasis on cross-cultural investigation (Funder, 2001) which is now rightly considered
an essential element in validating personality models (Eysenck & Eysenck, 1985; Costa & McCrae, 1992a). Early Psychoanalytic work (e.g. Freud, 1933) gave prominence to abnormal behaviour, moulding the study of personality to encompass the whole range of human personality, not simply the ‘normal’ range (Markon, Kreuger, & Watson, 2005), whilst the importance of learned behaviour in personality was highlighted by the Social Cognitive Theory (Bandura, 1986) and cognitive-affective personality systems (Mischel, 1999). However, due in part to weakly established, inconsistent or non-existent empirical work, some approaches such as the psychoanalytic, humanistic and behaviourist paradigms are today less influential. A full description of the expansion and progression of personality psychology is far beyond the scope of the current thesis, and comprehensive descriptions of that journey exist elsewhere (c.f. Carver & Scheier, 1996). However, given the centrality of personality to the current analysis of financial behaviour, a brief discussion of the most relevant aspects of the debate shall be considered.

2.1.2 State, trait and type

Personality often takes a categorical approach to the classification of individuals (e.g. Myers-Briggs Type Inventory; Myers, 1978). That is to say that proponents of the typology school of personality view people as members of distinct and discontinuous categories (Carver & Scheier, 1996); for example a person is either extravert or introvert. Equally, personality has been conceived of as embodying a state. That is, in a given situation the individual is subject to particular stimuli which in turn give rise to particular responses; for example anxiety is caused by the anticipation of an impending examination. Both of these approaches to personality have useful features: typologies are relatively simple to grasp and are useful when describing personality to non-expert individuals, whilst conceptions of personality in terms of a state draw attention to the importance of situational influences on emotion, cognition and behaviour. The state and
type approaches are often contrasted against the trait view of personality, which in essence suggests that an individual can fall along an equally distributed continuum for each trait, whereby positioning towards either extreme of the continuum is indicative of a stronger tendency to think, feel or behave in that manner. A person is not simply extraverted or introverted, but rather the individual is positioned somewhere along a scale ranging between the two extremes. A simple consideration of human personality and behaviour favours a continuum approach over a type approach: people do differ in their level of extraversion or indeed any other characteristic and are not simply one type or another. For this reason alone, the trait approach is superior to the type approach.

Equally, the notion that all behaviour is a product of its environment fails to hold up to scrutiny. This view is termed situationism and is the main contestant to classical trait theory. It was noted that traits seemed to share only modest correlations (0.3) with actual behaviour (Mischel, 1968) and that such small correlations (accounting for just 10% of behavioural variance) were evidence that trait views were inadequate\(^1\), instead, that states or situations are the greatest determinant of human behaviour. In response, Funder and Ozer (1983) revisited a number of studies that purportedly revealed the crucial nature of the situation to behaviour. When they analysed these studies using correlational methods of analysis similar to those used in personality research, it was revealed that the situations, like the traits, correlated with behaviour at levels of around 0.3.

Thus, behaviour is not simply the product of its environment. If this were the case, then no consistent patterns of human behaviour would be observable. This is

\(^1\) Much academic attention has been devoted to increasing the reliability of personality measures. In comparison, little effort has been devoted to measuring behavioural criterion variables. It is suggested that part of the reason for the modest correlations is a lack of reliability in outcome variables. This view is supported by evidence that correlations between personality and behaviour measured at multiple time points increase (e.g. Epstein, 1979; 1980; Rushton, Brainerd & Presseley, 1983).
simply not the case \(^2\) (cf. Funder & Ozer, 1983; Carver & Scheier, 1996). This is not to suggest that situational influences are not important, on the contrary, an individual may well have increased levels of anxiety as a result of an impending examination. Yet, not all persons show either behaviourally or biologically (e.g. hormone levels) identical responses (Carver & Scheier, 1996). It is noted that most human behaviour is the product of both trait(s) + state(s), whereby the influence of the trait is greater than that of the state in circumstances where situational pressures are weak and vice versa (e.g. Carver & Scheier, 1996; Monson, Hesley, & Chernick, 1982).

Situations differ in the levels of behavioural heterogeneity they promote. For instance, situations classically considered ‘strong’ situations (e.g. a job interview; a nightclub dance floor), are particularly suited to a narrow range of behaviours. As a result, such scenarios limit the expression of individual differences in underlying personality traits. Other situations, however, are conducive to a range of behaviours and may even promote variety. In such environments, is ‘easier’ to display variety in behaviour; variety that is ultimately driven by personality traits. Thus, whilst the situation does have an influence upon behaviour, the inherent differences between individuals, despite lying under the same skies and being educated alike, indicate the influence of some internal individual differences, proposed to be those of personality traits. Almost all modern personality theory supports these arguments and the interactionist, trait and state approach to personality.

Within the current thesis, personality will be viewed from the interactionist, trait perspective. Current personality trait theory is not a standalone theory. It is suggested that traits are biologically and neurologically underpinned, partially heritable (Krueger & Johnson, 2008), partially environmentally determined (Bouchard & McGue, 2003).

\(^2\) It might be suggested that observable consistency in behaviour is the product of learning as opposed to internal personality traits. However, again, this cannot be the case as consistency is observed even when individuals enter new environments they have never experienced before.
and are identified across numerous species, suggesting evolutionary importance (Penke, Denissen, & Miller, 2007). There are three main assumptions with regard to the nature of personality traits, (i) that they are relatively stable\(^3\), internal factors (ii) that are unique to the individual and (iii) influence behaviour. Each of these assumptions is vital to the aims of the current thesis. That is, it is key as to whether or not “a person’s unique pattern of traits” (Guildford, 1959, p.5) “produce[s] consistent individual differences” (Pervin & John, 2001, p.4) in their use of insurance and credit.

### 2.2 Identifying and organising personality traits

Personality psychology as it is today is largely the result of work in two parallel traditions, namely the lexical and the psychometric. Sir Francis Galton (1869) pioneered the “lexical hypothesis” which depends on the notion that if a personality trait is both important, and that it influences behaviour, then it will become entrenched in language. It is proposed that the more salient and important the personality trait, the more likely it is that it would be found as a single adjective. Work within the lexical tradition saw researchers head for dictionaries in a bid to identify an exhaustive list of potential trait descriptors (e.g. Allport & Odbert, 1936; Baumgarten, 1933; Galton, 1869). Allport and Odbert (1936) conducted an investigation that yielded 17,953 potential personality descriptors. The list was refined to 4,504 non-judgemental ‘trait names’ that could describe and distinguish one human’s behaviour from another.

The Allport and Odbert (1936) compendium was supplemented with specific psychological terms (Cattell, 1943a; 1943b) and throughout a series of refinements aimed at removing synonyms, Raymond B. Cattell (noted as one of the founders of modern personality psychology, and the factor analytic method) compiled 35 bipolar

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\(^3\) Relatively in the sense that as previously acknowledged situations influence the expression of traits but traits offer generalised prediction across varied situations. Also that personality whilst subject to changes due to developmental maturation is generally shown to be longitudinally stable and consistent in terms of rank order. However, it must also be acknowledged that personality stability is one area of knowledge that requires more research.
personality-descriptor scales. These same scales represent much of the foundation of currently held trait measures of personality. Using early incarnations of common factor analysis, Cattell found the 35 scales to be represented as a hierarchical model consisting of 8 higher order/broad factors and 16 primary/lower order factors. The hierarchical nature of personality is a consistent theme throughout the study of personality structure. The levels of this hierarchy are presumed to be organised according by construct breadth. Typically, personality models build from items which directly assess a narrow behaviour (e.g., I like loud parties), through facets (e.g., Gregariousness), to higher order factors of traits (e.g., Extraversion). Cattell’s 35 into 16 into 8 hierarchical model of personality (Sixteen Personality Factor Questionnaire, 16PFQ; Cattell, 1956a; 1956b) lead to a flurry of research aiming to replicate and confirm the structure of personality. It is out of these efforts that many of the currently accepted personality models were formed.

2.2.1 Five broad factors

“it now seems reasonable to conclude that analyses of any reasonably large sample of English trait adjectives in either self- or peer descriptions will elicit a variant of the Big Five structure”

(Goldberg, 1990, p.1223).

Numerous researchers sought to continue investigations of personality structure (Borgatta, 1964; Fiske, 1949; Norman, 1963; Tupes & Cristal, 1961), each failing to replicate Cattell's model, instead finding that their analyses consistently produced fewer factors. In each case the authors preferred a five factor solution. Born out of these efforts, two ensuing research tracks, one entrenched within the lexical approach (Digman, 1990; Goldberg, 1981;) and the other drawing upon lexical work but using a predominantly psychometric approach (Costa & McCrae, 1983; 1988; 1992a; 1992b),
continued to add support to the notion that five broad factors were able to account for much of the variance exhibited in a number of lower order personality traits.

The current consensus position enshrines the view that there are five uncorrelated factors that reside at the top of the personality hierarchy. These traits are labelled as Neuroticism, Extraversion, Openness-to-experience (Intellect in the lexical model), Agreeableness and Conscientiousness (Costa & McCrae, 1992a). These five factors are believed to measure all of the important aspects of non-clinical human personality, indeed, McCrae and Costa (1985, p.558) argue that their Five-Factor Model (FFM) is “exhaustive of the personality sphere”.

These two competing models, namely, the lexically derived Big Five (Digman, 1990; Goldberg, 1981) and the psychometrically derived FFM (Costa & McCrae, 1983; 1988; 1992a; 1992b) are not identical. Both models differ in their labelling and organisation of traits. For instance, the trait marker of warmth is organised under the FFM factor of Extraversion yet is considered a facet of Agreeableness in the lexical Big Five model. A second difference is that the Openness and Intellect factors place differing emphases on their main constituent features, with Openness concerned with seeking novel experiences and creative endeavours, and Intellect concerned with a general need for complex cognitive stimulation (DeYoung, Peterson, & Higgins, 2005; Digman, 1990). Such discrepancies have caused some to question whether the consistent identification of five factors is reproducing the same five factors or variations, each being unique to its own data set (Pace & Brannick, 2010).

The five factor approaches (Big Five and FFM) are not the only models which claim to measure the vast proportion of personality variance. Models, ranging from three (P.E.N, Eysenck & Eysenck, 1975) to Seven (MPQ, Tellegen & Waller, 1987) higher-order factors have been proposed, and have their own supporters. This said however, it is the psychometric five or the FFM that is currently the dominant model of
personality. In almost every context, the FFM, which has both comprehensive (NEO-PI-R) and shortened measures (NEO-FFI), is the ‘go to’ source when seeking to measure personality. Certainly in instances where economists have ‘borrowed’ personality measures, they have tended to use FFM based measures (e.g. Almlund et al., 2011; Borghans, et al., 2008; Pirog & Roberts, 2007).

This is understandable as the extensively supported and “exhaustive” (McCrae & Costa, 1985, p.558) FFM posits just 30 primary traits, six of which reside directly underneath one and only one of the broad five (Costa & McCrae, 1992a). Further, given the overarching nature of the five factors, one can be economical with measurement by measuring those factors directly, and still account for much of the variance that exists within the lower order facets, or the whole range of personality. Further, incorporating FFM measures in studies requires no real consideration or planning beyond the notion that personality might be relevant to the outcome of choice. If it is relevant, then the broad, exhaustive FFM will capture all of the necessary information.

If the mapping of personality suggested by the FFM is accurate and all-encompassing, then when seeking to measure personality, the FFM can be the only choice. Following this logic, one is compelled to draw upon the FFM when seeking to account for variation in personality that might drive the way we interact with insurance and credit. If, however, as is often argued, questions remain over the adequacy of the FFM, the decision is somewhat less automatic.

2.2.2 Five broad factors?

Despite the popularity of the FFM, the notion that five broad orthogonal factors top the personality hierarchy and describe the whole range of normal personality is frequently contested. The development of the five factor measures (e.g. NEO-PI-R; NEO-FFI; IPIP; BFI) was inextricably linked with concerns of a theoretical and methodological nature (for a useful discussion of these issues see Block, 1995; 2001;
Briefly, from a methodological viewpoint, the use of principal components analysis, data pre-structuring, procrustean rotations and the reliance on the Kaiser criterion as the main aid in factor determination have been often and justly criticised (e.g. Block, 1995; 2001; 2010). Further, research has been inconsistent in returning five factors from structural analyses (Booth, 2011) and where five factors have been identified there has been debate as to whether or not these five factors are consistent. Further, there have been numerous questions raised about the five factors and their supposed orthogonality. For instance, many of the thirty facets are found to cross load (Booth, 2011; Rushton & Irwing, 2008) and studies have consistently shown that there are stable and substantive correlations between the five factors (Rushton & Irwing, 2008), with recent research suggesting that these correlations are indicative of substantive higher-order traits (e.g. the big two, Digman, 1997, DeYoung, 2006, and the GFP; Rushton &Irwing, 2008).

It can be said that the five factor model is not without dispute and as such is not an automatic choice. Yet, concerns with respect to methodological and theoretical development do not necessarily rule out the FFM or lexical big five as suitable tools to investigate economic behaviour. Especially, if the FFM provides the best measurement of personality currently available, is exhaustive of the personality sphere, and is predictive of behaviour. Thus, in order to select the most suitable source for personality measures to be used within the current research, the remainder of this chapter will consider the FFM and other personality measures on three points that are critical to the current thesis. The first consideration will be the quality of measurement offered by differing inventories. Measurement is perhaps the most important element of any research; if one cannot measure and structurally represent a construct accurately then any subsequent research (e.g. construct correlations) cannot be considered reliable or valid. The second consideration is coverage. Exactly how many personality traits there
are and how these traits are organised is of crucial importance to this thesis. As discussed below, there are a number of traits that have been shown in past research to be of importance to financial behaviour. Accordingly, any measure used in this thesis must offer suitable coverage and measurement of all relevant traits. Finally, personality measures have been included in a great number of criterion and prediction based studies. From this body of research it is possible to examine which measures of personality tend to offer the greatest levels of prediction. Through this review, it is the aim to identify a strategy for selecting personality measures that will offer optimal measurement, coverage of relevant traits, and prediction. In other words, to select trait measures that will provide the most theoretically meaningful and statistically maximal relationships between personality and financial behaviour.

2.3 Measurement

As discussed above, the identification, measurement, and organisation of personality traits has been the predominant focus for personality researchers throughout history and remains a hotly contested topic today. Achieving high quality measurement is essential to this thesis as the reliability and validity of results will be directly related to the quality of measurement of both personality and financial behaviour. Thus, it is important to consider the different available personality frameworks from a measurement perspective. If one measure offers significantly improved measurement in comparison to all other competitors, then this alone means that it must be seriously considered as an appropriate tool to understand how personality relates to economic attitudes and behaviours. This study will, for reasons of accuracy and in order to take account of measurement error, use a latent variable approach and use Confirmatory Factor Analysis (CFA) and Structural Equation Modelling (SEM). CFA is a statistical tool which, theoretically at least, is ideally suited to the assessment of personality inventories. Firstly, CFA utilises latent constructs, which retain a theoretical consistency
with the prevailing view of personality traits as latent dispositions (Borsboom, 2006). Secondly, CFA models are easily extended to include second order latent constructs, in keeping with the view that personality is hierarchically structured (e.g. the FFM, Costa & McCrae, 1992a). Thirdly, personality items, generally, share only modest amounts of common variance, thus resulting in higher specific or error variances. CFA explicitly models this specific variance in items and factors as residual variance, resulting in estimates of latent traits comprised of only common or shared variance. Thus, it is particularly important to consider the measurement properties of personality measures within a latent variable framework.

2.3.1 Personality and CFA

The FFM is the most vehemently supported model of personality. Despite this popularity however, the model is often subject only to exploratory analyses and principal components analysis (as discussed above often using inappropriate estimators and rotations). This is paradoxical as exploratory techniques whilst crucial in the development of measures and theory, should not be the tool of choice when there exists an a priori theoretical model; as in the case of the FFM and other omnibus personality models. Yet still FFM researchers continue to abandon CFA in favour of Exploratory Factor Analysis (EFA).

In addition to method-theory inconsistency generated by the unquestioning application of EFA to models with strict a priori structures, the results of the now growing numbers of CFA tests suggest that a number of concerns are evident concerning omnibus personality measurement. Unlike results from the EFA based analyses, CFA models have consistently resulted in structural inconsistencies (substantial secondary loadings and correlated residuals that fail to replicate across data sets) and poor model fit (e.g., Church & Burke, 1994; Hopwood & Donnellan, 2010; Vassend & Skrondal, 2011). For instance, Hopwood and Donnellan (2010) examined
the structures of 7 popular omnibus personality measures including the NEO-PI-R. For each model, the solutions were either inadmissible or displayed very poor fit according to all indices. Even when models based on EFA from the same data were modelled, each model still failed to fit. In other CFA examinations of personality, even models in which a number of ad hoc modifications (cross factor loadings, correlated residuals) have been incorporated failed to adequately fit the data (Church & Burke, 1994; Vassend & Skrondal, 2011).

The lack of fit is not only evident in terms of the structural aspects of personality models (i.e. the way in which the facets and factors are organised) but there are also problems with the model components. For example, Vassend and Skrondal (2011) examined the unidimensionality of the FFM scales and found that many did not fit single factor models.

There is currently no evidence to suggest that current omnibus measures of personality, when modelled from the item level upwards, perform adequately in CFA.

There have been two main reactions to these findings.

2.3.2 Personality measurement is a work in progress

First, several researchers suggest that the poor fit observed is mostly due to still poorly understood and modelled complexity within these broad models (Gignac, Bates, & Jang, 2007; Vassend & Skrondal, 1997; 2011). In other words, the a priori structures are inaccurate. Resultantly, it has been suggested that personality researchers should, instead of aiming to measure the whole spectrum of personality in using a single measure, consider developing measures with a more restricted scope (Gignac et al., 2007; Vassend & Skrondal, 1997; 2011). It is not always necessary to measure the whole spectrum of personality in all studies as not all traits are equally salient to all

\*Booth & Irwing (2011) do report a fitting 16pf model. However this model uses item parcels (a technique that is controversial but is becoming more common in personality research. Parcelling is discussed in greater detail during Chapter 4). The item combinations within these parcels are not specified a priori and thus the model reported here is not exactly the theoretically suggested model.
outcomes. Thus, one can choose to research a smaller number of theoretically relevant aspects of personality. In sum, one reaction to the faltering performance of omnibus personality models is that the current models require further development (Church & Burke, 1994; Hopwood & Donnellan, 2010; Vassend & Skrondal, 2011) and in the interim period, researchers should be wary of trying to measure the whole spectrum of personality in all studies. This is a view shared by the current author.

2.3.3 If the model doesn’t fit, change the method

The second response stems from a keenness to preserve the reputation of omnibus measures, predominantly the FFM. This has lead to some suggestions that CFA is overly restrictive and as such, is an inappropriate tool for personality research (Hopwood & Donnellan, 2010; Marsh et al., 2010). Further still, some FFM proponents have suggested that CFA is systematically flawed; resulting in the rejection of accurate models (McCrae, Zonderman, Costa, Bond, & Paunonen, 1996). Along similar lines, there have been recent calls that researchers seeking to measure personality should abandon CFA models but rather than returning to EFA, opt instead for the newly developed Exploratory Structural Equation Modelling (ESEM; Marsh et al., 2010). ESEM is a method that allows the identification of exploratory factors within an SEM framework (see Asparouhov & Muthén, 2009). In personality models this means that all items load on all factors, even though many of those loadings are theoretically implausible, trivial in size and non-significant (Booth, & Hughes, Submitted).

Nevertheless, Marsh et al. (2010 p.489) conclude that "the traditional ICM-CFA model is not appropriate for the NEO-FFI and suspect that this would also be the case for many personality measures” and that their results “provide clear evidence that an ESEM approach is more appropriate than a traditional ICM-CFA approach for Big Five responses” (Marsh et al., 2010 p. 489). They conclude this on the basis of two observations. First, that ESEM models provide better levels of fit. Second, that inter-
factor correlations are smaller in ESEM than those extracted from CFA models. In turn, they argue that the higher correlations in CFA models are likely to result in multicollinearity that undermines discriminant and predictive validity.

However, this notion has been contested by the current author and colleagues (Booth & Hughes, Submitted). In this paper, it is shown that two FFM measures modelled within the ESEM framework, whilst showing improved fit over CFA models, still fail to achieve levels of fit considered conventionally acceptable (e.g. Hu & Bentler, 1998; 1999). Further, the improvement in fit is the result of overparametisation as opposed to more accurate modelling of personality structure. Furthermore, the factors derived from ESEM and CFA appeared to be more similar than Marsh et al., (2010) argue. Factor scores derived from the equivalent ESEM and CFA factors shared over 90% common variance and when the factors were considered in relation to the prediction of criteria, very few differences between the two were observed, with no clear pattern of either method offering improved explanatory power. It is therefore concluded that the use of ESEM factors, which include numerous non-significant and theoretically unjustifiable parameters in order to achieve an incremental improvement in model fit that still would not be considered to represent a well-fitting model, is not a satisfactory approach to the analysis of personality.

2.3.4 Summary

There are numerous problems with the measurement properties of popular omnibus measures of personality at both the structural and facet level (Church & Burke, 1994; Hopwood & Donnellan, 2010; Vassend & Skrondal, 2011). This appears to hold across almost all omnibus personality measures (Hopwood & Donnellan, 2010) and analytic techniques (Booth & Hughes, Submitted; Marsh et al., 2010). Thus, on the basis of measurement properties alone, it is difficult to pinpoint which measure will be most appropriate for the study of economic behaviour.
What can be ascertained from this section is that the use of any broad omnibus measure modelled according to its simple a priori structure is highly unlikely to achieve acceptable measurement properties (Booth & Hughes, Submitted; Church & Burke, 1994; Hopwood & Donnellan, 2010). If we cannot measure personality well, then we cannot expect to garner meaningful information regarding its relationship with financial behaviours and economic outcomes. Accordingly, careful consideration is needed as to whether or not a broad personality measure is suitable tool for this thesis. Even if omnibus measures are abandoned, choosing instead to use a smaller number of narrow traits, some measurement difficulties are likely. Thus, it is likely that some form of exploratory analysis and model modification will be necessary in order to achieve satisfactory measurement properties for the personality traits assessed within this thesis (Church & Burke, 1994). As a result, it is concluded that “at the present time, the exploratory use of the confirmatory technique [using only relevant personality traits] is likely to be more productive” (Church & Burke, 1994, p. 109).

2.4 Coverage

Throughout this thesis, and specifically in the next chapter, a series of personality traits hypothesised to be important in the regulation of financial behaviour will be proposed. Should the thirty FFM facets, or better still the five FFM factors, account for all of the variance of all known personality traits, that is, if the FFM truly is “exhaustive of the personality sphere” (McCrae & Costa, 1985, p.558), then regardless of which traits are supposed important, administration of the NEO-PI-R would be the best option. However, there is evidence to suggest that the FFM is not exhaustive.

2.4.1 Additional broad measures

Firstly, as stated above, the FFM and lexical big five are not the only broad omnibus personality measures designed to measure vast swathes of personality traits. Studies into the suitability of the five factor model have themselves spawned further
model developments. This has primarily been brought about by the observations of inconsistencies in the results of exploratory factor analytic studies. Each of these models has one thing in common: their supporters believe their model to offer a more accurate and appropriate organisational hierarchy for all human personality traits than does the FFM. Furthermore, most of these measures are argued to account for traits that are underrepresented or excluded from the FFM and other dominant personality models.

For instance, the Jackson Personality Inventory (JPI; Jackson, 1994) was developed with the theoretical aim of constructing a measure that accounted for “...a variety of interpersonal, cognitive and value orientations...derived from contemporary research in personality and social psychology” (Jackson, 1994, p.1). The specific focus in this endeavour was to measure personality constructs not included within existing personality measures (Jackson, 1994). The JPI model includes additional facets from the FFM (Risk-Taking) and also postulates six higher order factors, not five. The sixth factor emerged from a divide in Conscientiousness emphasising a distinction between Methodicalness and Achievement.

Further research motivated by the identification of this sixth factor was conducted over a number of years (Ashton, Lee, & Son, 2000; Lee, Ashton, Hong, & Park, 2000; Jackson, Paunonen, Fraboni & Goffin, 1996; Jackson, Ashton & Tomes, 1996; Lee, & Ashton, 2004) using a range of measures such as the NEO-PI-R, Six Personality Factor Questionnaire (6FPQ), JPI, and Personality Research Form (PRF). This research has lead to the most recent example of a newly constructed measure driven by perceived inaccuracies and lack of coverage in the FFM, namely the Honesty, Emotional Stability, Extraversion, Agreeableness, Conscientiousness and Openness (HEXACO) personality model. This model posits six, not five major factors.

In much the same vein, other models such as the Multidimensional Personality Questionnaire (MPQ; Tellegen, 1982; 1995) which was developed with the aim of
“encompassing and extending the range of constructs evident within the extant literature on normal personality” (Patrick, Curtin, & Tellegen, 2002, p.151) and the California Personality Inventory (CPI; Gough, 1957; 1987) which was developed to measure the “life-enhancing attributes of personality” (Jay & John, 2004, p.299) are all posited to measure aspects of personality that lie beyond the FFM sphere.

2.4.2 Specific traits

In addition to the proposal of several broad measures motivated by suspected lack of coverage in the FFM, there have been numerous narrow traits proposed as missing from the FFM. Paunonen and Jackson (2000), in a reanalysis of Saucier and Goldberg (1998), identified nine traits that fell beyond the factor space of the FFM: Conventionality, Egotistical, Integrity, Femininity, Seductiveness, Manipulativeness, Humour, Thriftiness and Religiosity, the latter trait being the only trait identified as ‘supernumerary’ in Saucier and Goldberg’s (1998) original analysis. In addition to these nine psychometrically identified traits Paunonen and Jackson also added Risk-Taking, which they argue is not only distinct from the FFM but was also not represented in Saucier and Goldberg’s adjective lists. In totality, their results identified ten personality traits (for a full discussion of all ten traits see Paunonen, 2002) that the FFM does not adequately measure. As will be discussed later, several of these traits (Risk-Taking, Integrity, and Manipulativeness/Machiavellianism) are potentially relevant to insurance claims, insurance fraud and credit use.

In addition to traits proposed by the Supernumerary Personality Inventory (SPI; Paunonen, 2002), a number of other specific facets, that have been shown to be

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5 Saucier and Goldberg (1998) produced 74 adjective clusters that they believed may not be satisfactorily covered by the FFM. Correlating the clusters with the factor scores for the Big Five, Saucier and Goldberg suggested a multiple correlation of 0.30 was adequate enough to assume the trait assessed in the adjective cluster was adequately represented within the FFM. On this basis, they found one trait to fall outside of FFM coverage. However, in their reanalysis, Paunonen & Jackson argued that a multiple correlation of 0.30 represents only 9% shared variance and the five broad factors often share greater relations that this, and that, therefore, this criterion was inadequate and illogical. As such, they increased the criterion to a multiple correlation of 0.45 or 20% shared variance, which to the mind of the current author remains conservative.
important in understanding behaviour, have been proposed to lie beyond FFM. Examples include: Need-for-Cognition (Cacioppo & Petty, 1982), Social Dominance Orientation (Pratto, Sidanius, Stallworth, & Malle, 1994), Right Wing Authoritarianism (Sibley & Duckett, 2008), and Risk-Taking (Jackson, 1994).

One more trait that is currently inadequately measured by the FFM and all other omnibus measures of personality is Impulsivity. Impulsivity, as we shall see more comprehensively in the next chapters, is central to individuals’ financial behaviour. The FFM contains a single facet of Impulsivity that sits at the bottom of the hierarchy and is subsumed by the Neuroticism factor. Impulsivity is largely considered to be a broad construct which itself subsumes several narrower components or traits (e.g. Evenden, 1999; Eysenck & Eysenck, 1977; Whiteside & Lynam, 2001). Impulsivity is related to acts carried out without thinking, delayed gratification, a lack of concentration, short time horizons and Sensation Seeking (Whiteside & Lynam, 2001). If it is the case that Impulsivity is multidimensional, then unless the dimensions are related in a manner that they can be represented uni-dimensionally and measured effectively by the single FFM facet, the FFM model fails to adequately assess Impulsivity.

In attempting to address this question and “bring order to the myriad of measures and conceptions of Impulsivity” Whiteside and Lynam (2001, p. 684) administered several previously published measures of Impulsivity to a large sample of undergraduate students. Item-level factor analyses produced four distinct factors, namely, Urgency, Premeditation, Perseverance and Sensation Seeking giving rise to the UPPS model of Impulsivity. When factor analysed jointly with responses to the FFM’s comprehensive measure the NEO-PI-R, it was found that the FFM’s conception of a single Impulsivity facet was simply inadequate. Indeed, the NEO-PI-R’s conception of Impulsivity loaded clearly (.74) on the factor of Urgency whilst showing only negligible loadings on each of the other three Impulsivity factors (.14, -.08, .18).
Premeditation and Lack of Perseverance loaded onto Conscientiousness, whilst Urgency loaded onto Neuroticism, and Sensation Seeking onto Extraversion. Further examinations (e.g. Cyders, 2005) have also posited more sub-facets of Impulsivity. Evidently, the FFM as it currently stands does not provide adequate coverage of the facets of Impulsivity and is unable to account for the multidimensional nature of Impulsivity. When investigating economic outcomes, this lack of coverage is likely to be a significant limitation of the FFM.

The constructs discussed here represent only some of the personality traits which have been theoretically suggested and empirically demonstrated to be inadequately captured by the FFM. Some are more and other less likely to be involved in producing heterogeneous financial behaviour, but all are substantive personality traits which are not sufficiently measured by the dominant FFM. The existence of such traits undermines the notion that the FFM and other broad omnibus measures of personality are exhaustive of the personality sphere.

2.5 Prediction

The first point of interest here is to address the question of whether or not psychometrically assessed personality traits predict behaviour. The answer is unequivocally yes. A vast body of empirical evidence has shown personality to correlate with and predict a whole host of complex human behaviours, such as, job performance (Barrick & Mount, 1991; Connelly & Ones, 2010; Hughes, Irwing, & Wacker, 2011; Judge, Bono, Ilies & Gerhardt, 2002; Judge, Higgins, Thoresen & Barrick, 1999; Judge & Ilies, 2002), physical and mental health (Freidman, 2000), creativity (Hughes, Furnham, & Batey, 2013), use of social network sites (Hughes, Rowe, Batey, & Lee, 2012), educational performance (Chamorro-Premuzic & Furnham, 2003), risky behaviours including unprotected sex and substance use (Dahlback, 1990), political preferences (Caprara, Barbaranelli, Consiglio, Picconi, & Zimbardo, 2003) and criminal
activity (Collins & Schmidt, 1993). In short, personality traits are predictive of almost all sophisticated human behaviours so to some degree. Thus, it is expected that personality will play a role in explaining behaviour related to the use of insurance and credit.

Despite emergent concerns over the coverage and measurement properties of the FFM, it is still the most popular measurement tool. Resultantly, much of the study of predictors of human behaviour has been conducted from within this framework. This is true of work in the economic psychology domain. The FFM has previously received endorsement from those seeking to encourage research considering the effect of personality on economic behaviours (Brändstatter, 1993) and has been shown empirically to relate to a range of economically important outcomes, such as self-reported saving (Brändstatter, 1996), earnings (Nyhus & Pons, 2005), entrepreneurial behaviour (Brändstatter, 1997) students’ use of credit (Pirog & Roberts, 2007) and debt (Nyhus & Webley, 2001). The FFM provides, in the view of many psychologists and individuals from other domains who borrow psychological tools, a unified and parsimonious theoretical framework that accounts for the vast proportion of, if not the full spectrum of personality (e.g. De Raad, 2000; Wiggins & Trapnell, 1997). As a result, it is considered to address concerns that trait psychology is limited by the use of many competing inventories:

“…we have literally hundreds of inventories incorporating thousands of traits, largely overlapping but also containing specific variance, each empirical finding is strictly only relevant to a specific trait, measured by a specific inventory; extension beyond that is by assumption, speculation and argument” (Eysenck, 1992, p.786).

The correspondence that can be assumed between studies using similar or identical measures of the FFM has allowed for the empirical aggregation and
corroboration of findings in a manner that surpasses speculation and argument. This has ultimately resulted in the ability to create meta-analytically derived estimates of magnitude of prediction (e.g. Barrick & Mount, 1991; 1996; Judge & Ilies, 2002). There is no question that the widespread use of the FFM has allowed accelerated progress. Yet questions remain as to whether researchers’ exclusive reliance on five broad personality factors (often at the expense of narrow, more nuanced measures), that as previously discussed do not offer particularly good measurement and are not exhaustive, may have served to prevent identification of the most important aspects of personality relevant to the explanation and prediction of behaviour (Paunonen & Ashton, 2001a; 2001b; Paunonen, Haddock, Fosterling & Keinonen, 2003).

2.5.1 Traits beyond the FFM factor space

As discussed in the previous section, numerous traits have been shown to lie outside the measurement structure of the FFM, invalidating claims of exhaustive coverage. The question therefore arises as to whether it is also the case that many of these traits possess unique predictive validity? Paunonen et al., (2003) examined this very question in relation to 19 outcome criteria in cross-cultural samples recruited from Canada, England, Germany and Finland. The results revealed that the ten SPI traits offered incremental predictive validity beyond that of the FFM and that they were able to predict more behaviours than FFM measures.

Further examples, though by no means an isolated one, exists in the current author and colleagues’ own work (Hughes, et al., 2012), where it was shown that social and informational uses of social networking sites was better predicted by the Need-for-Cognition trait (argued above to lie beyond the FFM factor space) than the Big Five factors. Similarly, Hughes et al. (2011) showed that Deferred-Gratification, a trait not covered by any omnibus measure, was strongly related to self-reported financial
behaviour and offered much greater predictive power than did any of the Big Five factors.

From examining just these few studies, it can be concluded that the lack of coverage is important not just for descriptive purposes, but also in terms of understanding and predicting behaviour. Traits exist beyond the reach of the FFM that are hypothetically useful when understanding financial behaviour, therefore this thesis must abandon the consensus view and use additional measures to those offered by the FFM framework.

### 2.5.2 Broad vs Narrow Traits

In addition to lost predictive validity due to excluded variables, there is a debate as to which level of the personality hierarchy offers the most fruitful source for prediction. It has been suggested that little value is added by measuring many narrow traits as the five broad factors account for much of the variance in their lower-order constituents. For instance, Ones and Viswesvaran (1996) have argued that the direct measurement of broad personality factors alone, is sufficient, and in the case where the outcome variable is itself broad or complex (e.g. job performance), preferable, as they suggest predictor and outcome variables of similar bandwidth are optimal. Should Ones and Viswesvaran (1996) be correct, given the inherent complexity and breadth of behaviours that result in insurance claims, insurance fraud and the use of credit, broad measures may be the most appropriate.

Due to the dominance of the FFM, and arguments that measuring only the five broad factors is in many cases sufficient, there has been a tendency by many researchers to disregard lower-order traits in prediction studies. This approach is also the subject of debate with suggestions that, regardless of the bandwidth of the outcome, narrow traits still offer important insights. The rationale for the view that increased explanatory power can be gained from the assessment of lower order constructs is a relatively
straightforward one: as the lower order traits and the broad factors supposed to subsume them are not perfectly correlated, trait measures possess specific and reliable (non-random) variance that might well offer increased predictive validity (Paunonen et al., 2003). Broad factors represent only the variance common to all of their constituent traits and thus trait-specific variance that could offer incremental prediction is lost.

A number of studies have directly assessed the levels of prediction offered by both broad and narrow personality measures. The general conclusion of the vast majority of these empirical studies has been in contradiction of the view espoused by Ones and Viswesvaran (1996). In each, narrow facets have been shown to offer increased prediction regardless of the complexity of the behavioural outcomes. Again, much of this work has been conducted within a FFM framework.

For instance, Paunonen and Ashton (2001a) examined the relative predictive validities of factor scores and constituent trait scales from two inventories, namely, the NEO-PI-R (Costa & McCrae, 1992a) and the PRF-JPI (Jackson, 1994). For each of their 40 criterion variables, Paunonen and Ashton (2001a) conducted a series of hierarchical regression models, each analysis controlling for the effects of sex:

1. They examined the predictive validity of the broad factors derived from either the NEO-PI-R or the PRF-JPI.

2. They examined the predictive validity of just five narrow trait scales that were rationally selected on the basis of theoretical reasoning. They did this for each criterion variable first using NEO-PI-R facets, then using PRF-JPI facets.
3. They examined the incremental validity offered by the five theoretically selected narrow traits over and above the broad factors. Paunonen and Ashton (2001a) found that the narrow traits were able to account for an average of approximately eight per cent more variance (or an increment of about 0.28 in a predictor–criterion correlation coefficient) in the outcome variables than were the broad factor measures. Generally, narrow traits offered greater accuracy and also predicted more criteria, that is, some criteria in which no relationship to the broad measures was observed were significantly related to the theoretically chosen narrow traits. Further, it was evidenced that measures from within the PRF-JPI model offered greater prediction than did measures from within the NEO-PI-R model.

A number of other empirical investigations of both self-report and objective outcome criteria have revealed similar results. For instance, in examining behaviour in the workplace, Timmerman (2006) found that FFM facet scores offered improved prediction of turnover (in logistic regression analysis) over the five factors alone. Jenkins and Griffith (2004) using the 16PF showed that narrower measures offered improved prediction of job performance. They concluded by arguing that the assessment of specific, relevant, narrow personality variables (identified through job analysis) will offer greater prediction of job performance than will broad or ‘off the shelf’ omnibus measures (p.265).

Lounsbury, Sundstrom, Gibson, and Loveland (2003) found that grade point average for twelve and fifteen year olds was better predicted by two narrow traits (aggression and work drive) than the FFM, with the two narrow traits offering incremental validity beyond the FFM factors. When the two sets of predictors are directly compared, the narrow traits explain between 5% and 15% more variance than broad measures. Paunonen and Ashton (2001b) also found this same trend but using only measures from within the FFM. Their results showed that the narrow trait of Need-
for-Understanding was a strong predictor of grade point average, whilst the global factor to which this trait belongs, Openness-to-experience, showed no significant correlation.

Similar results can be found for a number of inventories used to predict a wide range of behavioural outcomes (e.g. Ashton, Jackson, Paunonen, Helmes & Rothstein, 1995; Lounsbury, Welsh, Gibson & Sundstrom, 2005; Reynolds & Clark, 2001; Rothstein, Paunonen, Rush, & King, 1994; Tett, Steele & Beauregard, 2003). It is evident that across measures (the research discussed above used a range of measures, including the PRF-JPI, the 6FPQ, the 16PF and the NEO-PI-R) and outcomes, narrow facets predict additional unique variance beyond that offered by broader measures and, in many instances, the use of broad measures has the effect of cancelling the predictive utility of the narrow trait scales they subsume.

In addition, similar trends have been found with regard to self-reported financial behaviour. For example, Pirog and Roberts (2007) found that a narrow measure of trait Impulsivity was more strongly related to student’s credit card misuse than were any of the Big Five. Similarly, previous work by the current author and colleagues found that two narrow Impulsivity-related traits, namely, Deferred-Gratification and Impetuousness were twice as strongly related to a self-report measure of fiscal irresponsibility than were any of the Big Five. In consequence, it was concluded that “when examining financial behaviour it appears that broad personality factors do not offer the same explanatory power as narrower facets” (Hughes, et al., 2011, p.14).

2.5.3 Conclusion

The research outlined above has shown that broad omnibus measures are able to predict a range of behaviours. However, narrow personality traits selected on the basis of theoretical reasoning consistently offer greater levels of prediction. A reliance on broad measures of personality is likely to lead to underestimates and/or distorted
estimates of any relationship. Furthermore, a reliance on any single broad omnibus measure of personality (even focusing at the facet level) is likely to lead to the exclusion of a number of potentially relevant predictor traits. However, it is not practically feasible to administer tests of all known personality traits. Thus, a process of identifying a series of specific traits from within, across and beyond a range of inventories, models and taxonomies, on the basis of rational, theoretical and empirical evidence, would appear to offer the most effective method for the selection of traits that will maximise prediction and increase our understanding (Paunonen & Ashton, 2001a; 2001b).

2.6 Summary

In totality, the literature review in this chapter has shown that popular omnibus personality measures are not necessarily methodologically or theoretically coherent and of more importance here, they do not cover the full spectrum of personality nor necessarily offer the greatest quality measurement and levels of behavioural prediction. Given that the major goal within this thesis is that of ‘predicting’ or explaining the heterogeneity observed in insurance and credit use, the most popular and dominant omnibus measures of the day will not be the most dominant measures incorporated in this thesis. Instead, numerous narrow traits selected on the basis of theoretical and empirical evidence will comprise those aspects of personality measured within this thesis.

The following chapter, through consideration of extant research that has examined relationships between personality and economic behaviour and other behaviours that are suggested to closely resemble insurance and credit use, will serve to identify candidate traits.
Chapter 3

‘Impulsivity’ and Financial Behaviour

The principal goal of this thesis is to explore the role of individual differences in financial behaviour, and specifically, how personality influences insurance claims, insurance fraud and credit use. The previous chapter outlined the approach taken to personality, which in sum is to focus attention on narrow, lower order traits selected on the basis of theoretical reasoning and empirical evidence. This chapter charts the systematic review of extant literature that will provide the basis for that trait selection. The review will consider a wide range of extant research, always with a view to examining where the findings fit in relation to structural and theoretical views of personality.

In particular, the review will consider the previous work examining personality traits and individual level economic behaviour. There are now a number of well developed areas within this research domain, for example, gambling, household saving, students’ use of money and financial products and clinically classified compulsive spending. The knowledge gleaned from the results of previous empirical research will be considered in line with a systematic review of related personality traits in order to identify the traits to be examined in each of the three subsequent studies.

Whilst the three outcome variables of interest can all be considered financial or economic behaviours, they are diverse behaviours and not necessarily comorbid. Indeed, credit use would seem to be unrelated to a propensity to submit a fraudulent insurance claim. There will undoubtedly be a number of specific personality traits that are associated with claim padding, false claims and credit usage.

However, despite the diversity, it is also likely that a number of central traits are influential in all three economic behaviours. Studies exploring the role of personality in economic/financial behaviours all seem to converge on a similar set of behaviours and
traits, based loosely around impulsiveness (e.g. Alessi & Petry, 2003; Cyders & Smith, 2008; Hughes, et al., 2011; Joireman, Sprott, & Spangenberg, 2005; Parke, Griffiths, & Irwing, 2004; Pirog & Roberts, 2007; Tokunaga, 1993; Wang, Lu, & Maholtra, 2011). Thus, it is the contention of this chapter that Impulsivity-related traits will be influential in all three of the financial behaviours considered in this thesis (and most other financial decisions and behaviours too). That is to say, each outcome will be influenced by central Impulsivity-related traits, but will also contain unique variance that will be related to specific personality traits that are perhaps less ‘central’ to economic behaviour en masse. This chapter will focus on identifying the central traits suspected to be relevant for all of the outcomes. The outcome specific traits will be discussed within the relevant empirical chapters.

3.1 Economic Behaviour and “Impulsivity”

When reviewing literature related to individual level economic behaviour, one concept is almost ever-present: impulsiveness (Kamleitner et al., 2012; Kamleitner, Hornung, & Kirchler, 2011; Livingstone & Lunt, 1992; Webley & Nyhus, 2001). Despite Impulsivity being one of the most widely researched personality constructs, there exists considerable ambiguity and debate regarding the definition and measurement of the construct, as well as the nature of the causal processes underlying impulsive behaviour (c.f. Enticott & Ogloff, 2006; Evenden, 1999).

This lack of consensus has contributed to the production of myriad conceptualisations, models and measurement tools designed to capture Impulsivity (Evenden, 1999). Resultantly, the economic psychological literature describes studies which in a bid to measure impulsive tendencies, assess the constructs of Impulsivity, Urgency, Impulse-Control, Self-Regulation, Willpower, Impatience, Immediate/Delayed-Gratification, Delay Discounting, Premeditation, Attention, Perseverance, Future Orientation, Forethought, Risk-Taking and Excitement/Sensation
Seeking. Often these measures are suggested to either be largely equivalent or at least sub-facets of a broad general Impulsivity trait. Many of these constructs serve as useful predictors of economic behaviours such as: gambling (e.g. Alessi & Petry, 2003; Cyders et al., 2007; Parke, Griffiths, & Irwing, 2004), saving (e.g. Farkas & Johnson, 1997), impulsive and compulsive spending (e.g. Mowen, 2000; Vohs & Faber, 2004), self-reported fiscal irresponsibility (e.g. Hughes, et al., 2011; Joreman, et al., 2005), consumer debt (e.g. Lea, et al., 1993; 1995; Nyhus & Webley, 2001; Webley & Nyhus, 2001; 2008), student debt (e.g. Norvilitis, et al., 2003; 2006) and credit use (e.g. Pirog & Roberts, 2007; Tokunaga, 1993; Wang, Lu, & Maholtra, 2011).

Given the pervasiveness of “Impulsivity” in previous theories and empirical papers, it seems inevitable that Impulsivity will be influential in the economic components of decisions and behaviours related to insurance claims, insurance fraud and credit use. Perhaps the only remaining question is which “Impulsivity” traits are likely to be most relevant and how can they best be measured?

It is upon consideration of this question that the biggest problem underlying this body of literature is evident. The literature is full of examples of the ‘jingle jangle’ fallacy (Duckworth & Kern, 2011; Kelley, 1927; Thorndike, 1904). That is, there are constructs that share names and definitions but in reality measure differing constructs (jingle), whilst simultaneously, numerous differently named constructs are actually equivalent (jangle). As will be discussed in the following sections, many of the “Impulsivity” constructs and measures currently espoused are related but not equivalent whilst others are perhaps redundant.

The majority of jangle instances (the existence of two equivalent but differently named constructs) seem to be driven by disciplinary norms rather than anything substantive. For instance, economists discuss will-power, delay discounting and patience, whilst psychologists talk in terms of personality traits such as, Impulsivity,
Self-Regulation/Control and Deferred-Gratification. Such multiplicity makes the literature difficult to assimilate (e.g. Swann, Bjork, Meiller, & Dougherty, 2002). Consequently, decisions regarding which constructs to assess in order to maximise prediction without invoking redundancy are very difficult.

The literature appears to be more ‘jingly’ than it is ‘jangly’. That is, there is a greater prevalence of constructs which share identical names but are in fact distinct entities. For example, the ability/propensity to resist a reward now in favour of a more valuable reward in the future is the definition of delayed gratification and it is also the outcome of delay discounting, both of which have been described as impulsive and due to a lack of Self-Regulation and the result of a current time perspective (Logue, 1988; Cheng, Shein & Chou, 2012). In addition, the terms self-control and Impulsivity are often used interchangeably (e.g. Duckworth & Kern, 2011). Is it the case that these terminologies represent varied names for one single construct or are they distinct and important traits in themselves?

Often there is an assumption that these scales directly measure Impulsivity. However, evidence suggests that many of these constructs are distinct, not equivalent. For example, in a recent meta-analysis, Duckworth and Kern (2011) reveal that the correlation between delayed gratification measures and self-control/Impulsivity questionnaires ranged between .11 and .18. Hardly evidence suggesting equivalence.

In a structural analysis of the Urgency (a tendency to commit rash or regrettable actions as a result of intense negative affect), Premeditation, (tendency to delay action in favour of careful thinking and planning), Perseverance (the ability to remain with a task until completion and avoid boredom) and Sensation Seeking (the tendency to seek excitement and adventure) or UPPS model of Impulsivity (Whiteside & Lynam, 2001; discussed briefly in the previous chapter and in more detail below), two constructs, namely, Perseverance and Planning correlated highly ($r=.82$) suggesting jangle.
However, a single factor model, in contrast to the distinct two factor model, failed to fit the data (Smith, Fischer, Cyders, Annus, Spillane, & McCarthy, 2007). All other correlations between the four UPPS factors were ≤0.23, providing clear evidence that many of the factors deemed to be assessing Impulsivity are far from equivalent and actually share relatively little common variance.

One might argue that it is largely obvious that Impulsivity, Deferred-Gratification and Sensation Seeking are distinct to some extent but that regardless of whether these constructs contain unique variance and represent distinct traits, they are sub-facets of a broader Impulsivity construct and as such using the umbrella term Impulsivity to classify such measures is justified. However, evidence would again suggest that this is not the case. Smith et al. (2007) examined the existence of a higher order global Impulsivity facet directly above the four UPPS factors. Whilst the hierarchical model returned adequate fit, the factor loadings failed to provide evidence for the general Impulsivity factor. Planning and Premeditation both loaded above 0.90, Sensation Seeking loaded at 0.25 (6.3% shared variance) and Urgency loaded at just 0.08 (less than 1% shared variance).

It is evident that the state of Impulsivity measurement is not particularly clear. Measures presumed equivalent are in fact distinct and, contrary to common assumptions, are not even subsumed by a global Impulsivity factor. Are they even measures of Impulsivity at all?

A lack of awareness surrounding the complexity and multidimensionality of Impulsivity-related traits (all traits argued to be facets of Impulsivity from this point will be referred to as Impulsivity-related traits) has given rise to the problems discussed above whereby researchers and practitioners looking to conduct prediction studies are met with a whole array of potential conceptualisations and measures to choose from. If it is implied that the constructs of Urgency, Sensation Seeking, Future Orientation,
Delayed Gratification and so on are equivalent or at least highly related, and are represented adequately by a single general Impulsivity factor, it is not surprising that researchers whose focus is on ‘practicalities’ rather than measurement structure, or those who are not particularly familiar with the background literature, continue to select scales in a non-systematic manner.

Economic researchers work in different traditions to psychologists and have, unsurprisingly, dominated research concerning financial behaviour. Disciplinary boundaries are one contributory factor to the current situation. Economists have borrowed tools from psychology and vice versa, but often this has been done without recourse to any overriding framework, model or taxonomy. Carrillo-de-la-Pena, Otero, and Romero (1993) suggest that the current haze of Impulsivity-related traits is the result of the arbitrary, even haphazard, definition of Impulsivity and resultant selection of measures.

Indeed, in a recent review of psychology and credit use, the Impulsivity jingle, jangle issue was brushed over as Kamleitner, et al. (2012) suggested that “Regardless of terminology and concrete conceptualisation, results [that Impulsivity/Self-Control is related to credit use] seem to be robust in general”. Whilst this assertion is accurate, such an approach to the measurement and definition of Impulsivity is problematic and is representative of much of the extant literature. If we do not know which of the constructs are distinct, to what extent each measure taps personality traits or cognitive abilities, how these relate structurally, and which are sub-facets of other traits, then we are left with a cloudy picture as to exactly how Impulsivity-related traits influence economic decisions and behaviours. Resultantly, our understanding of the antecedents and ability to predict and manage economic outcomes is diminished.

It is argued here that ongoing efforts to map human personality offer a suitable framework to better understand economic behaviour and to arrange the extant literature
into more coherent groupings. Whilst a single comprehensive model of personality is the subject of ongoing debate and is far from complete (c.f. Booth, 2011), using knowledge of personality structure can certainly clarify much of the extant research. The importance of understanding personality structure within economic research has been recognised by some (Brändstatter, 1993; Almlund, et al., 2011). Much of this work has focused on and resultantly further stimulated use of the pervasive FFM. This is understandable for the reasons discussed in Chapter Two. However, as also discussed in Chapter Two, the FFM for reasons of structure, coverage, measurement and prediction is perhaps unlikely to be the most useful tool when investigating economic behaviour (see also Hughes at el., 2011; Pirog & Roberts, 2007).

Instead, here, a comprehensive review of measurement and structural work concerning Impulsivity-related traits will be conducted and utilised in order to clear some of the jingle and jangle and to guide efficient trait selection. The ultimate aim is to identify core Impulsivity-related traits that are likely to be of importance to all economic outcomes, including insurance claims, insurance fraud and credit use.

3.2 Delineating Impulsivity

“Impulsivity itself is often characterised as a failure to adequately inhibit behaviour and by a predisposition toward, unplanned actions without due consideration of the consequences of such behaviour. ... Impulsivity has been defined as the inability to withhold or stop a response in the face of negative consequences; preference for a small immediate reward versus a larger but delayed one; acting without forethought... novelty/sensation-seeking and an increased propensity to engage in risky behaviours”

Bari, Robbins, & Dalley, 2011, pg. 379-381

As evidenced by the above attempt to ring fence current Impulsivity conceptualisations, there is still considerable ambiguity surrounding Impulsivity, how to define it, what it consists of and how best to measure it. Perhaps, the one point of
consensus among Impulsivity researchers is the multi-faceted nature of the construct (Evenden, 1999; Whiteside & Lynam, 2001). If we can gain a clear understanding of the existence and structure of Impulsivity-related traits, we can in turn use this knowledge to provide a framework with which to examine extant literature regarding Impulsivity-related constructs and economic behaviour.

3.2.1 Personality and Psychometric Assessment of Impulsivity-Related Traits

A number of theoretically and statistically derived models have posited a structure for Impulsivity-related traits. The number of traits proposed range from 2 (e.g., Dickman, 1990; Eysenck & Eysenck, 1985) to 15 (Gerbing, Ahadi, & Patton, 1987) with most conceptualisations positing between 3 and 6 Impulsivity-related traits (e.g. Barratt, 1993; Buss & Plomin, 1975; Whitside & Lynam, 2001). Within the personality approach to Impulsivity, self and other report questionnaires are the measurement tool of choice. Analysis of such measures provides an opportunity to assess whether the constructs proposed are substantive, reliable and show evidence of validity. A broad review of the most widely accepted and utilised conceptualisations and subsequent structural analyses will be presented here.

In one of the earliest investigations into Impulsivity, Eysenck’s three factor omnibus model of personality (Psychoticism, Extraversion and Neuroticism) was used to relate Eysenck and Eysenck’s (1977) conceptualisation of Impulsivity to other personality traits. Eysenck and Eysenck (1977) posit two components of Impulsivity, namely, Venturesomeness and Impulsiveness. The former is subsumed by Extraversion and refers to the seeking of thrill, risk and sensation; whilst the latter is subsumed by Psychoticism, and refers to what is most commonly thought of as Impulsivity, namely, acting on the spur of the moment and doing and saying things without thinking them through. Similarly, Zuckerman, Kuhlman, Thornquist, and Kiers (1991) describe their Impulsive-Sensation Seeking dimension as involving lack of planning as well as
experience-seeking, defined as the willingness to take risks for the sake of excitement or novelty.

The most widely used Impulsivity measure to date is the Barratt Impulsivity Scale (BIS). After undergoing many structural investigations and revisions, the BIS is now considered to be adequately represented by three factors (Barratt, 1972; 1983; 1985; Barratt & Patton, 1983) entitled motor impulsiveness (“I do things without thinking”; “I act on the spur of the moment”), cognitive impulsiveness (“I make up my mind quickly”; “I am a careful thinker”) and non-planning impulsiveness (“I am more interested in the present than in the future”; “I plan tasks carefully”).

In a joint factor analysis of Eysenck’s Impulsivity measure (the I7) and the BIS, Luengo, Carrillo-de-la-Peña, Otero, and Romero (1994), extracted six factors. They are broadly speaking (i) Attention, (ii) Sensation Seeking, (iii) Premeditation, (iv) Spontaneity, (v) Impatience and (vi) Planning/Foresight. Factors three and four were assessed by semantically similar items and were suggested to be almost indistinguishable by the authors. It is the interpretation of the current author that these two dimensions reveal the distinction between acting out impulses and behaving in a manner that is premeditated and therefore appear less impulsive. In other words, Impulsivity and Impulse-Control are two distinct components as would be posited by Gray’s biologically rooted Behavioural Inhibition/Activation System (BIS/BAS; Gray, 1987, 1990; 1991; Gray and McNaughton 2000), which posits two general behavioural systems: one that activates behaviour and seeks reward (Impulsivity) and one that inhibits inappropriate and potentially harmful activations (Impulse-control). In keeping with findings in the BIS/BAS tradition, the two factors were modestly correlated at $r = .317$ and were differentially correlated with the Planning/Foresight factor.

Carrillo-De-La-Pena and Otero (1991) also showed that the six factors were underlain by three second order factors. The first, consisting of aspects iii, iv and vi is
similar to Eysenck’s conception of Impulsivity, namely, acting on impulse and failing to restrain such actions. The second factor included the Planning and Sensation Seeking aspects and the third was Attention. These three factors share aspects of Eysenck’s and Barratt’s models; however, they are not identical to either. Carrillo-De-La-Pena and Otero’s analysis suggests that both Eysenck’s I7 scale and Barrat’s BIS-11 scale are multidimensional and hierarchically related. Thus, some of the discrepancy in the number of factors identified may well be the result of different measures assessing Impulsivity-related behaviours at different levels of abstraction.

In another conceptualisation, Buss and Plomin (1975) view impulsive behaviour as consisting of four dimensions. The first and core component is inhibitory control; the second revolves around the tendency to consider alternatives and consequences before making a final decision; the third refers to the ability to remain focused upon the task in hand despite competing distractions; and the fourth represents the tendencies to become bored and to seek novel stimuli. Transferred into a common personality based language, we have a dimension of impulse control or impetuousness, one of planning and foresight, one of attention and a fourth of excitement/sensation seeking.

Upon consideration of the Barratt, Eysenck, and Buss and Plomin models which come from differing research traditions, it is evident that certain behaviours and traits consistently emerge. There is still considerable ambiguity concerning which of these conceptualisations is most accurate however, and whilst the Carrillo-De-La-Pena and Otero (1991) study created a coherent structure from Eysenck and Barratt’s work, there are other authors that posit slightly different constructs, that are related in different ways.

As briefly discussed in the preceding chapter, Whiteside and Lynam (2001) in a bid to ‘‘bring order to the myriad of measures and conceptions of Impulsivity’’ (p. 684) conducted a factor analysis of Impulsivity-related scales from ten measures, including
facets from broad measures such as the NEO-PI-R and specialised measures from the likes of Buss and Plomin (1975), Dickman (1990), Barrat (1983), Patton, Stanford & Barrat, 1995) and Eysenck (Eysenck, Pearson, Easting & Allsopp, 1985). They found four main Impulsivity-related traits, namely, Urgency (the tendency to experience strong reactions under conditions of negative affect), Premeditation (the tendency to think and reflect on the consequences of an act before engaging in that act), Perseverance (the ability to remain focused on a task that may be boring and/or difficult) and Sensation-Seeking (a tendency to enjoy and pursue activities that are exciting). Whiteside and Lynam (2001) used the first initial from each factor to name their model the UPPS model of Impulsivity.

The UPPS model proposed by Whiteside and Lynam shares considerable overlap with the Buss and Plomin model and also has equivalents in the Carrillo-De-La-Pena and Otero (1991) analysis. This four facet solution has been shown to be psychometrically robust and valid (Smith et al., 2007) and is seen as particularly useful as it has been positioned within the framework of the popular five-factor model (FFM) of personality (Whiteside & Lynam, 2001). Resultantly, the UPPS model has been widely adopted amongst Impulsivity researchers (Baumeister, 2002).

There is no question that the UPPS captures many of the main aspects of impulsive behaviour. However, it is suggested here for four main reasons that the UPPS is not an exhaustive model of Impulsivity-related personality traits.

First, Whiteside and Lynam (2001) used scale scores of a number of Impulsivity measures within their factor analysis. This is problematic as scale scoring relies on the assumption of unidimensionality. As discussed previously, a number of these scales do not cohere in factor analytic investigations and many are clearly multidimensional. This notion is further supported by the evidence that within Whiteside and Lynam’s analysis, 40% of the scales demonstrated poor levels of internal consistency (α < .70). Further, as
evidenced by analyses such as those conducted by Carrillo-De-La-Pena and Otero (1991) when analysing item level data from multiple inventories, dramatically different factor structures can be identified. It is also probable that the different scales assess Impulsivity-like traits at different levels of abstraction. Thus, by scale scoring multidimensional scales positioned at varying levels of abstraction, it is possible that a reduced and inaccurate number of factors were identified.

Second, whilst Whiteside and Lynam (2001) included a broad range of popular Impulsivity measures, these measures were published between 1970 and 1990. In the intervening period and since the UPPS has been published, there have been a number of additional constructs proposed as part of the Impulsivity spectrum: constructs such as delayed gratification and future orientation (Evenden, 1999; Lecrubier, Braconnier, Said & Payan, 1995).

Third, there has long been suggestion of a distinction between Impulsivity (i.e. acting out impulses) and self-control/regulation (i.e. willpower, patience, suppressing impulses). This notion is suggested in trait, biological, cognitive, and developmental notions of impulsive behaviour (e.g. Carver, 2005; Carver, Johnson, & Joormann, 2009; Eisenberg et al., 2004; Hofmann, Friese, & Strack, 2009; Metcalfe & Mischel, 1999; Steinberg, 2008; Tangney, Baumeister, & Boone, 2004). For example, dual-process models suggested by Carver (2005) and Hofmann et al. (2009) indicate that Impulsivity and self-control are distinct processes that together affect behaviour. It is suggested that the more impulsive a person, the greater the level of self-control needed in order to achieve self-regulatory outcomes. Often the two main components of such dual-process models are only moderately correlated (Maloney, Grawitch, & Barber, 2012) and are differentially related to other personality traits (Fulford, Johnson, & Carver, 2008) and behavioural outcomes (Friese & Hofmann, 2009). The UPPS conceptualisation of Impulsivity fails to account for these distinct traits/processes. It might be argued that the
premeditation scale is considered equivalent to Self-Regulation/control. However, if this is the case, then the UPPS no longer has a scale that assesses planning and future orientation and given that recent researchers have taken to using the label “Lack of Planning” for the premeditation scale (e.g. Smith et al., 2007), it seems most likely that this scale more closely approximates planning and forethought than Self-Regulation.

There is also direct empirical evidence of additional Impulsivity-related traits that fall beyond the UPPS. The Urgency facet is the closest to what in both everyday lexicon and previous psychological theory is termed Impulsivity and is closely associated with the impulsiveness facet of the NEO-PI-R (Whiteside & Lynam, 2001). It measures the notion of experiencing and being unable to control internal desires or impulses to eat too much or barge in on conversations or more generally, to do things that are later regretted. The scale has several items that refer to impulsive behaviour resulting from negative mood states. This scale makes a number of assumptions that Impulsivity is particularly relevant during negative mood states. However, impulsive behaviour is not confined to negative mood states. Indeed, Cyders (2005) posited and psychometrically supported the existence of ‘Positive Urgency’ which although correlated with Negative Urgency (r=0.37), showed differential correlations with risky behaviours (drinking) and offered incremental predictive validity beyond negative Urgency. Are these two scales indicative of two distinct personality traits or are they measures of Impulsiveness, rash action and Urgency that are seated within different modes of affect. The latter seems more plausible. It is suggested that in order to assess the core trait underlying impetuous, rash action, a scale which removes affect from the items is best suited. This is not to say that the two Urgency scales do not have utility, far from it, they will be very useful in numerous predictive studies. However, the goal of this section of the literature review is to identify core Impulsivity-related traits, and
although Positive and Negative Urgency are distinct scales, it is unlikely that they are distinct personality traits.

There have been a number of other studies that have posited Impulsivity models or have conducted statistical analysis on a number of pre-existing scales in a similar vein to Whiteside and Lynam (2001). For a summary of the factorial findings, see Table 3.2 presented later in this chapter. This table contains factor labels and indicative items for all major Impulsivity models and structural examinations.

Perhaps the most interesting structural analysis to date was carried out by Kirby and Finch (2010) who conducted Principal Components Analysis of 95 self-report Impulsivity items and also a metric of Delay discounting. What is particularly interesting within this paper is not just how many aspects are found, but their hierarchical relations. Kirby and Finch extracted as many components as possible (8) then subsequently forced the solutions to converge in successively fewer factors (7 then 6 and so on). The seventh and eighth components extracted were un-interpretable but the remaining six components all appear to capture aspects of impulsive behaviour and have been referred to in the literature at large and in the economic psychological literature specifically. At all levels of the hierarchy, there are constructs akin to many of the core factors proposed by the models discussed above.

Of the six feasible components, three are very similar to the factors proposed by the UPPS model, namely, Prepared/Careful (UPPS Premeditation), Divertible (UPPS Perseverance) and, Thrill and Risk Seeking (UPPS Sensation Seeking). The one exception is UPPS Negative Urgency. Kirby and Finch do find a factor which they

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6 The seventh factor identified remained intact until there were only 5 forced factors. It might have been wise to remove the items from this factor as with a Cronbach’s Alpha of 0.15, the items “Do you find it hard to understand people who risk their necks climbing mountains?”,”I like to think about complex problems” and “Do you usually prefer to stick to brands you know are reliable, over trying new ones on the chance of finding something better?” are clearly not assessing any substantive or reliable aspect of Impulsivity. Removal of these items may have influenced the results particularly the hierarchical relations as the number of factors was reduced.
entitle Impetuous which has similar connotations, (e.g. acting rashly) but without the negative mood state emphasis within the UPPS Urgency factor.

In addition to overlap with the UPPS factors, there are also components related to delayed gratification and an energetic carefree approach to life which Kirby and Finch entitle ‘impatiently pleasure seeking’ and ‘happy-go-lucky’ respectively. The delayed gratification factor revolves around patience and being able to pass up immediate rewards for long term gains, the main aspect that I proposed as missing from the UPPS model. This factor is loaded on by several self-report items but also a measure of delay discounting which was not included in the UPPS factor analysis.

At the broader levels of abstraction three major factors remained intact. The first is “Spontaneous” which includes aspects of Impetuosity (“I say the first thing that comes into my head”, “I do things without thinking”) and Attention (“I have a habit of starting things and then losing interest in them”, “Often I stop in the middle of one activity in order to start something else”). The second is “Prepared/Careful” which concerned planfulness and, thirdly, “Sensation Seeking”. When extracting just two components, Sensation Seeking was joined by a single factor subsuming Spontaneous and Prepared/Careful giving rise to something that looks very similar to Eysenck’s model. What the Kirby and Finch analysis reveals, is that there are at least six, identifiable, narrow aspects of impulsive behaviour. The analysis also shows that once the level of abstraction is considered, many of the previously identified models (e.g. Barratt, 1985; Buss & Plomin, 1975; Eysenck & Eysenck, 1977; Whiteside & Lynam, 2001) might actually share more commonality than is obvious at first.

3.2.2 Behavioural Measures of Impulsivity

Often only moderately related Impulsivity-related traits are consistently identified when using personality questionnaires. Is the same pattern evident when using differing measurement paradigms? In short, yes.
Not dissimilar to questionnaire based measures of Impulsivity-related traits, behavioural or task measures are numerous and diverse. In general, task based measures of impulsiveness can be considered measures of executive functioning (Dick et al., 2010; Duckworth & Kern, 2011; Hampson, 2012). Behavioural tasks designed to assess impulsive tendencies are often weakly intercorrelated ($r \approx .15$) and often do not correlate strongly with self- ($r \approx .15$) or other- ($r \approx .20$) report measures of Impulsivity (Duckworth & Kern, 2011; Edmonds, et al., 2009). Such evidence suggests that just like questionnaire conceptualisations, behavioural tasks are not measuring a single Impulsivity construct but multiple largely independent constructs.

As evidence of multidimensionality has been uncovered, different behavioural Impulsivity measures have been categorised according to their main characteristics. The majority of behavioural tasks are suggested to fit within five broad categories (Dick, et al., 2010; Dougherty, Marsh, Mathias, & Swan, 2002; Friedman & Miyake 2004). The first category consists of response inhibition tests which gauge the ability to inhibit an already initiated response. In-line with the traits discussed above, these measures most closely resemble Self-Regulation/Control. The second category is termed ‘resistance to distraction and interference’. Tests in this category involve performing a task whilst avoiding interference from task-irrelevant information. The third category is resistance to proactive interference which involves resisting memory intrusions of information previously, but no longer relevant to task completion. Both the second and third categories are most closely related to attention based facets of Impulsivity discussed above. The fourth category is tasks of gratification delay and is somewhat familiar from the questionnaire measure discussion. Generally, delay-of-gratification tasks require participants to make a series of choices between smaller, immediate rewards and larger, delayed rewards. The fifth and final category concerns assessments of elapsed time. This final category is the most distinct from facets
assessed by personality questionnaires. The most closely related traits are those concerning future planning and foresight.

Table 3.1 provides a list of illustrative tasks for each of the five components. The table was adapted from tables, categorisations and discussion presented in Dick et al. (2012) and Duckworth and Kern (2011). In addition to measures that fit within these five categories, other measures such as the Balloon Analogue Risk Task (BART; Lejuez et al., 2002) and the Iowa Gambling Task (Bechara, Damasio, Damasio, & Anderson, 1994) have also been argued to constitute Impulsivity measures (Duckworth & Kern, 2011).

Conceptually, many of the tasks outlined above are closely related with trait measures identified previously. However, lacking evidence of convergent validity with self and other ratings makes alignment across different measurement traditions difficult. The main limitation facing behavioural tasks is the lack of measurement specificity. With any measure, there is always ‘measurement error’ (measured variance due to factors other than the desired target of the measure) however this problem seems somewhat more pertinent in behavioural tasks. Many of the behavioural tasks measure multiple types of behaviour that might be considered impulsive (e.g. patience, attention and response inhibition are all needed for successful performance on the stop-go task) and perhaps more worryingly, the measures also assess other conceptually distinct variables such as motivation, motor skills, working memory and cognitive ability/intelligence. Cognitive ability and intelligence, in particular, are measured in almost all behavioural tasks whether they are matching tasks, recall tasks or tasks that require cost-benefit analysis of rewards presented at varying times. The lack of specificity afforded by behavioural measures and the resultantly large proportion of measurement error is likely the main underlying cause of the small relationships between behavioural tasks and questionnaire measures.
### Table 3.1

**Examples of Impulsivity-related behavioural tasks**

<table>
<thead>
<tr>
<th>Example tasks</th>
<th>Brief description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Category 1: Response Inhibition</strong></td>
<td></td>
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<tr>
<td>Go/no-go tasks</td>
<td>Participant develops a prepotent motor response (e.g., hitting the spacebar) to frequently appearing targets, and then must inhibit this response when a less frequently appearing non-target appears.</td>
</tr>
<tr>
<td>Stroop task</td>
<td>The subject must respond to a series of stimuli in a way that requires inhibition of a previously overlearned response.</td>
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<tr>
<td><strong>Category 2: Resistance to Distraction and Interference</strong></td>
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<tr>
<td>Eriksen Flanker task</td>
<td>Subjects must sustain attention to a target stimulus while ignoring distracters.</td>
</tr>
<tr>
<td>Word naming or Shape Matching tasks</td>
<td>Name target word/shape, presented in green, alone or with distractor red word/shape.</td>
</tr>
<tr>
<td><strong>Category 3: Resistance to Proactive Interference</strong></td>
<td></td>
</tr>
<tr>
<td>Brown–Peterson task</td>
<td>Learn and later recall successive lists made up of words taken from same category.</td>
</tr>
<tr>
<td>Cued recall task</td>
<td>View one of two lists of words, and then recall words on most recent list, ignoring previous list words.</td>
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<tr>
<td><strong>Category 4: Delay of Gratification</strong></td>
<td></td>
</tr>
<tr>
<td>Two choice Impulsivity paradigm</td>
<td>Choice between smaller reward now (e.g. one marshmallow, £5) or a larger, delayed reward (e.g. two marshmallows, £10).</td>
</tr>
<tr>
<td>Single key Impulsivity paradigm</td>
<td>Respond as desired, size of reward related to length of delay between responses.</td>
</tr>
<tr>
<td><strong>Category 5: Distortions in elapsed time</strong></td>
<td></td>
</tr>
<tr>
<td>TIME paradigm</td>
<td>Estimate how much time has elapsed.</td>
</tr>
</tbody>
</table>

On the whole, it is extremely difficult to obtain precise measures of narrow Impulsivity-related traits from behavioural tasks and as such it is difficult to take too much from these measures in informing narrow trait identification. The effective design of narrow behavioural tasks that can assess the main components of impulsive behaviour is one aspect of Impulsivity investigation that requires more investment. Nevertheless, such tasks do reveal the existence of Impulsivity related to patience and
the willingness/ability to pass up immediate gratification, what, in the Kirby and Finch analysis is termed ‘Impatiently Pleasure Seeking’ and which appears to be underrepresented in current psychometric measures.

3.2.3 Neurobiological Evidence

A more promising avenue of research that can aid the identification of distinct Impulsivity-related traits is to examine whether they are dissociable at the neuroanatomical and neuropharmacological level (Evenden, 1999; Pattij & Vanderschuren, 2008). For example, whilst altered functioning of Serotonin has long been implicated in impulsive behaviour, its role is not particularly straightforward. Serotonin depletion was found to impair impulsive action yet not to impair delay of gratification (Crean et al., 2002). Further, increasing dopamine activity in the brain region of the nucleus accumbens enhances impulsive action, whilst increasing dopamine activity within the orbitofrontal cortex decreases the ability to delay gratification. Further, Winstanley, Dalley, Theobald & Robbins (2004) revealed that global Serotonin depletion (i.e. across the whole brain) hindered behavioural inhibition or impulsive action, but not what they term “impulsive choice” which is equivalent to the concept of delayed gratification in personality research. It can be thus concluded that dopamine has bidirectional effects on two distinct forms of Impulsivity, most likely through action in different brain areas (Pattij & Vanderschuren, 2008).

There is also evidence to suggest that Impulsivity-related traits concerned with self-control tend to be affected by Serotonin change, whilst sensation-seeking traits remain unrelated to Serotonin change, but are related to changes in dopaminergic activity (Hennig, 2004). Similarly, impulsive traits are generally shown to be related to increased levels of the hormone testosterone (e.g. O’Connor, Archer, Hair, & Wu, 2002), whilst Sensation Seeking, despite hypotheses to the contrary (Zuckerman, 1983) is unrelated to testosterone levels (Rosenblitt, Soler, Johnson, & Quadango, 2001).
Clearly at both the hormonal and neurochemical levels, Sensation Seeking and Impulsivity traits related to rash action are dissociable.

Much of the neurobiological evidence points to the likelihood of different biological bases underlying different types of ‘Impulsivity’ that may well manifest in different personality traits. Certainly, impulsive action, impulse control and Sensation Seeking can be differentiated as Serotonin is differentially involved with all three, thus offering further support for the contention that acting on impulse, regulating impulses and delaying gratification whilst being behaviourally alike, are in actual fact distinct at least at the neurophysiological level. This should cast some doubt over the increasingly common practice that “rates of delay discounting are often operationalized as an index of Impulsivity” (Reynolds, 2006, p.651). The neuropharmacological research alongside the psychometric work of Kirby and Finch (2010) and behavioural task research adds weight to the notion that a propensity to defer gratification is distinct from and inadequately covered in many questionnaire-based Impulsivity measures. In future, as will be the case here, researchers are advised to consider thoroughly which aspect of behaviour is likely to be of most importance: whether Impetuousness, Self-Regulation, Sensation Seeking, Deferred-Gratification, Attention or Foresight are the significant focal traits and choose measures accordingly.

3.3 Framework of Impulsivity-Related Traits

The review of personality, neurological and behavioural aspects of Impulsivity described above, has served to help identify six main domains of Impulsivity-related traits. Each domain along with a working definition is presented in Table 3.2. The taxonomy has been used to position dimensions from all notable Impulsivity models and measures, whether derived theoretically, psychometrically or experimentally (See Table 3.3). Where available, example items have been provided.
### Table 3.2

*Working definitions for the six dimensions of Impulsivity-related traits*

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impetuousness</td>
<td>A tendency to experience strong impulses to act in a rash, impetuous manner.</td>
</tr>
<tr>
<td>Self-Regulation</td>
<td>The ability/willingness to enact restraint in order to suppress, modify, and adapt one's emotions, impulses or desires to act in accordance with the situation (i.e. social norms).</td>
</tr>
<tr>
<td>Attention / Persistence</td>
<td>Refers to one’s attention span: the tendency to maintain focus and persevere with tasks.</td>
</tr>
<tr>
<td>Forethought and Planning</td>
<td>Considering the future consequences of current actions and planning responses accordingly in order to achieve ones desired goals.</td>
</tr>
<tr>
<td>Delayed Gratification</td>
<td>A sensitivity to reward that is manifest in the willingness/ability to pass up enjoyment or something of value now with the aim of achieving something of greater enjoyment or value in the future.</td>
</tr>
<tr>
<td>Sensation Seeking</td>
<td>Thrill and adventure seeking for the sake of experience.</td>
</tr>
</tbody>
</table>
Table 3.3\(^7\)

*Impulsivity-related factors from all major models, measures and structural examinations categorised by the six Impulsivity-related domains*

<table>
<thead>
<tr>
<th>Author</th>
<th>Impetuosity</th>
<th>Self-Regulation</th>
<th>Forethought and Planning</th>
<th>Attention / Persistence</th>
<th>Patience / Delayed Gratification</th>
<th>Sensation Seeking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Buss and Plomin (1975)</td>
<td>Inhibitory Control (I have trouble controlling my impulses)</td>
<td>Decision Time (I like to make detailed plans before doing something)</td>
<td>Persistence (I generally like to see things through to the end)</td>
<td>Sensation Seeking (e.g. I generally seek new and exciting experiences and sensations)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eysenck et al. (1984)</td>
<td>Impulsiveness (Are you an impulsive person; Do you generally do and say things without stopping to think?)</td>
<td>Non-planning Impulsiveness (e.g. I am more interested in the present than the future)</td>
<td>Attentional Impulsiveness (e.g. I get easily bored when solving thought problems)</td>
<td>Venturesomeness (e.g. I enjoy extreme activities)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Barratt (1985)</td>
<td>Motor Impulsiveness (I act on the spur of the moment; I act on impulse)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carrillo-De-La-Pena &amp; Otero (1991)</td>
<td>Spontaneity</td>
<td>Premeditation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\(^7\) A number of other conceptualisations and models have been offered (e.g. Humphrey, 1982; White, et al., 1994) but due to clear evidence of scale multidimensionality and poor reliability these works are not considered particularly useful. As such, they are not included here.
Table 3.3 Continued

Impulsivity-related factors from all major models, measures and structural examinations categorised by the six Impulsivity-related domains

<table>
<thead>
<tr>
<th>Author</th>
<th>Impetuousness</th>
<th>Self-Regulation</th>
<th>Forethought and Planning</th>
<th>Attention / Persistence</th>
<th>Patience / Delayed Gratification</th>
<th>Sensation Seeking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parker et al. (1993)</td>
<td>Cautious Vs. Spontaneous</td>
<td>Methodical Vs. Disorganised</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Act on the spur of the moment; stop and think)</td>
<td>(I have detailed plans; I am methodical)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Olson et al. (1999)</td>
<td>Inhibitory Control</td>
<td></td>
<td></td>
<td></td>
<td>Delay Of Gratification, Choice Delay, Reward Delay</td>
<td></td>
</tr>
<tr>
<td>Swann et al. (2002)</td>
<td>Rapid Response</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reynolds (2006; Study 2)</td>
<td>Impulsive Disinhibition</td>
<td>Impulsive Decision-Making</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Miller et al. (2004)</td>
<td>Dysfunctional</td>
<td>Functional</td>
<td>Non-Planning</td>
<td>Drive</td>
<td>Reward Responsiveness</td>
<td>Venturesomeness</td>
</tr>
<tr>
<td>Ireland &amp; Archer (2008)</td>
<td>Behavioural Motor Impulsivity (I act on the spur of the moment; I ‘act on impulse’)</td>
<td>Cognitive Planning Skills (I am a careful thinker; I plan trips well ahead of time)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Whiteside &amp; Lynam (2001)</td>
<td>Urgency</td>
<td>Premeditation</td>
<td></td>
<td>Lack Of Perseverance</td>
<td>Sensation Seeking</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(I have trouble controlling my impulses; I often get involved in things I later wish I could get out of)</td>
<td>(I have a reserved and cautious attitude toward life; I like to stop and think things over before I do them; I am not one of those people who blurt out things without thinking)</td>
<td></td>
<td>(I generally like to see things through to the end; I tend to give up easily)</td>
<td>(I generally seek new and exciting experiences and sensations)</td>
<td></td>
</tr>
</tbody>
</table>
Table 3.3 Continued

Impulsivity-related factors from all major models, measures and structural examinations categorised by the six Impulsivity-related domains

<table>
<thead>
<tr>
<th>Author</th>
<th>Impetuousness</th>
<th>Self-Regulation</th>
<th>Forethought and Planning</th>
<th>Attention / Persistence</th>
<th>Patience / Delayed Gratification</th>
<th>Sensation Seeking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Luengo et al. (1994)</td>
<td>Spontaneity</td>
<td>Premeditation</td>
<td>Planning/Forethought</td>
<td>Attention</td>
<td>Impatiently Pleasure Seeking</td>
<td>Sensation Seeking</td>
</tr>
<tr>
<td>Gerbing et al. (1987)</td>
<td>Spontaneous</td>
<td>Carefree</td>
<td></td>
<td></td>
<td>Impatiently Pleasure Seeking</td>
<td>Sensation Seeking</td>
</tr>
<tr>
<td>Kirby &amp; Finch (2010)</td>
<td>Impetuous (e.g. I often say the first thing that comes into my head)</td>
<td>Prepared / Careful (e.g. I plan and organise my work in detail)</td>
<td>Divertible (e.g. I have a habit of starting things and then losing interest in them)</td>
<td></td>
<td>Impatiently Pleasure Seeking (e.g. I have no patience with dull or boring persons; delay discounting task)</td>
<td>Thrill &amp; Risk Seeking (e.g. Would you enjoy skydiving?)</td>
</tr>
</tbody>
</table>
Using the above framework, I will now consider extant research concerning ‘Impulsivity’ and economic behaviour. The approach of examining empirical findings in the context of a comprehensive view of Impulsivity-related personality traits will allow for a more systematic interpretation of findings and will simplify the goal of selecting those personality traits most likely to enhance our understanding of insurance claims, insurance fraud and credit use. The following questions will be examined: Do all of the six Impulsivity-related factors influence economic outcomes? What is the relative importance of each trait? Are some or all of these traits likely to be ‘central traits’ of importance across a range of financial behaviours and economic outcomes (e.g. spending/saving behaviour, credit use and gambling)?

3.4 Impetuousness and Financial Behaviour

First I will examine Impetuousness. Contained within this domain are the Impulsivity facets of the NEO-PI-R, Urgency from the UPPS model (Whiteside & Lynam, 2001), and the EASI-III inhibitory control scale (Buss & Plomin, 1975). Thus, Impetuousness can be defined as acting upon strong impulses in a rash and reckless manner that often results in undesirable, regrettable outcomes. The following section will briefly discuss evidence of relationships between Impetuousness and a range of consumer based financial behaviours and economic outcomes, such as, spending/saving behaviour, credit use and gambling.

Perhaps the most obvious behaviour to begin with is impulsive and compulsive spending. Impulse buying is seen as a temporary indulgence of impulses that falls within the ‘normal’ range of behaviour, whereas compulsive spending is viewed as pathological and considered to be within the ‘clinical’ range of behaviour\(^8\). Compulsive

\(^8\) There is currently an unhelpful divide between the two in the literature. Compulsive spending is the extreme variant of impulsive spending (compulsive saving or hoarding being at the opposite end of the continuum). This view is inline with most current research which shows dimensional representations
buying is defined as a ‘chronic, repetitive purchasing that becomes a primary response to negative events or feelings’ (O’Guinn and Faber, 1989, p. 155). Impetuousness is the main component found in both the generic and extreme variants of impulsive spending (e.g. Billieux, Rochat, Rebetez, & Van der Linden, 2008; Mowen, 2000; Vohs & Faber, 2004).

Of the UPPS factors, Urgency most closely approximates what is here termed Impetuousness. In an analysis using the UPPS factors, compulsive buying was positively correlated with Urgency, Lack of Perseverance and Lack of Premeditation (Billieux, et al., 2008). However, stepwise multiple linear regression revealed that Urgency was the only significant predictor of compulsive buying tendencies, supporting the claim that this form of Impulsivity, ‘Impetuousness’, is the key personality component in governing rash spending: Behaviour that can often result in undesirable and regrettable financial outcomes. Impetuousness also has indirect effects on spending through personality disorders such as mania and attention deficit/hyperactivity disorder (Mueller et al., 2007).

In two recent studies conducted by the current author (Hughes, et al., 2011a; 2011b), Impetuousness was found to correlate strongly ($r = 0.64$ and $0.65$) with self-reported fiscal irresponsibility, a scale which assesses the propensity to spend beyond one’s means, neglect savings and ignore one’s financial circumstances. Scales that measure Impulsivity that would be classified under the current taxonomy as ‘Impetuousness’ have been shown to relate to a range of monetary behaviours, such as, money management (Baumeister, 2002), money retention (Hayhoe, Leach, & Turner, 1999), self-reported credit card misuse (Pirog & Roberts, 2007; Wang, et al., 2011) and gambling (Alessi & Petry, 2003; Cyders et al, 2007).

On the basis of such evidence, it is safe to conclude that Impetuousness is influential with respect to a number of financial behaviours. Thus, it is also likely to be influential in the use of other financial products such as insurance. Impetuousness is suspected to be one of the central traits that is influential in claims behaviour, insurance fraud and credit use and thus, will be assessed in each of the three studies.

3.5 Self-Regulation and Financial Behaviour

Self-Regulation is suggested to constitute the suppressive component of a dual-process model of Impulsivity (Carver, 2005; Hofmann et al., 2009). In other words, whilst ‘Impetuousness’ is concerned with experiencing strong impulses and desires, Self-Regulation is concerned with controlling, modifying, and adapting those impulses or desires (Murtagh & Todd, 2004) in order to respond in an appropriate manner (i.e. to behave in accordance with social norms, rules or laws, in order to avoid negative consequences). Thus, low self-regulatory control can result in manifestations of greater ‘Impetuousness’ and also other behaviours commonly (but incorrectly) classified as impulsive such as thrill-seeking and Risk-Taking (Byrnes, 2005; Steinberg, 2008). This is evidenced by correlations with sexual Risk-Taking (Raffaelli & Crockett, 2003) and substance use (Wills, Sandy, & Yaeger 2002).

In comparison to other impulsivity-related traits, Self-Regulation, as defined here, has received limited attention in relation to financial behaviour and economic outcomes. This is likely the result of the blurring of distinctions between different facets of Impulsivity previously discussed, whereby many researchers lump distinct Impulsivity-related traits into a single ‘Impulsivity’ construct.

However, as Rose (2007) points out “compulsive buying is fundamentally a self-regulatory problem”. People who score relatively highly on measures of compulsive buying report having irresistible urges to buy and a sense of lost control over their buying. They also continue to buy in spite of adverse consequences to their financial
well-being, mental health, and personal relationships (Dittmar, 2004; O’Guinn & Faber, 1989). In keeping with the dual-process view of impulsive action, Shefrin and Thaler (1992) describe a model of saving behaviour that incorporates a “planner” and a “doer” – two processes which draw upon different time horizons; the “planner” function adopts a future oriented time horizon and uses self-control resources in order to suppress actions guided by the “doer” which has a short time horizon.

Several empirical studies also support the relevance of Self-Regulation to financial behaviour. For instance, Livingstone and Lunt (1992) found that credit card users with low self-control described themselves as buying things on impulse and rewarding themselves with purchases more often than whose who had higher levels of self-control. In accordance with this finding, individuals in debt have also been found to display lower levels of self-control over their finances (Livingstone & Lunt, 1992). However, it is unclear as to the causal relationship; whilst lower self-control is likely to lead to financial problems, amassing large debts may also decrease an individual’s general desire and ability to exhibit self-control (Webley & Nyhus, 2001). In addition, impulse control has been related to saving behaviour, in that individuals who exhibit higher impulse control are able to save more money for the future (Baumeister, 2002; Wärneryd, 1995).

Vohs and Faber (2007) conducted a series of studies that considered the effect of impulsive spending on self-regulatory resources. Participants who had to control their thoughts felt stronger urges toward impulsive buying than did control participants. In a second study, participants who had their regulatory resources depleted reported that, compared to a control group, they would spend more money in a simulated spending situation. Similarly Vohs and Faber’s third set of participants, who were required to suppress their thoughts during a distracter task, spent more money and purchased more items than non-depleted participants. These findings imply that reduced regulatory
resources can lead to increased levels of impulsive spending. Vohs and Faber (2007) argued that Self-Regulatory resources can be conceptualised as a generalised pool of energy that allows people to overcome incipient urges and substitute a desirable behaviour for an undesired one (e.g., Vohs & Baumeister 2004a; 2004b), supporting the notion of a dual-process model of impulsive action.

3.6 Attention, Perseverance and Financial Behaviour

There is very little research that considers Attentional Impulsivity and economic outcomes. What little research there is suggests that attention/perseverance is of little if any importance to financial behaviour and economic outcomes. There appears to be no relationship with gambling behaviour, whether social gambling, gambling frequency or pathological gambling (MacLaren, Fugelsang, Harrigan & Dixon, 2011; Smith, et al., 2007). Billieux et al. (2008) did observe a correlation with compulsive buying behaviour \((r = .24)\), but found that when considered alongside other Impulsivity-related traits, attention/perseverance failed to offer any incremental predictive validity.

3.7 Forethought, Planning and Financial Behaviour

The fourth domain to be considered is that of forethought and future orientation, defined as: a tendency to consider future consequences of behaviour and to plan in order to achieve the most desirable outcomes. Forethought and planning is essential to many financial outcomes. For instance, in order to take an expensive annual holiday or amass adequate retirement funds, one must act with forethought and actively consider the future consequences of current actions in order to achieve such goals.

Within the UPPS factors, it is “Premeditation” that is most closely aligned with this domain. Billieux et al. (2008) noted a significant correlation between premeditation and compulsive buying behaviour \((r = .29)\) and in a multitrait-multi-method study, Smith et al. (2007) observed a significant relationship between lack of planning and problem gambling \((\beta = -.24)\), but not gambling frequency.
In addition, various studies have measured forethought through assessments of time horizons (immediate vs. future focus). Results show that shorter time horizons are related to greater indebtedness (e.g. Lea, et al., 1995) less successful saving (e.g. Fisher & Montalto, 2010; Rabinovich & Webley, 2007) and pathological gambling (Hodgins & Engel, 2002).

One particularly interesting and promising measure within this domain is the recently developed Consideration of Future Consequences scale which assesses “the extent to which people consider the potential distant outcomes of their current behaviours and the extent to which they are influenced by these potential outcomes” (Strathman, Gleicher, Boninger, & Edwards, 1994, p.743). Consideration of Future Consequences has been linked with a wide variety of ‘responsible’ behaviours (e.g. Dorr, Krueckeberg, Strathman, & Wood, 1999; Lindsay & Strathman, 1997) and this extends to responsible financial behaviour. For instance, those lower in Consideration of Future Consequences are more likely to behave in a fiscally irresponsible manner ($\beta = .67$; Hughes et al., 2011a) and engage in impulsive buying (Verplanken & Herabadi, 2001), whilst those high in Consideration of Future Consequences were found to be more likely to use a hypothetical windfall in a fiscally responsible fashion such as paying off debts (Joireman, Sprott & Spangenberg, 2005; Howlett, Kees & Kemp, 2008). Further, Joireman, Kees and Sprott (2010) showed Consideration of Future Consequences to be correlated with indebted students’ compulsive buying tendencies ($\beta = -.34$) and credit card debt ($\beta = -.36$).

### 3.8 Patience, the Delaying of Gratification and Financial Behaviour

Deferred-Gratification is defined by the extent to which one is able to wait in order to engage in a tempting act or to obtain a desired object (Beck, 2003) and often results in passing up a small reward now (e.g. partying the night before an exam,
potentially negatively influencing the result) in favour of a future larger reward (e.g.
maximising exam performance).

Deferred-Gratification is often used interchangeably with the term delay
discounting which is defined as preferring “smaller, more immediate rewards [as
opposed] to larger, more delayed ones” (Shamosh & Gray, 2008, p. 290).

The slight definitional difference between the constructs of delayed gratification
and discounting is exactly that, slight (e.g. Mischel, Shoda & Rodriguez, 1989). Still,
there is a difference: delay discounting is assessed by presenting participants with a
choice of two rewards of differing magnitude and time delay and asking participants to
choose which they would prefer, whereas delayed gratification is assessed by measuring
how long a participant can wait before receiving a reward. It has been argued that
Deferred Gratification is a measure of ‘willpower and patience’ (Reynolds &
Schiffbauer, 2005), whereas, having a preference for a larger distant reward (delay
discounting) is different from sustaining behaviour that bypasses the immediate reward
in order to achieve the delayed reward. As Reynolds and Schiffbauer (2005) point out,
many individuals decide to lose weight but fewer are able to sustain that choice by
adhering to a restricted diet.

However, whilst the two are not equivalent, they are part of the same process of
decision and behaviour (Shamosh & Gray, 2008). In order to Defer-Gratification, one
would first need to choose to obtain the distant reward. In all real world reward-delay
instances, one must first choose to desire either a small but instant, or a large but distant
reward (delay discounting). Presuming the distant reward is chosen, one must then
continue to delay gratification in order to achieve the desired outcome.

In relation to the current thesis, the trait of Deferred-Gratification is relevant as
many economic decisions and behaviours require it. For instance, saving now to buy
later or paying an insurance premium now involves effectively accepting zero reward or
even punishment, in order to (potentially) receive a larger reward or compensation at a later point.

Indeed, delayed gratification has been shown to predict gambling behaviour (Rachlin, 1992; Parke, Griffiths & Irwing, 2004), saving choices (Bar-gill, 2004; Farkas & Johnson, 1997) and students’ credit card debt (Norvilitis, et al., 2006). In two studies conducted by the author (Hughes, et al., 2011a; 2011b), Deferred-Gratification has been shown to account for substantial proportions of variance (69.6 and 85%) in self reported fiscal irresponsibility. Further, Deferred-Gratification has been implicated in consumers’ underestimation of future borrowing, in that individuals lower in Deferred-Gratification tend to borrow on credit cards despite initial intentions not to (Bar-gill, 2004). That is to say, that despite best intentions, individuals who are unable to defer gratification often get ‘sucked in’ to the buy now, pay later mentality. This supposition is further supported by the finding that Deferred-Gratification considered alongside non-dispositional predictors such as “financial knowledge” and “number of credit cards” has been identified as a significant predictor of credit card debt (Norvilitis, Merwin, Osberg, Roehling, Young & Kamas, 2006).

3.9 Sensation Seeking and Financial Behaviour

Sensation-seeking has been defined as “the need for varied, novel and complex sensations and experiences and the willingness to take physical, social, legal and financial risks for the sake of such experiences” (Zuckerman, 1994, p. 27). Sensation Seeking has customarily been conceptualised as encompassing four main concepts, namely, Thrill and Adventure Seeking, Disinhibition, Boredom Susceptibility and Experience Seeking (Zuckerman, 1979b; Zuckerman, Eysenck & Eysenck, 1978). Within the current taxonomic view, Sensation Seeking refers only to thrill, risk, excitement and adventure seeking. Disinhibition and Boredom Susceptibility are
contained within the dimensions of Impetuousness and Attention/Perseverance respectively.

There is some research that has shown a relationship between the tendency to sensation-seek and economic outcomes. For instance, those high in sensation-seeking take more risks in their everyday financial matters (Wong & Carducci, 1991; Zuckerman, 1979b; Zuckerman & Kuhlman, 1978), are more likely to engage in compulsive buying (Rodríguez-Villarino, González-Lorenzo, Fernández-González, Lameiras-Fernández, & Foltz, 2006), gambling (Parke, et al., 2004), to have more credit card debts (Tokunaga, 1993) and view saving as less important (Finke, 2006) than those low in Sensation-Seeking.

3.10 The Relative Importance of the Six Impulsivity-Related Traits

As briefly outlined above, measures of traits across all six Impulsivity-related factors have been shown to correlate with a range of economic outcomes. However, the strength, consistency and relative value of those relationships vary. Some aspects of the traits appear to be more central to economic decisions and behaviour than others. Given the goal of identifying central traits of importance across the economic domain, without invoking measurement redundancy, it is important that the relative merits of traits within all six domains are considered. Whilst no study has ever collectively considered all six variants of Impulsivity-related traits identified here, numerous studies have measured two or more. Thus, it is possible to make an assessment regarding which Impulsivity-related traits are consistently important across a range of financial behaviours and as such, which are likely to be the best candidates as ‘central traits’.

As discussed above, Billieux et al. (2008) found compulsive buying behaviour was more closely correlated with the UPPS scale of Urgency, classed here as Impetuousness ($r = .50$) than with measures that would sit within the planning/future orientation ($r = .29$), attention/perseverance ($r = .24$) and Sensation Seeking ($r = .12$, non-
significant) domains. In addition, in a stepwise regression, Impetuousness was the only trait that offered explanation of unique variance.

In two studies conducted by Hughes et al. (2011a; 2011b) Deferred-Gratification proved to be the single largest predictor of self-reported fiscal irresponsibility. In addition, Self-Regulation and Consideration of Future Consequences (2011a) as well as Impetuousness (2011b) were observed to be important predictors accounting for additional unique variance beyond Deferred-Gratification. However, a measure of Sensation Seeking showed only a modest correlation ($r = .11$) and did not explain any unique variance (2011b).

Similar trends to those reported by Hughes and colleagues were presented in a recent study of self-reported credit card use in China. Wang et al. (2011) used measures that would conform to the factors of Sensation Seeking, Impetuousness, Self-Regulation and Deferred-Gratification. In examining two forms of credit use, namely, revolving credit (General credit card debt: Credit that is automatically renewed as debts are paid off) and petty instalments (A credit system by which payment for merchandise is made in instalments over a fixed period of time, common with catalogue purchases), they found that Impetuousness and Deferred-Gratification were predictive of both. Self-Regulation was predictive of only revolving credit, but was the best predictor ($\beta = -.65$), and Sensation Seeking was only predictive of petty instalment ($\beta = .18$) but to a lesser extent than Deferred-Gratification ($\beta = -.31$) and Impetuousness ($\beta = .33$). Sensation Seeking was also found to be unrelated to students’ credit card debt, whilst Deferred-Gratification ($\beta = .20$) proved a significant predictor even when considered alongside demographic and attitudinal questions, a range of other psychological variables (i.e. materialism), and self-reported credit-card use (Norvilitis, et al., 2006).

Extant evidence suggests that in relation to use of money and credit, Impetuousness, Self-Regulation and Deferred-Gratification are of the greatest
importance, whilst Planning and Future Orientation predict proportionately smaller but significant portions of unique variance. However, Attention/Perseverance and Sensation Seeking are generally unimportant when considered alongside the other Impulsivity-related traits.

In relation to gambling, Parke, et al. (2004), found that a measure of delayed gratification predicted ($\beta = - .23$) gambling behaviour better than did Sensation Seeking ($\beta = -.05$). In addition, the same study notes a significant difference in delayed gratification between pathological gamblers and non-pathological gamblers, whilst no significant difference is observed for Sensation Seeking.

In a multitrait-multimethod investigation of the UPPS factors, Smith et al. (2007) report that in relation to problem gambling, both Urgency ($\beta = .25$) and Planning ($\beta = -.24$), classified by the current taxonomy as Impetuousness and planning/future orientations are both significant predictors. However, no significant relationships were observed between problem gambling and either perseverance or Sensation Seeking. Sensation Seeking was related to a measure of gambling frequency however, and was the only one of the four UPPS factors to explain unique variance ($\beta = .31$). Further, a recent meta-analysis (MacLaren, et al., 2011) which used the UPPS factors to organise extant research found significant differences between pathological gamblers and non-pathological gamblers in Urgency (Impetuousness) and Premeditation (planning/future orientation), but no effects were found for perseverance (attention/perseverance) and Sensation Seeking. Collectively, these results reveal that the traits of Impetuousness, delayed gratification and planning/future orientation play a role in gambling, whilst Sensation Seeking and attention/perseverance are relatively less important.

Of the six domains identified, measures that approximate Impetuousness, Self-Regulation and Deferred-Gratification, show the most consistent and sizeable associations with a range of diverse economic behaviours, whilst Foresight and
Planning measures are shown to be influential but to a lesser extent. Further, measures of Attention/Perseverance and Sensation Seeking are generally observed to be the least related and often offer no additional explanatory value beyond the aforementioned traits. Perhaps the correlations evidenced by attention/perseverance and Sensation Seeking are largely due to the variance shared with the other Impulsivity-related traits.

As stated at the beginning of this chapter, it is expected that each outcome will be influenced by central Impulsivity based traits, but will also be explained by specific personality traits that are less ‘central’ to economic behaviour en masse. The current literature review suggests that the traits most likely to be ‘central traits’ are Impetuousness, Self-Regulation, Deferred-Gratification and Foresight/Planning. Across all three studies, each will be measured.

3.11 Summary

Given the decision to use a candidate trait approach to selecting personality traits on the basis of their theoretical and empirically observed salience, the current chapter examined extant literature to identify these candidate traits. This chapter recognised the importance of Impulsivity-related traits and processes to a wide-range of financial behaviours. Past evidence suggests that Impulsivity-related traits are by far the most consistent personality correlates of financial behaviour. However, Impulsivity measurement is largely confused and interpretation of past work to select traits proved difficult. Accordingly, in order to disentangle measurement of Impulsivity, I conducted a multifaceted examination of Impulsivity measurement drawing on psychometric, behavioural, and neuropharmacological approaches. This analysis suggested that there are at least six forms of Impulsivity-related traits, labelled here as, Impetuousness, Self-Regulation, Deferred-Gratification, Foresight/Planfulness, Attention, and Sensation Seeking. Using this six-factor framework to categorise Impulsivity measures and systematically re-assess extant literature concerning Impulsivity and financial
behaviour, it was apparent that four of the Impulsivity-related traits, namely, Impetuousness, Self-Regulation, Deferred-Gratification, and Foresight/Planfulness were of particular relevance to the current thesis. Accordingly, each of these four Impulsivity-related traits will be examined in the next three empirical chapters concerning insurance claims (Study 1), insurance fraud (Study 2), and consumers’ credit use (Study 3).
Chapter 4

Study 1: Personality and Insurance Claims

The fundamental hypothesis underlying this thesis is that financial attitudes and behaviours are influenced by individual differences in a range of personality traits. Further, that accurate measurement of these traits will be fruitful when attempting to understand and predict variation in individuals’ financial behaviour. The first study directly tests these hypotheses by exploring the extent to which attitudes towards submitting insurance claims, and the number of previously submitted motor and home insurance claims, can be explained by personality. The personality traits assessed in this study come under two broad headings. First, as discussed in Chapter Three, there are a number of Impulsivity-related traits expected to be of importance to a wide range of financial behaviours, namely, the central Impulsivity-related traits of Impetuousness, Self-Regulation, Deferred-Gratification and Consideration of Future Consequences. Second, a number of carefully selected outcome specific traits are measured to account for the unique variance in Attitudes Towards Insurance Claims and claims history. These are: Risk-Taking, Sensation Seeking, Compulsivity and Oppositionality.

There is very little literature that discusses any aspect of insurance in relation to psychology and to our knowledge there is no published research that empirically examines the relationship between personality, and consumer Attitudes Towards Insurance Claims or insurance claim submissions. Consequently, no single body of extant research can be consulted in order to identify personality predictors of insurance claims behaviour. There are however a number of closely related fields that can provide some insight; for instance, the previously discussed literature concerning personality and the use of other financial products, and, personality and driving behaviour.
4.1 Introduction

This study examines whether or not personality is related to an individual’s Attitudes Towards Insurance Claims (i.e. whether people see claiming following an accident as a given and will claim whenever the opportunity arises or, alternatively, whether they will avoid claiming if at all possible) and their propensity to submit motor and home insurance claims (i.e. a count of previous claims). As discussed in Chapter 1 (section 1.3.2), there are three main reasons for focusing on motor and home insurance.

To recapitulate: First, driving and home care are part of everyday life, and as such it is suspected that personality will have a greater influence on the use of motor and home insurance than other types of insurance. Second, motor and home insurance are the most widely owned policies. Third, the economic impact of these policies to both customers and insurers is substantial. The average person with a car and home will spend more than £1,000 per annum on insurance, whilst insurers pay compensation equivalent to £18.4 and £9 million every day in private motor and home insurance claims respectively (approximately £10 billion per annum; ABI, 2009).

4.1.1 Risk Profiling and Premium Allocation

Despite the widespread uptake of insurance and the significance of its cost, little is known about what influences our insurance claims behaviour (Clarke, 1989). The current study begins to address this shortfall by identifying some of the personality correlates of insurance claims attitudes and behaviours. Insurers have obvious vested interests in understanding what drives claims behaviour (Clarke, 1989). Firstly, to ensure customers receive fair terms when applying for financial products; secondly, as insuring the ‘wrong’ person directly impacts upon bottom line profit.

In generating a risk profile and attempting to predict customer behaviour, insurers have turned to a range of demographic variables. For example, insurance quotes are traditionally based on differences in age, sex, occupation, income and marital status.
(also car related variables such as make and model and home related variables such as age, post code). Yet, given that each customer is an individual, with his/her individual circumstances and character, little effort is made to measure the defining characteristics of a person’s behaviour. The models of risk used to assign financial products make the assumption that individuals of similar demographic status (e.g. age, sex, occupation) will behave alike and pose similar levels of risk. Whilst this assumption holds in some cases (e.g. the inverse correlation between age and motor accidents), it fails in many more.

As the description of soaring costs outlined above show, underwriting has not been as successful as it could be in discriminating ‘good’ and ‘bad risks’. This is largely due to the fact that demographic variables do not offer the nuanced prediction necessary. Variation in age and gender does have an impact upon the level of risk posed. However not all females, not all thirty-two year olds, not even all female thirty-two year olds who live in the same postcode, behave identically.

In addition, insurers within the European Union can no longer use gender (one of best predictors in relation to motor insurance) in risk equations. Pricing on the basis of gender was recently outlawed as a discriminatory practice for the exact reason noted above, that not all males or females drive in the same manner. There is also a suggestion that pricing on the basis of age is soon to undergo similar legal scrutiny (ABI, 2009). All in all, insurers need to find new, fair, and more successful ways to differentiate between ‘good’ and ‘bad’ customers.

Should personality traits be better able to explain individual’s insurance claims behaviour than the traditionally used demographic variables there are two main potential future benefits. First, the improved risk profiling would mean that customers will benefit from fairer premiums based upon their own behaviour, not the fact they are young or old, or an accountant or comedian. Second, financial institutions can reduce
risk and maximise profit. So, the value of research of this kind to both academic
knowledge and business should not be underestimated.

4.1.2 Insurance and Psychology

There is very little literature that discusses any aspect of insurance in relation to
psychology and to the current authors’ knowledge there is no published research that
empirically examines the relationship between personality, and consumer Attitudes
Towards Insurance Claims or insurance claim submissions. Extensive searches of many
online journal databases returned only a few papers that either examined, empirically or
theoretically, possible links between psychology and insurance. There were papers
concerning psychological variables and the uptake of insurance ⁹ (e.g. Curry, Robison,
Shugrue, Keenan, & Kapp, 2009; Hemenway, 1990), the influence of insurance
ownership on perceptions of risk (e.g. Tykocinski, 2008), genetic and psychological
determinants of health (e.g. Brockett & Tankersley, 1997; Tetushkin, 2000) and return
to health following mental and physical illness (e.g. Pollack & Grainey, 1984), mental
health and insurance (e.g. Kennedy, 2004), and several papers concerning the validity of
cognitive ability tests and personality assessments in predicting job performance in the
insurance industry (e.g. Arneson, Millikin-Davies & Hogan, 1993; McManus & Kelly,
1999; Muchinsky, 1993).

Very little of the research found was of direct relevance to the relationship
between personality and insurance. In fact, with the exception of the job performance
research, personality was rarely mentioned. However, there was one notable exception:
a theoretical paper concerning credit scores ¹⁰ and motor insurance (Brockett & Golden,
2007). The paper introduced the practice of using credit scores in order to predict levels

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⁹ The vast majority of this research was American and concerned uptake of personal health insurance.
¹⁰ Credit scores are the outcome of a statistical assessment of creditworthiness. Credit scores typically
take into account factors such as: credit card history; outstanding debt; type of credit used (e.g. credit
cards, store cards, pay day loans); bankruptcies; late payments; collection accounts and judgments; length
of credit history; number of credit lines; total borrowed.
of consumer risk. A review of related literature revealed that credit scoring is consistently among the top three predictors of automobile insurance losses, with age and gender being the other consistently useful predictors (e.g. Insurance Institute for Highway Safety, 2003; Kellison et al., 2003; Miller & Smith, 2003; Monaghan, 2000; Wu & Guszcza, 2003).

Brockett and Golden argue that despite the consistent empirical evidence revealing the utility of credit scores in identifying ‘bad insurance risks’ the practice is controversial, due in the main to the lack of understanding concerning the mechanisms underlying the credit score → insurance risk relationship. Therefore we will explore the question of why, beyond statistical fluke, this might be the case.

In short, Brockett and Golden (2007) argue that “biochemical” and “psychobehavioral” factors influence financial risk-taking and resultantly credit scores, and that these same factors also influence risk-taking in relation to driving behaviour. Thus they argue, that “a possible explanation of the observed relationship between credit scores and insured losses is that credit scores yield new information about the biochemical and psychobehavioral characteristics of the individual, which is then predictive of their insurance loss propensity” (p. 25). In essence, Brockett and Golden (2007) draw upon the same line of argumentation put forward throughout this thesis and in particular in Chapter Three, namely, that certain personality traits are likely related to a diverse set of financial attitudes and economic outcomes. In other words, credit use and insurance claims behaviour are likely to share common variance due to underlying psychological characteristics, particularly, Impulsivity-related traits.

Similar arguments can be made for the two most well known predictors of insurance risk: sex and age. Maturation is correlated with decreases in Impulsivity-related traits (Costa & McCrae, 1988; Pechmann, Levine, Loughlin, & Leslie, 2005) and males score higher in measures of Impulsivity-related traits, and Risk-Taking
(Cross, Coping & Campbell, 2011) but lower in traits related to Sensitivity and Conscientiousness (Booth & Irwing, 2011; Del Guidice, Booth, & Irwing, 2012; Schmitt, Realo, Voracek, & Allik, 2008). As will be discussed below, these traits are related to driving behaviour and as such are likely to impact upon motor claims behaviour.

One way in which the current thesis diverges from Brockett and Golden is how the relationships between the “psychobehavioural” construct of personality and insurance (and later credit) uses are assessed. If one is ultimately interested in behaviour and the psychological characteristics that lead to certain behaviours, why not measure those psychological characteristics directly as opposed to measuring proxies (e.g. age, sex, credit score)?

The current practice of using credit scores to predict insurance risk is assessing path ‘C’ in Figure 4.1. In essence, personality traits (and other psychological characteristics) influence our credit scores through our financial behaviour. Thus, assessments of credit scores retain some of the variance related to personality. This variance is, understandably, correlated with motor insurance claims.

However, as Brockett and Golden (2007) argue, it is underlying psychological factors that are actually related to both credit scores and insurance claims behaviour. By assessing path ‘C’, it seems likely that what insurers are accessing is a somewhat attenuated even spurious correlation, that is in reality driven by a third variable: personality.
Credit scores are by no means pure measures of psychological characteristics or responsible behaviour. Credit scores are also heavily influenced by other factors. Often those factors are arbitrary or beyond the control of the individual. If both credit use and insurance risk are determined by similar psychological characteristics and behaviours, it would be much more sensible and valid if one were to examine direct paths from individual psychological characteristics to outcome, viz, paths ‘A’ and ‘B’ in Figure 1:

The goal of this study. Examining the direct pathway not only provides a much more precise measure of the relationship of interest; it also negates some of the problems related to credit scoring itself.

Taking a credit score as a metric of Risk-Taking or irresponsibility is problematic. The principal aim of a credit score is to assess how profitable, not necessarily how risky a customer is likely to be. Further, credit scores can be heavily affected by factors other than a person’s psychological characteristics or behaviour that have no real bearing on a person’s responsibility (Birnbaum, 2005). For instance:

- Redundancy, major medical condition of a dependent, and divorce account for over 80% of bankruptcies (Warren & Tyagi, 2003). Whilst perhaps not having adequate savings to last through a short period of unemployment could be

Figure 4.1. *Simple conceptual model of associations between psychological individual differences, credit scores and insurance claims*
considered indicative of fiscal irresponsibility, sudden changes in life circumstance can be very difficult to plan for. Very few people can afford to live without an income for any sustained period of time. Thus, using credit scores can unfairly penalise people for events that are truly outside of their control (e.g. redundancy, illness) or are no reflection of their general levels of responsibility (e.g. marriage breakdown).

- Credit scores penalise the young and those with shorter credit history, regardless of responsibility. If you have no or very little credit history because you have generally tended to live within your means and save up before purchases rather than borrow money (a good indicator of responsibility; Hughes et al., 2012), your credit score will be poor. Even if you have an impeccable credit history, you can have a worse score than a person with a longer but less consistent history.

- Credit scores are argued to discriminate against the poor and some ethnic minorities (Birnbaum, 2005) and thus can reflect and perpetuate historical discrimination and inequality.

- Credit scores are not necessarily a reflection of responsible financial behaviour. For instance, a person with a perfect payment history who has taken a less reputable form of credit (e.g. store credit cards, pay day loan) will have a worse credit score than a person with an identical payment history who has borrowed from a more reputable source (e.g. bank loan).

- In addition, the number of credit streams open also influences the credit score. Thus, a person who is exceptionally vigilant and responsible and uses multiple credit sources in a manner that represents the best value can be penalised.

Credit scores, whilst being reflective of fiscal responsibility to some extent, can also contain other variance that is largely unrelated and even arbitrary (Birnbaum,
Credit scores can unfairly penalise people for events that are truly outside of their control (e.g. redundancy, illness, parents’ wealth), discriminate against certain groups (e.g. ethnic minorities, the young), can reflect factors that have no relation to general levels of responsibility (e.g. marriage breakdown), and even penalise people for being particularly responsible (e.g. limited credit history due to saving before buying).

It could be argued that regardless of how a person’s financial hardship came about, the credit score measures credit worthiness and ability to pay back what will be borrowed. Thus, a credit score might be of use in determining who is likely to default on insurance premium payments. However, to use credit scores in order to predict generic levels of responsibility that will manifest in claims behaviour appears troublesome. It is not surprising that the practice is regarded with concern from consumer and legal groups (e.g. Birnbaum, 2005; Brockett & Golden, 2007).

In light of the many associated problems, to use the credit score metric in a different field, that is (or should be) wholly concerned with Risk-Taking and responsibility, raises a whole host of questions about the true validity and ethics of the practice (Birnbaum, 2005). Assessment of what is truly relevant, the factors that actually influence motor and home insurance risk without also invoking arbitrary, non-related and discriminatory factors, would be of huge benefit to the insurance industry. To this end, personality assessment is a promising avenue to explore.

4.1.3 Making an Insurance Claim

There are two main events that lead to placing an insurance claim. First, the opportunity to claim arises, that is, there is damage to the insured property. In terms of

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11 Here, it is necessary to address one large practical concern regarding the use of personality in high-stakes environments, namely, socially desirable responding and deliberate faking. Traditional likert-type scale personality measures can be distorted and responses positioned in a socially desirable manner. In order to counteract such issues, personality assessments that are ‘fake-proof’ would be necessary. This endeavour is likely the work of several individual PhD theses. However, through use of innovative measurement paradigms such as computer adaptive, ipsative personality measures, it is possible to generate fake-resistant measures which can reduce the impact of response distortion.
home or motor insurance, such an opportunity is most likely to arise from an accident\textsuperscript{12}, for instance, a multiple car crash, a single car crash (e.g. tree, wildlife, bollard), DIY related household mishaps (e.g. damaged furniture, carpets, electrical items), fire (e.g. chip pan, cigarette, candle) or from a lack of maintenance (e.g. water damage from leaking roof pipes) (ABI, 2009).

Some people will have one car accident and/or home mishap, while others have multiple accidents, and yet others have none at all. There are stable, cross domain, individual differences in accident proneness (Visser, Pijl, Stolk, Neeleman & Rosmalen, 2007). It is hypothesised here and suggested by extant literature that levels of accident proneness are likely the manifestation of certain situational and psychological antecedents, with personality being one of the most important. For example, based on a study of 2041 traffic accidents, Sabey and Taylor (1980) concluded that human factors were contributing elements in 95\% of the accidents. In particular, driving behaviour was identified as the most central of these factors. Thus, literature concerning accident proneness will be used in order to identify the most likely personality traits predictive of insurance claims behaviour since it directly increases the number of opportunities to claim. If there is no accident, no damage to the insured product, then there is no claim, not legitimately at least.\textsuperscript{13}

The second major event prior to claim submission is the decision to submit an insurance claim. This is considered to be the economic element of the claim submission process. It is not always ‘worth’ submitting a claim as future premiums could increase and offset the value of the claim. Thus, in terms of a simple cost-benefit analysis, it is

\textsuperscript{12}Six semi-structured interviews were conducted with claims handlers, during which the most common types and causes of insurance claims were discussed. This information was used in conjunction with information available from the Association of British Insurers to identify the most common motivations of home and motor insurance claims.

\textsuperscript{13}A note of caution is needed here. The concept of accident proneness as an individual level characteristic has often been criticised (McKenna, 1983; Reason, 1990). However, a number of empirical studies suggest the existence of stable individual differences in accident proneness (Engel, 1991; Hindmarch, 1991; Neeleman, 2001; Neeleman et al., 1998) and a recent meta-analysis provided compelling evidence that “accident proneness exists” (Visser, et al., 2007, p.556).
sometimes a better financial decision to pay for repairs using personal funds rather than submit a claim. In scenarios in which such a decision is possible (i.e. where the value of repairs is not too large), personality is likely to play a role. For instance, realising that there is a decision to be made would require considering the potential future consequences of the claim rather than simply submitting the claim on impulse. Equally, personality probably influences willingness to pass up the relatively short term ‘reward’ (insurance payout) and instead opting for a short term ‘punishment’ (covering the cost of damages) in order to receive a distant, diluted but larger reward (“no claims history” leading to reduced future premiums). From these two scenarios, one can see that several of the core Impulsivity-related traits might well play a role in the economic elements of the decision to submit an insurance claim.

Next, each of the core traits and traits specific to insurance claims will be discussed in relation to the role they are likely to play in insurance claims behaviour. This discussion will have particular focus upon extant literature from the domains of accident proneness and driving behaviour.

4.1.4 Central Traits

The four central Impulsivity-related traits to be assessed in all three studies (due to their pervasiveness across economic outcomes) are Impetuousness, Self-Regulation, Deferred Gratification and Consideration of Future Consequences. These traits are suspected to play a role in the economic component of insurance claims behaviour. For example, in order to gain full financial value from an insurance policy, making an insurance claim requires a balance between the payout and the potential loss in increased future premiums. Thus, it is expected that Impulsivity-related traits, particularly Consideration of Future Consequences and Delayed Gratification, will be influential in an individual’s attitudes toward insurance claims.
In addition to being related to the economic component of insurance claims behaviour, the central traits are also likely to be related to the behavioural components of motor and home insurance claims behaviour (e.g. car accidents and home neglect). For instance, Zimbardo, Keough, and Boyd (1997) conducted multiple studies of personality and self-reported risky driving. They reported significant correlations with measures akin to Impetuousness ($r = .18$), Deferred-Gratification ($r = -.20$), and Consideration of Future Consequences ($r = -.23$).

Further, Pavan et al. (2009) reported a significant difference between burns patients who had “more or less “knowingly” put themselves at risk of injury” (p.247) and those whose injuries were accidental (i.e. through no fault of their own) in the short unidimensional Barratt Impulsiveness Scale (akin to Impetuousness).

It is evident that alongside the likely role in the economic element of claims submission, the core traits are also likely to play a role in the behavioural aspects that increase the opportunity and need to claim. Thus, it is hypothesised that Impetuousness will be positively correlated with attitudes favourable to submitting claims and also to the number of insurance claims submitted, whereas Self-Regulation, Deferred Gratification and Consideration of Future Consequences will be negatively correlated to both attitudes and previously submitted claims.

### 4.1.5 Outcome Specific Traits

In addition to the central Impulsivity-related traits, it is hypothesised that insurance claims attitudes and claim submission will be influenced by a number of specific personality traits that are perhaps less ‘central’ to economic behaviour en masse. Focusing on the accident proneness literature, the next section will identify those traits.
4.1.6 Accident Proneness

Both motor and home insurance claims often follow from accidents (e.g. car crashes, home fires). Thus, the accident proneness literature provides an insight into the personality traits that give rise to the opportunity to submit an insurance claim. Accident proneness can be defined as “the tendency of an individual to experience more accidents than otherwise identical individuals (in terms of basic personal characteristics like age, gender and place of residence), due to stable personality characteristics” (Visser, et al., 2007, p.556). The following sections will consider specific personality traits that have been shown to underlie accident proneness, with a specific focus on dangerous driving and driving accidents.

4.1.7 Sensation Seeking

The first trait suggested by extant research to be of importance to insurance claims behaviour due to accident proneness is the Impulsivity-related trait of Sensation Seeking. Sensation Seeking can be defined as “the need for varied, novel and complex sensations and experiences and the willingness to take physical, social, legal and financial risks for the sake of such experiences” (Zuckerman, 1994, p. 27). In other words, individuals high on sensation-seeking often exhibit a preference for stimuli that are intense, novel and arousing (Donohew, Zimmerman, Cupp, Novak, Colon, & Abell, 2000) and, because they quickly become bored with routine, are continually in search of ways to increase stimulation through a range of exciting, and often risky, activities, behaviours, experiences and attitudes (Zuckerman, 1994).

Sensation Seeking is one of the most widely researched constructs in relation to driving behaviour. Sensation Seeking has been shown to correlate with self-reported risky driving. The correlations tend to range from 0.3-0.5 (Machin & Sankey, 2008) and are often stronger than the correlations observed with other personality scales (e.g. Zimbardo et al., 1997). The effects hold across a number of countries and diverse
samples (Beirness, 1993; Dahlen, Martin, Ragan, & Khulman 2005; Jonah, 1997). For instance, Burns and Wilde (1995) reported a correlation with risky on the job driving among a sample of almost 80 taxi drivers, whilst other studies have confirmed similar associations with young driver and university student populations (Arnett, 1994; Jonah, Thiessen, & Au-Yeung, 2001; Trimpop & Kirkcaldy, 1997). Iversen and Rundmo (2002) randomly sampled 2500 licensed drivers from Norway and reported a similar correlation ($r = .23$) and through the application of Structural Equation Modelling revealed that Sensation Seeking had both direct and indirect (via risky driving practices) effects on accident involvement. Furnham and Saipe (1993) found that those who had been convicted of motoring offences (e.g. speeding) scored significantly higher in measures of Sensation Seeking than drivers with no offence history.

In addition to car accidents, Novelty Seeking, a scale closely related to Sensation Seeking was found to effectively discriminate (a 1.79 standard deviation difference) between burns victims who had put themselves in danger and those who had been injured through no fault of their own (Pavan et al., 2009). The trends evident in the risky driving and accident literature strongly suggest that Sensation Seeking is a key variable in relation to accidents, particularly driving related accident proneness. Thus, it is hypothesised that Sensation Seeking will be positively related to the number of submitted claims. It is also expected that the effect will be greater for motor claims than home insurance claims.

### 4.1.8 Risk-Taking

Should I cross in the middle of the busy road or take the longer route via the pedestrian crossing? Should I purchase car/home insurance or take my chances? Should I pay to fix my loose roof tiles or not? Most decisions in everyday life have to be made without advance knowledge of their consequences and thus involve some degree of uncertainty and risk. Each of us varies in the extent to which we are willing to accept
uncertainty and the associated risks. The personality dimension underlying the degree to which an individual voluntarily participates in behaviour that contains or, is perceived to contain, a significant degree of risk is referred to as Risk-Taking (Reber, 1995).

Individuals with greater Risk-Taking propensity are more likely to engage in activities that involve a high degree of danger, potential injury, financial loss or even death. Indeed, Risk-Taking has been found to influence individuals’ behaviour across a number of domains, such as: drug use (Cherpitel, 1999), sexual activities (Yeh, 2002), leisure activities (McIntryre, 1992) and to a lesser extent, financial behaviour (Grable, 2000; Hughes et al., 2011a).

Alongside the construct of Sensation Seeking, Risk-Taking has been shown to be one of the most important personality correlates of dangerous driving behaviour and car accidents. For example, Risk-Taking was correlated with attitudes towards traffic safety ($r = 0.25$; Ulleberg & Rundmo, 2003), speeding ($r = 0.37$; Machin & Sankey, 2008) and risky-driving behaviour ($r = 0.31$; Ulleberg & Rundmo, 2003) with risky driving behaviour in turn related to accident involvement (Iversen & Rundmo, 2002; Machin & Sankey, 2008, Nabi et al., 2005). As a result of such relationships, it is hypothesised that Risk-Taking will be positively correlated with the number of submitted insurance claims. However, previous research which has shown only modest correlations with a range of economic outcomes (e.g. Hughes et al., 2011) suggests that Risk-Taking might not be strongly correlated with attitudes toward insurance claims.

### 4.1.9 Conscientiousness

In addition to Sensation Seeking and Risk-Taking, the broad, higher-order factor of Conscientiousness has been shown in two meta-analyses to be an important variable in workplace accident proneness\(^4\) (Clarke & Robertson, 2005; 2008). As discussed in

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\(^4\) In the 2005 meta-analysis, Extraversion is revealed to be the only one of the five factors to predict driving accidents, but not non-driving accidents. One of the facets in Extraversion is excitement seeking, a scale very close to Sensation Seeking, so this result is not wholly surprising.
Chapter 2, Conscientiousness is a broad personality trait of the FFM (Costa & McCrae 1992a) that subsumes several lower order traits. As argued in Chapter Two, it is likely that using these narrow traits as opposed to the broad factor will improve our understanding and prediction of insurance claims behaviour. This is especially true in the current case as evidence suggests that common FFM measures tend not to adequately reflect the full range of Conscientiousness, especially the high ends of Conscientiousness (e.g. Haigler & Widiger, 2001).

Conscientiousness contains traits such as self-discipline (akin to Self-Regulation), self-efficacy, thoroughness, organisation, deliberation (akin to premeditation in the UPPS model of Impulsivity) and the need for achievement. So, in addition to the traits akin to those already considered in Chapter Three, Conscientiousness as conceptualised by the FFM, consists of self-efficacy, thoroughness, orderliness, and the need for achievement. The most common home insurance claims are often the result of poorly maintained pipes or roofs, accidents arising from home improvements and chip pan or cigarette fires. When considering such behaviours, it is evident that in order to maintain one’s house and conduct work in a manner that doesn’t lead to accidents, one would need to be methodical, thorough, careful and orderly.

Two traits within the Dimensional Assessment of Personality Pathology (DAPP-BQ-BQ; Livesley & Jackson, 2009) assess these very tendencies: Compulsivity and Oppositionality. Compulsivity is defined as a “Need for order, precision, and structure; highly methodical and organized; often excessively concerned with cleanliness... schedules, and rules; and tends to complete all tasks meticulously” (Livesley & Jackson, 2009, p. 19). Those high in Oppositionality are said to “Resist expectations of satisfactory performance of routine tasks... rarely takes initiative, shows low levels of
activity and fails to take control of own life; fails to get things done on time, does not plan or organize” (Livesley & Jackson, 2009, p. 20).

From these definitions, it is clear to see how Compulsivity and Oppositionality might relate to insurance claims. A person who is methodical, organised and meticulous and who is generally self-motivated is much more likely to look after property and as such avoid problems that might arise due to poor maintenance. In addition, driving behaviour that is methodical, rule following and orderly is almost the opposite of the risky-driving style so closely related to motor accidents. Although neither trait has previously been investigated in relation to motor nor home related accident proneness, Compulsivity has been shown to be negatively correlated with personal injury and accidents (e.g. Abramowitz & Mahaffey, 2010). It is expected that Compulsivity will be negatively and Oppositionality positively related to the number of previously submitted claims.

4.1.10 Summary and Hypotheses

The personality predictors of consumer Attitudes Towards Insurance Claims and consumers claims history are heavily under researched. In consequence, the current study is largely exploratory in nature and will begin to address this shortfall by exploring the relationship between 8 personality traits, claims attitudes and submitted claims. It is hypothesised that claims attitudes which endorse submitting claims whenever possible and greater numbers of actual insurance claims will be positively correlated with Impetuousness, Risk-Taking and Sensation Seeking but negatively correlated with Self-Regulation, Deferred-Gratification, Consideration of Future Consequences, Compulsivity and Oppositionality.
4.2 Method

4.2.1 Sample

The sample was recruited using a combination of off-line and on-line approaches. For the off-line approaches, convenience samples were sought with participants completing the pencil and paper version of the questionnaire. The on-line participants were recruited via advertisements containing a short overview of the study on social networking sites (Facebook, LinkedIn, and Twitter). The advertisements contained a link which took the participants directly to the survey. Typically, on-line samples are more diverse with regard to age, gender, geographic location and socio-economic status than off-line samples (Gosling, Vazire, Srivasta, & John, 2004). This trend has led a number of authors to suggest that on-line surveys are superior and should be used instead of traditional pencil and paper methods where possible (Evans, & Mathur, 2005; Samuel & Douglas, 2001). Nevertheless, some people still do not have access to the internet and as a result, the use of pencil and paper methods remains important. Research suggests that provided on-line and off-line versions of surveys are identical, they can be combined and analysed with no detrimental effects (Meckel, Walters & Baugh, 2005). Thus, the dual-approach to data collection allowed for greater demographic diversity than the use of a single approach.

The resulting general population sample numbered 377. The sample had more males (57.8%) than females (42.2%) and ages ranged from 18 – 78 (M = 37.9, SD = 12.4, Mean UK age = 39.5). The sample proved relatively diverse across most demographic categories. In relation to the UK population estimates, the sample is almost equivalent in terms of ethnic representation (ONS, 2001): White = 83.2%, Black = 2.8%, Asian = 10.7%, Chinese = 2.2% and 1.1% were members of other ethnic groups. Thirty percent of the sample were single and had never been married, 53% were married, 17% divorced, 34% were living with partners, 6% were separated and 2% were
widowed. In relation to children, most had none (57.8%), 13% had a single child, 20% had two, 10% had 3 and 5% had four or more.

The educational and occupational breakdown of the sample is presented in Table 4.1. In comparison to the UK population, the sample had higher average earnings and occupational status and was educated to a higher level (across population, 29% have degrees). Despite this slight skew, on the whole, the sample is well distributed and diverse and in terms of age, marital status and ethnicity is comparable to UK national estimates.

Table 4.1

*Educational and Occupational characteristics of sample by frequency (%)*

<table>
<thead>
<tr>
<th>Education</th>
<th>No Schooling</th>
<th>Age 16</th>
<th>Age 18</th>
<th>Non-University Higher</th>
<th>University</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 (0)</td>
<td></td>
<td>67 (18.2)</td>
<td>75 (20.8)</td>
<td>68 (18.7)</td>
<td>158 (42.3)</td>
</tr>
<tr>
<td>Employment Status</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full-Time</td>
<td>229 (60.7)</td>
<td>29 (7.7)</td>
<td>47 (12.5)</td>
<td>26 (6.9)</td>
<td>35 (9.3)</td>
</tr>
<tr>
<td>Part-Time</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>9 (2.4)</td>
</tr>
<tr>
<td>Self-Employed</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2 (0.5)</td>
</tr>
<tr>
<td>Unemployed</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Retired</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Occupational Group</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Professional/Senior Manager</td>
<td>82 (25.2)</td>
<td>69 (21.5)</td>
<td>56 (17.0)</td>
<td>49 (15.5)</td>
<td>39 (9.4)</td>
</tr>
<tr>
<td>Junior Manager</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>44 (11.7)</td>
</tr>
<tr>
<td>Other White Collar/Service</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Skilled Worker</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Semi/Unskilled Worker</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Annual Salary</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 10k</td>
<td>75 (19.9)</td>
<td>37 (9.9)</td>
<td>59 (13.7)</td>
<td>56 (13.3)</td>
<td>22 (5.8)</td>
</tr>
<tr>
<td>10k – 15k</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15k – 20k</td>
<td></td>
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<tr>
<td>20k – 30k</td>
<td></td>
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<td></td>
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<tr>
<td>30k – 40k</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>40k – 50k</td>
<td></td>
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<td></td>
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<tr>
<td>50k – 60k</td>
<td></td>
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<td></td>
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<tr>
<td>60k - 70k</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>70k – 100k</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt; 100k</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>33 (8.8)</td>
<td>27 (7.2)</td>
<td>13 (3.4)</td>
<td>27 (7.4)</td>
<td>26 (7.8)</td>
<td></td>
</tr>
</tbody>
</table>

4.2.2 Measures

Data were collected using a close-ended questionnaire provided in both on-line and paper format, consisting of a self report measure of Attitudes Towards Insurance Claims, personality, insurance claims history and demographics (discussed above). The following section describes each of the measures used. A full list of items by scale can be found in Appendix 1. A list of the items retained following factor analysis can be
found in section 4.3.2 for the Attitudes Towards Insurance Claims scale and Tables 4.2 for the personality items.

4.2.3 Insurance claims behaviour

Attitudes Towards Insurance Claims: No previous instruments have been developed that assess individual’s insurance claims attitudes. Accordingly, a new scale was developed in order to assess Attitudes Towards Insurance Claims. Openly available information gathered from the website of the Association of British Insurers (ABI) was used to gain a sense of general Attitudes Towards Insurance Claims. Next, ten unstructured interviews (four with currently employed claims handlers and six with members of the general population) were conducted with the aim of generating material that could be used as questionnaire items to measure consumer’s attitudes towards claiming. Following interviews, eleven items were selected to assess Attitudes Towards Insurance Claims. The response scale was in the format of a 7-point Likert scale which ranged from very accurate (1) through neither accurate nor inaccurate (4) to very inaccurate (7). The scale was tested for reliability and validity using standard psychometric techniques (e.g. Ghiselli, Campbell, & Zedeck, 1981). Exploratory Factor Analysis (to be discussed in more detail below) showed that eight of the items loaded upon a single factor. Further analysis using Confirmatory Factor Analysis revealed that 2 of the 8 items were major sources of misfit, thus the final scale was comprised of 6 items with a Cronbach’s alpha of 0.76. These items are displayed in Appendix 1.

In order to assess participants’ propensity for claiming, a measure of Claims History was gauged. Participants’ were asked three questions, first, whether or not they currently owned home and/or motor insurance, second, asking them to report if they have ever made a claim on those insurance policies, and third, to indicate how many claims they had made. This method of measurement provided a retrospective assessment of claims propensity across a prolonged period. As insurance claims are
typically infrequent events (a single claim each year would be highly unusual) it was
deemed necessary to collect data spanning a long period to provide as representative a
view of a person’s claims activity as possible. Limiting the time period to say just a
single year would run a high risk of returning data with very little variation, so much so
that no trends or differences between claimants and non-claimants could be estimated.
The questions can be viewed in Appendix 1.

4.2.4 Personality

In order to ensure all necessary traits were measured without encouraging
participant dropout (as a result of a too lengthy a questionnaire), eight shortened (8-
item) versions of extant personality scales were used to assess the four central
Impulsivity-related traits (Impetuousness, Self-Regulation, Deferred-Gratification and
Consideration of Future Consequences) and the four specific predictor traits (Risk-
Taking, Sensation Seeking, Compulsivity and Oppositionality). The items selected were
chosen on the basis of four criteria. First, items were chosen if they showed high factor
loadings. Second, parsimonious items were preferred. Third, synonymous or repetitive
items were removed. Finally, in terms of face validity, items which appeared to assess
the full spectrum of the trait were selected. This process was undertaken by a three
person subject matter expert panel including the current author.

In their original full scale format, all eight scales have been used in numerous
published studies and all have been shown by their authors to possess adequate internal
consistency $\alpha = 0.71 – 0.88$). All scales were responded to using a common response
format with individuals choosing from seven options: Very Inaccurate, Inaccurate,
Moderately Inaccurate, Neither Inaccurate nor Accurate, Moderately Accurate,
Accurate, and Very Accurate – in order to rate how accurately each statement described
their typical behaviour. Participants were prompted to describe themselves as they
generally are, not as they wish to be and to describe themselves honestly in relation to
other people they know of the same sex and roughly the same age. The full
questionnaire can be seen in Appendix 1.

**Impetuousness** was assessed using items from the International Personality Item
Pool (IPIP) \(^{15}\) impulsiveness scale (Goldberg, 1999a; 1999b). As discussed in earlier
chapters, this aspect of Impulsivity relates to rash and reckless action on the basis of
‘gut reactions’ and ‘internal urges’. Example items are: ‘I make rash decisions’ and ‘I
do things I later regret’.

**Self-Regulation** was again assessed using eight items such as ‘I can always say
"enough is enough" and ‘I am a highly disciplined person’ taken from the IPIP
(Goldberg, 1999a) Self-Regulation scale. Those scoring highly in Self-Regulation are
able and/or willing to resist temptation and urges, whilst those scoring lower are less
willing or able to do so.

**Deferred-Gratification** was assessed using Ray and Najman’s (1986) Deferment
of Gratification Scale. The scale was designed to measure preparedness to delay
gratification with respect to money, consumable items and emotions whilst also
assessing a general tolerance for waiting and the capacity to plan in advance (Ray &
Najman, 1986). The original scale consisted of twelve items. The shortened version
utilised in the present study retained six items, for example: ‘Are you good at saving
your money rather than spending it straight away?’ A high score on this measure
indicated a greater willingness, propensity and ability to defer-gratification.

The **Consideration of Future Consequences scale** was devised by Strathman et
al. (1994) and is designed to measure the level of emphasis a person places on the
distant outcomes of his/her behaviour through items such as ‘I only act to satisfy

\(^{15}\) A number of the scales in this study and subsequent studies were adapted from the International
Personality Item Pool (IPIP; Goldberg, 1999). The IPIP is a comprehensive inventory of personality
measures available for free and in the public domain, which currently contains over 2,000 items. In each
case Goldberg has developed a scale equivalent to that of the original inventory. In general the IPIP scales
equal or exceed the basic psychometric properties of the original scales.
immediate concerns, figuring the future will take care of itself.' The scale has been shown to possess good convergent validity with measures of planning, general future time orientation (Zimbardo & Boyd, 1999) and delay of gratification (Strathman et al., 1994).

Risk-Taking was measured using the IPIP (Goldberg, 1999a) scale of Risk-Taking Behaviour which was developed to be similar to that within the Jackson Personality Inventory (Jackson, 1994). Six of the scales’ items, each assessing an individual’s propensity towards taking risks were utilised here; for example items such as ‘I take risks’ and ‘I would never make a high risk investment’.

Sensation Seeking was measured using an abbreviated version of Zuckerman’s (1979) Sensation Seeking Scale: Form V (SSS-V). The shortened scale was comprised of 8 items. For example, “I would like to try parachute jumping” and “I like ‘wild’ uninhibited parties”. The full SSS-V composite scale has shown good alpha reliabilities ranging from .83 to .86 (Zuckerman, Eysenck & Eysenck, 1978).

Compulsivity concerns the extent to which individuals tend to experience compulsive urges towards order and tidiness and as a result are highly reliable, conscientious and meticulous. The DAPP-BQ-BQ Compulsivity scale (Livesley & Jackson, 2009) which has been shown to possess good levels of internal consistency (α > .88) and test-retest reliability (r > .83), was used here. Example items are “I usually do jobs systematically step by step” and “I am happiest when my time is carefully organised”.

Oppositionality was assessed using eight items derived from the DAPP-BQ which assess the tendency to oppose others, adopt a passive interpersonal style, and passively resist expectations of satisfactory performance. Example items are “I often ‘forget’ to do tasks that require a lot of effort” and “I plan to do so many things, I often
don’t get anything done”. The scale has been shown to possess good levels of internal consistency ($\alpha > .88$) and test-retest reliability ($r > .90$) (Livesley & Jackson, 2009).

Social Desirability was also assessed in this study. Given the personal nature of the data being collected, it was deemed sensible to include a measure of response bias. Eight items from the Social Desirability Scale (SDS17; Stöber, 2001) were used to assess participants’ tendency to report acting in a socially desirable manner. Example items are “There has been an occasion where I have taken advantage of someone” and “I take my bad moods out on others every now and then”.

4.2.5 Demographic Measures

Nine demographic variables were also assessed. Participants’ sex was recorded as either male or female. Their age was freely recorded, as was their number of dependants. Participants’ ethnicity was recorded as one of the following options: White, Mixed, Asian or Asian British, Black or Black British, Chinese, Other. Participants’ marital status was recorded as one of the following options: Single (never married, Living with Partner, Married, Divorced/Annulled, Separated, Widowed, Remarried, Other. Participants’ educational attainment was recorded as one of the following options: No Schooling, Secondary to 15/16, Secondary to age 18, Non-University Higher Education, University. Participants’ employment status was recorded as one of the following options: Unemployed, Employed (part-time), Employed (Full-time), Self-employed, Student, Retired. Participants’ Occupational Group was recorded as one of the following options: Professional/Senior Manager, Other White Collar Service, Semi-Skilled/Unskilled, Junior Managerial, Skilled Worker, Other. Finally, participants’ annual salary excluding bonuses was recorded using an ordinal salary range scale with each point on the scale increasing by £10,000 (e.g. Less than £10,000; 10,000-£19,999; £20,000-£29,999).
4.2.6 Procedure

Data collection lasted for approximately six weeks. During this period, participants were presented with either a paper questionnaire or were directed via three social networking sites (LinkedIn, Facebook and Twitter) to the online questionnaire. Both formats were identical. The questionnaire was accompanied with a brief paragraph of information detailing the purpose of the study (to measure links between personality and insurance) and closed with a detailed debriefing page. The full questionnaire can be found in Appendix 1.

4.2.7 Missing Data

Missing data accounted for a total of 4.7% of the recorded responses. The aim of all missing data analysis is to maximise the sample size whilst maintaining the basic properties of the observed scores (Little & Rubin, 2002; Schafer, 1997; Schafer & Graham, 2002). The most appropriate method for dealing with missing data is still an area for debate and can vary dependent on the parameters of a specific study.

However, one point of consensus is that the use of techniques such as listwise deletion or mean replacement, which can lead to a significant reduction in sample size and biased estimates of variable parameters, are inappropriate (Schafer & Graham, 2002). Furthermore, the nature of the missing data in the current study varied in nature: In some cases participants had completed the first one or two sections of the questionnaire completely but had failed to complete any of the remaining sections, whereas in other cases, missing data appeared to be missing completely at random (MCAR; e.g. due to oversights when filling in the questionnaire). In response to this variation in types of missing data, several techniques were applied. Firstly, all participants had completed the Attitudes Towards Insurance Claims scale as this was presented first, so responses from all participants were used in the factor analysis of the Attitudes Towards Insurance Claims scale. With regards to the later sections,
participants who had completed less than 50% of the remaining items were deleted in a listwise fashion. In line with general guidelines for current best practice, missing data for those who had completed above 50% of the survey were imputed using the expectation-maximisation method of estimation within SPSS 16 (Schafer & Graham, 2002).

4.2.8 Analysis Strategy

Following the treatment of missing data, I first sought to identify a reliable structure for each of the variables. To this end, Exploratory Factor Analysis (EFA) was conducted first on the Attitudes Towards Insurance Claims items, and then a separate EFA was conducted on all the personality items together. This is the first study to use the Attitudes Towards Insurance Claims scale and such an exploration of its underlying structure was essential. All of the personality items were analysed simultaneously in order to identify the number of substantive personality traits measured by the items. Should the items used to define the scales measure distinct constructs then they would in any case form a stable factor. Many of the scales examined, however, have been argued to overlap. Whilst all efforts were made to reduce the risk of such an occurrence during scale and item selection, some overlap cannot be ruled out. The EFA examined whether each scale is truly independent or whether a smaller number of factors are able to adequately account for the variance in the item responses.

Next, each of the factors identified were tested for robustness and unidimensionality using Confirmatory Factor Analysis (CFA). Next, using the identified structures, a series of latent variable stepwise regressions using the personality variables as the predictors and Attitudes Towards Insurance Claims as the outcome variable were modelled\(^\text{16}\). Finally, a series of mean difference and logistic regression models were

\(^{16}\) Ideally a mediation model would have been examined along the lines of personality \(\rightarrow\) Attitudes Towards Claims \(\rightarrow\) Claims History. However, due to the nature and distribution of the Claims History data, this was not possible.
applied to explore the relationship between personality and claims history. Analyses were conducted using Mplus 6.0 and SPSS 16.

4.3 Results

4.3.1 Exploratory Factor Analysis

Each of the Exploratory Factor Analyses was conducted in Mplus using the Weighted Least Squares Means and Variances (WLSMV) method of estimation and the Oblique, Geomin rotation. Commonly, Likert-type data are considered close approximations to continuous measurement and analysed using maximum likelihood. In reality however, Likert-type data are ordinal and as such is theoretically suited to WLSMV which makes no assumptions regarding distribution or levels of measurement (Browne, 1984; Muthén, & Muthén, 2010). It was expected that should multiple factors be identified, they would be meaningfully correlated and that factor indicators may meaningfully cross load. Thus, the oblique Geomin rotation was selected as it allows factors to freely correlate and has been shown to perform well in such instances (Muthén, & Muthén, 2010, p.537).

In order to establish the number of factors to extract, information derived from a scree test (Cattell, 1966) and parallel analysis (Horn, 1965) was used. The scree test is based on plotting eigenvalues in descending order of magnitude. The point where the slope ‘levels off’ (i.e. the difference in magnitude between subsequent eigenvalues becomes negligible) is taken as an indication of the number of meaningful factors. Those before the levelling off are considered likely to be substantive factors and those after the levelling off are considered random error (Cattell, 1966). Parallel analysis involves the comparison of eigenvalues generated by the sample data, with eigenvalues generated from 1,000 of random data sets containing the same number of variables and observations. Factors from the actual data are suggested to be retained when they have eigenvalues larger than 95 percent of the randomly generated eigenvalues for the
corresponding factor (O’Connor, 2000). The Parallel Analysis was conducted in SPSS16 using the syntax codes provided by O’Connor (2000, p.398).

Parallel analysis has been shown by simulation studies to be one of the most accurate methods of factor determination but generally errs on the low side, whilst the scree test is often over-sensitive and suggests too many factors (Velicer, Eaton & Fava, 2000; Hayton, Allen & Scarpello, 2004). Thus, in conjunction these tests allowed for a plausible range of factors to be identified.

In order to find the most satisfactory solution, each of the solutions within this range were tested on the basis of four further criteria: (i) each factor was required to be identified by at least 3 salient items loading greater than 0.3; (ii) individual items had to load onto one factor at 0.3 or greater; (iii) solutions were preferred which minimised the number of cross loadings and (iv) factors were expected to be theoretically coherent and interpretable. Whilst there is no universally accepted set of ‘rules’ within Exploratory Factor Analysis, the above criteria are consistent with the general recommendations in the literature (e.g. Kline, 1994).

4.3.2 EFA of the Attitudes Towards Insurance Claims items

An initial scree test suggested a 2-4 factor solution whilst results from a parallel analysis suggested a single factor solution. Three and four factor solutions were inadmissible as both the fourth and third factor were underidentified (with only a single salient loading). A two factor solution was then tested. Half of the items cross loaded at greater than 0.2 (items 3, 4 and 5 failed to load on either factor). Inspection of the items revealed that the two factors seemed to be tapping the same general principle (i.e. how often one should claim) but the items in factor one were worded positively whilst on factor two the items were negatively written. The two factors were correlated at 0.64. It appears that the multiple factors identified are due to an artifactual response bias driven by reverse-coded items that often make unidimensional factors appear multidimensional
Often in such instances, the multiple factors disappear when the reverse-coded items are rewritten in a positive manner (Idaszak & Drasgow, 1987).

Accordingly, a single factor was extracted. Seven of the original ten items loaded above 0.3 (ranging from 0.49 – 0.82) and the factor accounted for 44% of the variance. The scale evidenced an adequate Cronbach’s alpha of 0.76. It was decided that the single factor solution was the most adequate. Those scoring highly on this factor are generally reluctant to place an insurance claim. They would disagree with the statement “when it comes to insurance, get your money’s worth, claim at every opportunity”, would find it a “waste of time lodging an insurance claim for less than £500”, would not claim “if it was their fault damage to their insured property occurred”, would generally “avoid claiming if at all possible” and “if I [they] could afford not to, I [they] would not claim”. Thus, the scale appears to represent a reluctance to claim. Throughout the remainder of the thesis, for consistency, the scale will be referred to as the Attitudes Towards Insurance Claims scale.

4.3.3 EFA of the personality items

A Kaiser-Meyer-Olkin (KMO) value of .79 and a significant Bartlett's Sphericity test ($\chi^2 (1275) = 12386.48, p < 0.001$) revealed that both the sampling adequacy and strength of variable relations were sufficient to justify a factor analysis of all 64 personality items. The items were drawn from 8 scales entitled: Impetuousness, Self-Regulation, Deferred-Gratification, Consideration of Future Consequences, Risk-Taking, Sensation Seeking, Oppositionality, and Compulsivity.

Results from a parallel analysis suggested that an 8 factor structure underlay the data as did the scree test. However, in the interests of exploration, seven, eight and nine factor solutions were explored further. The nine factor solution had all eight of the predefined factors (with some slight variation) plus a factor consisting of three items.
from the Compulsivity scale, two of which also loaded above 0.3 upon a factor with each of the other Compulsivity items. The seven factor solution returned six of the predefined scales and split the Self-Regulation items so that they loaded upon the Impulsivity and delayed gratification factors. The eight factor solution returned the a priori structure and as such, this solution appeared the best theoretically. It also performed well statistically, accounting for 65.4% of the variance and retaining 52 of the original 64 items (80%) with just 11 cross factor loadings greater than 0.2. The rotated factor loadings generated by the final solution are displayed in Table 4.2

**4.3.4 Factor interpretation**

Factor 1 was identified as Oppositionality as all eight of the items loading on this factor were taken from the DAPP-BQ Oppositionality scale (e.g. “I often don’t do the things I’m supposed to do”). Factor 2 comprised seven of the eight Compulsivity items. A typical item is “I spend a lot of time making sure that everything is exactly the way it should be”. Factor 3 is loaded on by seven items from the IPIP Impulsivity scale. The items are concerned with immediate expression of impulses. The highest loading items are “I make rash decisions”, “I often jump into things without thinking” and “I act impulsively”. Factor 4 is loaded on by six of the Sensation Seeking items and as such is taken as a measure of this construct. Factor 5 consists of eight items taken from Strathman et al’s (1994) Consideration of Future Consequences scale and is characterised by items such as “I only act to satisfy immediate concerns figuring the future will take care of itself”. Factor 6 was identified as Deferred-Gratification (DG) as the four highest loading items were taken from the Ray and Najman Delayed-Gratification scale (1986). Factor 7 is identified by items that measure risky and rule-breaking behaviours, for example “I take risks” positively loads and “I stick to the rules” loads negatively. Thus the scale was entitled Risk-Taking. Finally, Factor 8 is loaded by four items from the IPIP Self-Regulation scale. The items are primarily
concerned with the regulation of impulses and temptations. Accordingly, the scale is here defined as a measure of Self-Regulation. Example items are “I can always say enough is enough” and “I easily resist temptations”.
<table>
<thead>
<tr>
<th>Item</th>
<th>F1</th>
<th>F2</th>
<th>F3</th>
<th>F4</th>
<th>F5</th>
<th>F6</th>
<th>F7</th>
<th>F8</th>
</tr>
</thead>
<tbody>
<tr>
<td>I often don’t do things that I am supposed to do.</td>
<td>-0.833</td>
<td></td>
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</tr>
<tr>
<td>I often fail to get things done on time.</td>
<td>-0.816</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>I often “forget” to do things that require a lot of effort.</td>
<td>-0.792</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>When doing a task I don’t want to, I get sidetracked easily.</td>
<td>-0.608</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>If there is something I have to do but really don’t want to do, I put it off in the hope that I won’t have to do it.</td>
<td>-0.579</td>
<td></td>
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<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I plan to do so many things in a day that I often don’t get anything done.</td>
<td>-0.550</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am usually the last one to be ready when I go out with others.</td>
<td>-0.452</td>
<td>-0.333</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am not very well-organised.</td>
<td>-0.369</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-0.301</td>
</tr>
<tr>
<td>I spend a lot of time making sure that everything is exactly the way it should be.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.893</td>
</tr>
<tr>
<td>I usually do jobs systematically step by step.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.776</td>
</tr>
<tr>
<td>I am happiest when my time is carefully organised.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.748</td>
</tr>
<tr>
<td>When I see things out of place, I have an almost uncontrollable urge to put them back.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.649</td>
</tr>
<tr>
<td>I spend hours trying to make everything as exact as possible.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.592</td>
</tr>
<tr>
<td>I measure everything precisely, never relying on estimates.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.507</td>
</tr>
<tr>
<td>I do jobs thoroughly even if no one else will ever see them.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.414</td>
</tr>
<tr>
<td>I make rash decisions.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.912</td>
</tr>
<tr>
<td>I jump into things without thinking.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.876</td>
</tr>
<tr>
<td>I act on the spur of the moment.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.521</td>
</tr>
<tr>
<td>I act impulsively.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.410</td>
</tr>
<tr>
<td>I do things I later regret.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.402</td>
</tr>
<tr>
<td>I am easily excited.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-0.396</td>
</tr>
<tr>
<td>I barge in on conversations.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-0.393</td>
</tr>
<tr>
<td>I would love to bungee jump.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.810</td>
</tr>
<tr>
<td>I would love to sky dive.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.300</td>
</tr>
<tr>
<td>I seek adventure.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.802</td>
</tr>
<tr>
<td>I have tried marijuana or would like to.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.287</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-0.785</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.648</td>
</tr>
</tbody>
</table>
Skiing down a fast slope is my idea of fun.  
I like wild uninhibited parties.  
I consider how things might be in the future, and try to influence those things with my day to day behaviour.  
Often I engage in a particular behaviour in order to achieve outcomes that may not result for many years.  
I only act to satisfy immediate concerns, figuring that I will take care of future problems when they arise.  
I only act to satisfy immediate concerns, figuring the future will take care of itself.  
I am willing to sacrifice my immediate happiness or well-being in order to achieve future outcomes.  
I think that sacrificing now is usually unnecessary since future outcomes can be dealt with at a later time.  
I am good at saving money rather than spending it straight away.  
I enjoy things all the more because i have to wait for it and plan for it.  
I find it is worthwhile to wait and think things over before deciding.  
I like to spend money as soon as i get it.  
I never spend more than I can afford.  
I am good at planning things way in advance.  
I know how to get around the rules.  
I avoid dangerous situations.  
I take risks.  
I am willing to try anything once.  
I stick to the rules.  
I would never make a high risk investment.  
I can always say "enough is enough.".  
I am a highly disciplined person.  
I use swear words.  
I let myself be taken over by urges to eat too much.  

<table>
<thead>
<tr>
<th></th>
<th>Eigenvalue</th>
<th>Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>11.5</td>
<td>0.91</td>
</tr>
<tr>
<td></td>
<td>4.13</td>
<td>0.90</td>
</tr>
<tr>
<td></td>
<td>3.61</td>
<td>0.84</td>
</tr>
<tr>
<td></td>
<td>2.70</td>
<td>0.81</td>
</tr>
<tr>
<td></td>
<td>1.61</td>
<td>0.82</td>
</tr>
<tr>
<td></td>
<td>1.52</td>
<td>0.62</td>
</tr>
<tr>
<td></td>
<td>1.84</td>
<td>0.71</td>
</tr>
<tr>
<td></td>
<td>1.72</td>
<td>0.70</td>
</tr>
</tbody>
</table>

Note: F1: Oppositionality, F2 = Compulsivity, F3 = Impetuousness, F4 = Sensation Seeking, F5 = Consideration of Future Consequences, F6 = Deferred-Gratification, F7 = Risk-Taking, F8 = Self-Regulation
4.3.5 Confirmatory Factor Analysis and Measurement Models

Next, Confirmatory Factor Analyses (CFA) were conducted to test the robustness and of the scales identified using EFA. Where necessary, the factors were amended in order to compile robust factors that would subsequently be used in regression analyses. The item level models were estimated using WLSMV.

When assessing model fit, three of the more accurate and reliable fit indices (Hu & Bentler 1998, 1999) were consulted, namely, the Root Mean Square Error of Approximation (RMSEA), the Comparative Fit Index (CFI) and the Tucker-Lewis Index (TLI). In addition, the Weighted Root Mean Square Residual (WRMR) was used when categorical variables formed the factor indicators, and the Standardised Root Mean Square Residual (SRMR) was examined in the case when parcels comprised the indicators. The SRMR is only calculable with continuous data. Parcelled indicators provide more scale points than single items and thus more closely approximate continuous data (Coffman & MacCallum, 2005). Models were considered to adequately approximate the data at values of ≤ .08 for the SRMR (Spence, 1997) and the RMSEA (Browne & Cudeck, 1993), less than 1 for the WRMR and ≥ .90 for the CFI and TLI, (Bentler & Bonnett, 1980) with values above .95 preferred (Hu & Bentler, 1998; 1999).

**Attitudes Towards Insurance Claims:** The initial model derived directly from the EFA failed to achieve close fit (CFI = 0.926; TLI = 0.910; RMSEA = 0.060; WRMR = 0.695). Inspection of the model results revealed that one item (‘waste of time lodging an insurance claim for less than £500’) had the lowest loading (0.48) and was implicated in four modification indices greater than 15. Resultantly, the item was removed. The remaining six item scale showed good fit (CFI = 0.988; TLI = 0.970; RMSEA = 0.047; WRMR = 0.439) and each item had a large loading (0.64 – 0.83) supporting the unidimensionality of the Attitudes Towards Insurance Claims scale.
**Personality:** All 8 personality scales were subject to individual item level CFAs. Most returned good fit, but some did not. In an effort to improve the measurement properties of those scales which returned inadequate fit, a number of revisions were made using the model results and modification indices as a guide. Following this procedure, all scales evidenced good fit (See Table 4.3).

Table 4.3

*Fit indices for original and modified CFA models*

<table>
<thead>
<tr>
<th>Model</th>
<th>$\chi^2$</th>
<th>DF</th>
<th>SIG.</th>
<th>CFI</th>
<th>TLI</th>
<th>RMSEA</th>
<th>WRMR</th>
</tr>
</thead>
<tbody>
<tr>
<td>ATIC</td>
<td>16.06</td>
<td>9</td>
<td>$p &lt; .014$</td>
<td>0.988</td>
<td>0.970</td>
<td>0.047</td>
<td>0.439</td>
</tr>
<tr>
<td>Oppositionality</td>
<td>16.35</td>
<td>9</td>
<td>$p &lt; .060$</td>
<td>0.987</td>
<td>0.992</td>
<td>0.037</td>
<td>0.201</td>
</tr>
<tr>
<td>Compulsivity</td>
<td>32.31</td>
<td>20</td>
<td>$p &lt; .001$</td>
<td>0.901</td>
<td>0.896</td>
<td>0.580</td>
<td>0.452</td>
</tr>
<tr>
<td><strong>Revised</strong></td>
<td>40.78</td>
<td>9</td>
<td>$p &lt; .001$</td>
<td>0.959</td>
<td>0.980</td>
<td>0.087</td>
<td>0.541</td>
</tr>
<tr>
<td>Impetuousness</td>
<td>28.76</td>
<td>14</td>
<td>$p &lt; .001$</td>
<td>0.925</td>
<td>0.919</td>
<td>0.064</td>
<td>0.763</td>
</tr>
<tr>
<td><strong>Revised</strong></td>
<td>16.35</td>
<td>9</td>
<td>$p &lt; .060$</td>
<td>0.987</td>
<td>0.992</td>
<td>0.037</td>
<td>0.201</td>
</tr>
<tr>
<td>Self-Regulation</td>
<td>44.25</td>
<td>5</td>
<td>$p &lt; .001$</td>
<td>0.951</td>
<td>0.940</td>
<td>0.085</td>
<td>0.521</td>
</tr>
<tr>
<td>Sensation Seeking</td>
<td>22.06</td>
<td>9</td>
<td>$p &lt; .014$</td>
<td>0.956</td>
<td>0.950</td>
<td>0.057</td>
<td>0.339</td>
</tr>
<tr>
<td>Consideration of Future Consequences</td>
<td>101.03</td>
<td>20</td>
<td>$p &lt; .001$</td>
<td>0.891</td>
<td>0.876</td>
<td>0.078</td>
<td>0.752</td>
</tr>
<tr>
<td><strong>Revised</strong></td>
<td>58.26</td>
<td>9</td>
<td>$p &lt; .001$</td>
<td>0.931</td>
<td>0.940</td>
<td>0.071</td>
<td>0.645</td>
</tr>
<tr>
<td>Deferred-Gratification</td>
<td>65.45</td>
<td>9</td>
<td>$p &lt; .001$</td>
<td>0.948</td>
<td>0.921</td>
<td>0.090</td>
<td>0.704</td>
</tr>
<tr>
<td>Risk-Taking</td>
<td>62.56</td>
<td>5</td>
<td>$p &lt; .001$</td>
<td>0.921</td>
<td>0.901</td>
<td>0.095</td>
<td>0.842</td>
</tr>
</tbody>
</table>

Note: ATIC = Attitudes Towards Insurance Claims

**4.3.6 Measurement Model**

Next, in order to further improve the measurement properties of the scales, item parcels were created via the single-factor parcelling methodology whereby items are sequentially assigned to parcels based on their factor loadings from the item level models (Little, Cunningham, Shahar & Widaman, 2002; Landis, Beal and Tesluk, 2000). However where correlated errors had been modelled, these items were placed in the same parcel regardless of the magnitude of the factor loadings. Where possible, a
minimum of three parcels per factor were created, satisfying the minimum requirement for model identification and ensuring that the ratio of known to be identified and unknown parameters was great enough that unique values could be estimated for the unknown parameters (Bollen, 1989, p. 88–89). However, some scales (Deferred-Gratification, Self-Regulation, Conduct-Problems, Risk and Optimism) were composed of too few items to create three parcels. In such instances, two parcels were created meaning that these factor models were locally underidentified, as the number of parameters to be estimated exceeded the degrees of freedom. Such locally underidentified models, can become identified when modelled within a larger model, such as the measurement model estimated here. However, based on the results of simulation studies it was decided to place an equality constraint on those factors with just two indicators (Little, Lindenberger, & Nesselroade, 1999).

As opposed to single items, parcels are often more representative of measured psychological constructs and show greater internal reliability. Furthermore, parcelled indicators provide more scale points and thus more closely approximate continuous data (Coffman & MacCallum, 2005), reducing measurement error (Bagozzi & Heatherton, 1994; Bagozzi & Edwards, 1998) and the effects of non-normality associated with ordinal data. All analyses using parcelled variables were conducted using Maximum-Likelihood estimation since the use of item parcels provides a close approximation to continuous measurement.

In order to assess the appropriateness of the parcels, a measurement model was estimated which included all eight personality scales and Attitudes Towards Insurance Claims. The measurement model showed border line but loosely acceptable levels of fit ($X^2 = 735.289$, $df = 332$, CFI = .911, TLI = .901, RMSEA = .062, SRMR = .054). Inspection of the modification indices revealed a number of modification indices greater than 10, however as the measurement model broadly achieved fit, and subsequent
models were likely to include a smaller number of variables, no action with regard to the modification indices was taken.

4.3.7 Correlational Analysis

Next, all correlations between each of the personality scales, Attitudes Towards Insurance Claims and Social Desirability are shown in Table 4.4. Attitudes Towards Insurance Claims was significantly correlated with six of the eight personality variables (Compulsivity and Sensation Seeking showing no relationship). As expected, all four of the traits proposed as central to economic behaviour were significantly correlated with insurance claims attitudes, two of the four, namely, Delayed-Gratification \((r = .300)\) and Self-Regulation \((r = .221)\) produced the strongest associations. In addition, Risk-Taking and Oppositionality, which were assessed primarily because they are suspected to influence claims behaviour through their impact upon everyday behaviour (e.g. driving and home care), were also significantly correlated with Attitudes Towards Insurance Claims. Social desirability was no more than moderately correlated with any of the variables.

Seventy-five percent of the correlations observed are significant with more than a quarter (28%) greater than 0.4. Such a degree of inter-correlation may indicate some common method variance which has served to artificially inflate parameter estimates. However, the use of Structural Equation Modelling (which models measurement error) and the presence of numerous non-significant correlations, some which are practically zero suggests that the effects of common method variance is either operating selectively or is having relatively little impact on the correlation estimates (cf. Brannick, Chan, Conway, Lance & Spector, 2010; Podsakoff, et al., 2003). However, the high intercorrelations may influence the results of subsequent regression models, as many of the variables may fail to explain unique variance in claims attitudes due to shared variance with the other predictor variables.
Table 4.4

Correlations between all variables derived from the standardised measurement model

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td>ATIC</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oppositionality</td>
<td>.174*</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Compulsivity</td>
<td>-.014</td>
<td>-.393**</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Impetuousness</td>
<td>.164*</td>
<td>.447**</td>
<td>-.183*</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Self-Regulation</td>
<td>-.221*</td>
<td>-.473**</td>
<td>-.206*</td>
<td>-.294**</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Sensation Seeking</td>
<td>.098</td>
<td>.250*</td>
<td>.123</td>
<td>.300**</td>
<td>-.364**</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>CFC</td>
<td>-.142*</td>
<td>-.655**</td>
<td>.103</td>
<td>-.462**</td>
<td>.401**</td>
<td>-.241*</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Deferred-Gratification</td>
<td>-.372**</td>
<td>-.467**</td>
<td>.449**</td>
<td>-.308**</td>
<td>.440**</td>
<td>-.321**</td>
<td>.597**</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Risk-Taking</td>
<td>.203*</td>
<td>-.054</td>
<td>.011</td>
<td>.371**</td>
<td>-.101</td>
<td>.504**</td>
<td>.086</td>
<td>-.194*</td>
<td>-</td>
</tr>
<tr>
<td>Social Desirability</td>
<td>.082</td>
<td>.071</td>
<td>.032</td>
<td>.247*</td>
<td>-.331*</td>
<td>.276*</td>
<td>.121</td>
<td>-.221*</td>
<td>-.231*</td>
</tr>
</tbody>
</table>

Note: ATIC = Attitudes Towards Insurance Claims, CFC = Consideration of Future Consequences
* = p<.05 ** = p<.001

Table 4.5

Correlations between Attitudes Towards Insurance Claims and Demographic Variables

<table>
<thead>
<tr>
<th></th>
<th>Sex</th>
<th>Age</th>
<th>Marital status</th>
<th>Dependants</th>
<th>Educational attainment</th>
<th>Employment status</th>
<th>Salary</th>
</tr>
</thead>
<tbody>
<tr>
<td>ATIF</td>
<td>-.14*</td>
<td>-.064</td>
<td>-.050</td>
<td>-.118</td>
<td>-.158*</td>
<td>-.128*</td>
<td>-.034</td>
</tr>
</tbody>
</table>

* = p<.05
4.3.8 Stepwise regression models using Structural Equation Modelling

Next, in order to establish the extent to which the personality traits selected can account for individuals’ attitudes regarding how often and under what circumstances to submit an insurance claim, an iterative series of stepwise regressions based on the revised measurement model were estimated using Structural Equation Modelling (SEM).

Delayed gratification had the strongest correlation with Attitudes Towards Insurance Claims and was regressed first. Next, a series of two predictor models in which each of the remaining personality traits which showed a significant correlation with Attitudes Towards Insurance Claims were sequentially regressed alongside delayed gratification. The pair of traits that accounted for the greatest proportion of variance were then sequentially regressed alongside each of the remaining variables in a series of models with three predictor variables. This iterative process was continued until the addition of further personality traits failed to increase the variance explained.

The modelling strategy applied allows for the systematic identification of the most predictive, yet parsimonious regression model. The results from these models are displayed in Table 4.6. As can be seen, the final personality model consisting of Deferred-Gratification, Consideration of Future Consequences and Self-Regulation fit the data adequately and accounted for 35.8% the variance in Attitudes Towards Insurance Claims (Table 4.6, Model D). Finally, all of the demographic variables measured were regressed alongside the final personality model. None accounted for any additional variance. Further, a demographic only model was also tested. It accounted for just 3.4% of the variance with gender the only significant predictor ($\beta = -0.115$, p=0.047) suggesting a small effect for males to have a higher propensity to make insurance claims.
Table 4.6

Parameter estimates and fit statistics for the personality latent variable regression models

<table>
<thead>
<tr>
<th>Model</th>
<th>Parameter</th>
<th>$r^2$</th>
<th>$\beta$</th>
<th>$\chi^2$</th>
<th>CFI</th>
<th>TLI</th>
<th>RMSEA</th>
<th>SRMR</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Delayed Gratification</td>
<td>.160</td>
<td>-.372**</td>
<td>40.315</td>
<td>0.988</td>
<td>0.979</td>
<td>0.053</td>
<td>0.044</td>
</tr>
<tr>
<td>B</td>
<td>Delayed Gratification</td>
<td>.298</td>
<td>-.344**</td>
<td>80.284</td>
<td>0.966</td>
<td>0.952</td>
<td>0.052</td>
<td>0.040</td>
</tr>
<tr>
<td></td>
<td>Consideration of Future Consequences</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>Delayed Gratification</td>
<td>.235</td>
<td>-.365**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Self-Regulation</td>
<td></td>
<td>-.201*</td>
<td>91.745</td>
<td>0.958</td>
<td>0.945</td>
<td>0.064</td>
<td>0.051</td>
</tr>
<tr>
<td>D</td>
<td>Delayed Gratification</td>
<td>.358</td>
<td>-.339**</td>
<td>180.248</td>
<td>0.954</td>
<td>0.941</td>
<td>0.058</td>
<td>0.046</td>
</tr>
<tr>
<td></td>
<td>Consideration of Future Consequences</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Self-Regulation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-.203*</td>
</tr>
</tbody>
</table>

In totality, the regression analyses reveal that persons who are able to defer-gratification, self-regulate and consider the future consequences of their current behaviour are more likely to disagree with the notion of “claiming at every opportunity” instead tending to “avoid claiming… if at all possible”. The results also reveal that personality has a greater relation to an individual’s claims attitudes, than do the ten demographic variables measured here. As three of the four central Impulsivity-related traits account for unique variance, the results lend support to the notion that these traits whilst related are distinct, rather than multiple measures of a broad Impulsivity construct.

4.3.9 Claims History

Alongside claims attitudes, the current study was also concerned with participants’ self-reported claims history (i.e. the number of claims previously made). The general goal here was to discover how personality relates to the quantity of submitted insurance claims. The two areas of insurance under investigation were (i)
claims on automobile insurance and (ii) claims on home contents and buildings insurance as a result of accidental damage (i.e. not resulting from burglary). The dependant variable – a count of previously submitted claims – violates many of the statistical assumptions of parametric analyses (i.e. linearity, normality and continuity) and as such previously used methods such as linear regression models are not appropriate (e.g. Cabrera, 1994; Davis & Offord, 1997). Instead, Multivariate Analysis of Covariance (MANCOVA) and logistic regression were utilised to examine the relationship between personality and claims history. MANCOVA and logistic regression are very similar statistical techniques; the logic for applying both is that they provide distinct and meaningful results. The MANCOVAs allow for a solid test of group differences whilst controlling for demographic variables, and the logistic regression models provide the ability to generate parsimonious predictive models of claims history. Participants were identified as either “claimants” (previously lodged one or numerous insurance claims, coded “1”) or “non-claimants” (never previously submitted a claim).

4.3.10 Automobile insurance claims history

Of the sample, 192 participants had made one or more automobile insurance claims, 185 had made no claims. Of the 192 claimants, 101 had made one claim, 71 had made two claims, 17 had made three claims and 6 had made four claims. One-hundred and thirteen of the claimants were male and seventy-nine were female. The mean age was 43.0 years for claimants and 34.8 years for non-claimants.

In order to explore whether claimants and non-claimants differed in personality and Attitude Towards Insurance Claims, a MANCOVA was computed. Whether a person had claimed or not was used as the grouping variable, the personality traits and Attitude Towards Insurance Claims were the outcome variables and, the demographic variables (age, sex, marital status, employment, and salary) were entered as covariates.
A significant main effect was observed (Pillai’s Trace = 0.103; F = 3.910, p < 0.001, η² = 0.103). Follow up univariate analyses revealed that significant differences were observed in Attitudes Towards Insurance Claims and the personality scales of Oppositionality, Deferred-Gratification, Compulsivity, Sensation Seeking and Self-Regulation, although the partial eta squared (η²) estimates of effect size were generally quite small. No differences were apparent in the traits of Consideration of Future Consequences, Risk-Taking or Impetuousness. The results are shown in Table 4.7.

Table 4.7

<table>
<thead>
<tr>
<th>Personality differences between claimants and non-claimants (N=384)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>ATIC</td>
</tr>
<tr>
<td>Oppositionality</td>
</tr>
<tr>
<td>Compulsivity</td>
</tr>
<tr>
<td>Impetuousness</td>
</tr>
<tr>
<td>Self-Regulation</td>
</tr>
<tr>
<td>Sensation Seeking</td>
</tr>
<tr>
<td>Consideration of Future Consequences</td>
</tr>
<tr>
<td>Deferred-Gratification</td>
</tr>
<tr>
<td>Risk-Taking</td>
</tr>
</tbody>
</table>

Note: ATIC = Attitudes Towards Insurance Claims
* p<0.05 ** p<0.001

4.3.11 Logistic Regression of Motor Claims

A series of hierarchical, stepwise forward, maximum likelihood, binary logistic regression analyses were used to build a model that could best explain group

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17 If future studies are able to collect larger and more even samples in terms of the number of claims submitted, a more detailed ordinal regression model could be modelled using participant categories of non-claimants, occasional claimants, and frequent claimants.
membership (non-claimant vs. claimant). This method enters the most predictive variable, followed by the second most predictive variable and so on until no more variables offer explanation of unique incremental validity.

The base model – which predicts group membership by entering all cases into the most frequently occurring category – classified participants as claimants or non-claimants correctly in 55.7% of cases. This model was used to consider the significance and quality of subsequent models.

The first specified model sought to test the capability of personality to correctly identify participants as claimants or non-claimants after the effects of demographics had been accounted for. Thus, in Step 1 all ten demographic variables measured were entered. In Step 2, all 8 personality variables were entered simultaneously. Overall the model was shown to be reliable by the non-significant Hosmer and Lemeshow test: $\chi^2 = 11.41, df = 8, p = .241$. Increases in age and educational attainment were significantly related to claims history. With regards to personality, the model indicated that decreases in Delayed-gratification and increases in Oppositionality and Sensation Seeking increased the likelihood of having previously claimed. The model correctly classified 64.8% of participants, identifying 78% of claimants but only 37% of non-claimants and the Nagelkerke $r^2$ was .224.

The model results are presented in Table 4.8. The parameter estimates labelled B should be interpreted as follows: a positive significant parameter indicates that an increase in that variable increases the probability of having previously claimed and vice

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18 This positive relationship is a result of the nature of the claims data, it is whether one has previously claimed and as such the older one is, the greater the likelihood one will have claimed in the past.

19 The classification figures presented are based on taking the standard 0.5 cut-off value from SPSS. This cut-off value can be moved in order to minimise either type I or type II errors. However, this practice can be criticised for capitalisation upon chance within each sample. Having acknowledged the potential fluidity of the classification figures, they are retained and reported for one main reason, namely that they offer an indication of the potential utility of the models for allocating premiums.

20 The Nagelkerke $r^2$ is a pseudo $r$ square measured developed to approximate the $r$ squared statistic derived from traditional linear regression. The Nagelkerke $r^2$ is the most accurate of the pseudo $r^2$ measures, but still one must interpret the measure with caution. Thus, it is reported for fullness of information but will not be relied upon heavily as an indicator of model fit and adequacy.
versa for a negative parameter. The Wald statistic and accompanying p value indicate the degree of significance attached to the B value. Finally, the column entitled Exp(B) is the odds ratio (along with the 95% confidence interval for the estimate) and should be interpreted accordingly.

Table 4.8

Summary statistics for Demographics and Personality predicting automobile claims history

<table>
<thead>
<tr>
<th></th>
<th>B</th>
<th>S.E.</th>
<th>Wald</th>
<th>p</th>
<th>Exp(B)</th>
<th>Lower</th>
<th>Upper</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Step 1</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>.071</td>
<td>.014</td>
<td>27.753</td>
<td>.000</td>
<td>1.074</td>
<td>1.046</td>
<td>1.103</td>
</tr>
<tr>
<td>Education</td>
<td>.424</td>
<td>.182</td>
<td>5.443</td>
<td>.020</td>
<td>1.528</td>
<td>1.070</td>
<td>2.182</td>
</tr>
<tr>
<td>Deferred-Gratification</td>
<td>-.298</td>
<td>.164</td>
<td>3.292</td>
<td>.020</td>
<td>.742</td>
<td>0.538</td>
<td>0.895</td>
</tr>
<tr>
<td>Oppositionality</td>
<td>.253</td>
<td>.131</td>
<td>3.740</td>
<td>.035</td>
<td>1.287</td>
<td>1.097</td>
<td>1.663</td>
</tr>
<tr>
<td>Sensation Seeking</td>
<td>.184</td>
<td>.158</td>
<td>2.431</td>
<td>.042</td>
<td>1.176</td>
<td>1.153</td>
<td>1.546</td>
</tr>
<tr>
<td>Constant</td>
<td>-3.322</td>
<td>1.330</td>
<td>6.240</td>
<td>.012</td>
<td>.036</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The second model tested examined whether personality remained a predictor once demographics and attitudes had been accounted for. The demographics variables were entered in Step 1, Attitudes Towards Insurance Claims in Step 2 and the personality traits in Step 3. The resultant model which consisted of age, educational attainment, Attitudes Towards Insurance Claims, Deferred-Gratification and Oppositionality was shown to be reliable by the non-significant Hosmer and Lemeshow test: $\chi^2 = 5.56$, $df = 8$, $p = .326$. The combined personality, attitudes and demographic model increased the percentage of correctly classified participants to 72.2% and achieved a Nagelkerke $r^2$ of .255. The model correctly identified 84% of claimants and showed a substantial improvement in identifying non-claimants (55%). Further the
model correctly identified 75% of those participants considered here as frequent claimers (3 or more claims). The model results are displayed in Table 4.9.

Table 4.9

**Summary statistics for Personality, ATIC and Demographic logistic regression predicting automobile claims history**

<table>
<thead>
<tr>
<th>Step</th>
<th>B</th>
<th>S.E.</th>
<th>Wald</th>
<th>Sig.</th>
<th>Exp(B)</th>
<th>Lower</th>
<th>Upper</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td>Age</td>
<td>.082</td>
<td>.015</td>
<td>30.780</td>
<td>.000</td>
<td>1.085</td>
<td>1.054</td>
</tr>
<tr>
<td>Step 2</td>
<td>ATIC</td>
<td>.325</td>
<td>.123</td>
<td>7.028</td>
<td>.008</td>
<td>.742</td>
<td>1.089</td>
</tr>
<tr>
<td>Step 3</td>
<td>Deferred-Gratification</td>
<td>-.327</td>
<td>.164</td>
<td>3.877</td>
<td>.035</td>
<td>.721</td>
<td>0.521</td>
</tr>
<tr>
<td></td>
<td>Oppositionality</td>
<td>.202</td>
<td>.125</td>
<td>3.640</td>
<td>.041</td>
<td>1.265</td>
<td>1.007</td>
</tr>
<tr>
<td></td>
<td>Sensation Seeking</td>
<td>.199</td>
<td>.134</td>
<td>2.431</td>
<td>.036</td>
<td>1.176</td>
<td>1.142</td>
</tr>
<tr>
<td></td>
<td>Constant</td>
<td>-2.971</td>
<td>1.230</td>
<td>9.240</td>
<td>.001</td>
<td>.006</td>
<td></td>
</tr>
</tbody>
</table>

Note: ATIC = Attitudes Towards Insurance Claims

### 4.3.12 Home Insurance Claims History

Two hundred and forty-six of the participants had home insurance. Of those, 169 had made no claims, 58 had made a single claim, 15 had made two claims and 4 had made three claims. The mean age for the claimants was 46.24 and the mean age for non-claimants was 41.2.

First, using a MANCOVA the grouping variable classified respondents into claimants or non-claimants, while personality traits and Attitude Towards Insurance Claims comprised the dependent variables, and the demographic variables (age, sex, marital status, employment, and salary) were entered as covariates. A non-significant main effect was observed (Pillai’s Trace = 0.050; $F = 1.541, p = 0.144, \eta^2 = 0.050$)
suggesting that there were generally few differences in personality between claimants and non-claimants on home insurance. Inspection of univariate results revealed that only Deferred-Gratification (F = 3.653, p = 0.005, ηp² = 0.015), Self-Regulation (F = 3.154, p = 0.024, ηp² = 0.023) and Impetuosity (F = 2.907, p = 0.047, ηp² = 0.012) differed between the two groups.

Next, logistic regression models were applied to participants’ home insurance claims history. The base model correctly classified 43.2% of the participants. The first model examined the effects of personality (after controlling for demographics). The model consisting of age, Impulsivity and delayed-gratification was shown to be reliable (Hosmer and Lemeshow test: χ² = 9.67, df = 8, p = .515), correctly classified 66.3% of participants and produced a Nagelkerke r² of .372. In sum, the model revealed that impulsive individuals who fail or choose not to delay gratification are more likely to have previously claimed on home insurance. The model correctly identified 45.5% of claimants and 75.7% of non-claimants. The results are displayed in Table 4.10.

The second model tested consisted of the demographic variables in Step 1, Attitudes Towards Insurance Claims in Step 2, and personality in Step 3. Attitudes Towards Insurance Claims was not a significant predictor of home insurance claims history and the model produced was identical to the demographic and personality only model. Thus, in contrast to car claims, it appears that claims attitudes are unrelated to the submission of home insurance claims. This might suggest that home claims arise as a result of enduring behavioural tendencies (personality) relating to property management, but, as a result of the generally large value of home claims, how one perceives and views insurance is of less relevance.
Table 4.10

Summary statistics for Personality, ATIC and Demographic logistic regression predicting home claims history

<table>
<thead>
<tr>
<th></th>
<th>B</th>
<th>S.E.</th>
<th>Wald</th>
<th>p</th>
<th>Exp(B)</th>
<th>EXP(B) 95% C.I.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Lower</td>
</tr>
<tr>
<td><strong>Step 1</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>.101</td>
<td>.011</td>
<td>36.856</td>
<td>.000</td>
<td>1.210</td>
<td>1.146</td>
</tr>
<tr>
<td><strong>Step 2</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Deferred-Gratification</td>
<td>-.436</td>
<td>.172</td>
<td>6.412</td>
<td>.011</td>
<td>.454</td>
<td>0.402</td>
</tr>
<tr>
<td>Impetuousness</td>
<td>.350</td>
<td>.158</td>
<td>4.870</td>
<td>.035</td>
<td>1.419</td>
<td>1.131</td>
</tr>
<tr>
<td>Constant</td>
<td>-4.172</td>
<td>1.153</td>
<td>13.090</td>
<td>.001</td>
<td>.015</td>
<td></td>
</tr>
</tbody>
</table>

4.3.13 Results Summary

Exploratory (EFA) and Confirmatory Factor Analysis (CFA) revealed the Attitudes Towards Insurance Claims scale to be best represented by a single factor which measured an individual’s willingness to claim. Further, EFA and CFA largely provided support for the a priori structure of the personality items, returning eight factors that mostly conformed to the predefined scales. Latent variable regression analyses revealed that Deferred-Gratification, Consideration of Future Consequences and Self-Regulation accounted for 35.8% of Attitudes Towards Insurance Claims. Demographic variables were generally unrelated.

In addition, the utility of personality as a predictor of historical claims behaviour was demonstrated by a series of logistic regression models. Deferred-Gratification was a generalised predictor of both home and motor claims, whilst Oppositional was related to motor claims and Impetuousness was related to home claims. In conjunction with age and educational attainment respectively, personality correctly classified 66.3% of home claimants and 72.2% of motor claimants.
4.4 Discussion

The first study of the thesis examined the relationships between personality, Attitudes Towards Insurance Claims and the number of previously submitted insurance claims. Consistent with hypotheses, Attitudes Towards Insurance Claims were positively correlated with Impetuousness, Risk-Taking and Oppositionality, and, negatively correlated with Self-Regulation, Deferred-Gratification and Consideration of Future Consequences. Contrary to hypotheses, Sensation Seeking and Compulsivity were uncorrelated with Attitudes Towards Insurance Claims. In relation to actual claims submitted, motor claims were found to relate to Deferred-Gratification, Self-Regulation, Sensation Seeking, Oppositionality and, Compulsivity, whilst home claims were related to Deferred-Gratification, Self-Regulation and Impetuousness.

This study being the first to consider personality, and motor and home insurance claims attitudes and behaviours has produced a number of interesting results. Most notably for the current thesis, the evidence suggests that the personality traits assessed can be modelled in a manner that is predictive of claims attitudes and claim submission. Thus, the first study served as a solid test of the main thesis questions and rationale, providing positive support. The major findings of the study are discussed below.

4.4.1 Attitudes Towards Insurance Claims

The first novel contribution made by this study is the initial development of the Attitudes Towards Insurance Claims scale. Evidence from EFA and CFA of the items generated revealed a single, well fitting, six-item factor; suggesting that the construct can be measured psychometrically. The final scale assessed participants’ general willingness to submit insurance claims, with high scores indicative of a “claim at every opportunity” mentality.

Psychometric evaluation of the scale suggested it possessed good levels of internal consistency. In terms of validity, the scale was correlated in the expected
direction with six of the eight personality variables. In addition, the scale was shown to possess construct and criterion validity as those who reported that they had previously submitted motor insurance claims scored significantly higher on the scale than did those who had never previously claimed, whilst the scale improved classification of previous motor claimants and non-claimants. However, the same effect was not observed with home insurance claims.

Despite the generally positive results derived from analysis of the Attitudes Towards Insurance Claims items, a number of the original items failed to fit the single factor model or form additional substantive factors. In particular, items relating to negative views of the insurance industry that might drive claims behaviour (e.g. Insurers make enough profit from me to pay out every time; I would gain satisfaction from winning an insurance claim). A negative view of the insurance industry and the notion of ‘winning’ claims were themes that emerged from several of the exploratory interviews. However, the items generated did not cohere in the factor analysis. Further research into the fledgling area of claims attitudes is needed with particular focus on whether or not additional, substantive attitudes exist.

In relation to personality, Attitudes Towards Insurance Claims was significantly correlated with six of the eight traits assessed (Compulsivity and Sensation Seeking were not significantly correlated). Latent variable regression analyses revealed that Deferred-Gratification, Consideration of Future Consequences and Self-Regulation collectively accounted for 35.8% of the variance in Attitudes Towards Insurance Claims. These results suggest that as hypothesised, sensible claims strategies are linked to a person’s tendencies to consider the distant actions of their outcomes, to value distant more salient rewards over closer less salient rewards and generally have the ability to self-regulate.
Claiming on insurance policies will yield, in the form of a compensatory pay out, a relatively quick, ‘reward’. However, in the long run, one’s premiums will increase as insurers assume that the past claims behaviour will predict future claims. An individual low in Deferred-Gratification, Consideration of Future Consequences and Self-Regulation would almost certainly opt for the proximal “reward” of the claim payout as opposed to the distant and incrementally received “reward” of lower premiums.

All three significant predictors of Attitudes Towards Insurance Claims are Impulsivity-related traits. Although these traits are correlated, there is clearly unique predictive validity offered by each. Indeed, previous approaches to Impulsivity-related traits might have adopted only one of the traits viewing them as either equivalent or largely overlapping. Had this been the case, the levels of prediction of Attitudes Towards Insurance Claims would have been reduced and had the study used only a measure of Impetuousness, one would have concluded that impulse-related traits were not predictive of claims attitudes. The regression results obtained in Study 1 support the utility of discriminating amongst Impulsivity-related traits in understanding and predicting economic outcomes. In sum, if one considers future consequences, self-regulates and sees value in delaying gratification, one is less likely to adopt a ‘claim at every opportunity’ view of insurance.

Demographic variables were largely unrelated to claims attitudes (Table 4.5) and with the exception of gender ($\beta = -0.115$, p=0.047) none predicted Attitudes Towards Insurance Claims scores. The finding that claims attitudes were unrelated to income suggests that the attitudes are not developed on the basis of a simple cost-benefit analysis. If this were the case, one might expect those with a lower income to be more willing to claim as the proportional value of a short-term pay-out would be greater than for a person with a larger income. Instead, the associations with personality suggest that
the attitudes are linked to dispositional preferences and tendencies. Discovering exactly how insurance based attitudes emerge is an interesting challenge for future research.

4.4.2 Motor Claims

A series of MANCOVAs revealed that previous motor claimants scored significantly higher in Oppositionality and Sensation Seeking and lower in Deferred-Gratification, Self-Regulation and Compulsivity than those who had never claimed. These results suggest that past claimants prefer immediate gratification, have a lowered ability/willingness to enact restraint and are not highly methodical or organised. Further, they enjoy thrill and adventure and often fail to get things done and passively resist expectations of satisfactory performance. In addition, claimants also scored significantly higher on the Attitudes Towards Insurance Claims scale. This was actually the largest observed difference between the groups. This suggests that how people view claims has a non-trivial influence on whether or not they do claim. Future research might wish to examine how such attitudes are formed, how stable they are and whether or not they can be altered. If Attitudes Towards Insurance Claims can be altered, then insurers may, through educational programmes, be able to reduce unnecessary claims, in turn boosting profit and reducing adverse impact on consumers’ premium payments.

In order to examine whether the relationship between personality and motor claims history extended to retrospective prediction, a series of logistic regression models were estimated. The results revealed that Deferred-Gratification, Oppositionality, and Sensation Seeking in conjunction with Age and Educational Attainment correctly classified claimants to a substantial degree. This suggests that individuals who are particularly sensitive to reward, tend to show low levels of initiative, fail to achieve and have a desire to experience new and extreme sensations, have a greater propensity to submit motor insurance claims. Indeed, using this model, 78% of previous claimants were correctly identified. When participants’ Attitudes
Towards Insurance Claims were included in the model, Deferred-Gratification, Oppositionality, and Sensation Seeking remained significant predictors and the classification of claimants increased to 84%. In addition, the model also correctly identified 75% of the frequent claimants in the sample (3 or more claims). This suggests that the effects of Deferred-Gratification, Oppositionality and Sensation Seeking upon motor claims behaviour are not fully mediated through attitudes towards claiming, rather than to some degree personality and attitudes have independent and additive effects.

4.4.3 Home Claims

In comparison to motor claims, fewer significant personality effects were observed with respect to home insurance claims. Deferred-Gratification and Impetuousness were the only personality traits that differed significantly between claimants and non-claimants. Those who had claimed were lower in Deferred-Gratification and higher in Impetuousness. Surprisingly, there were no effects for the traits of Compulsivity and Oppositionality. It was hypothesised that those who were compulsive in nature would care for their home in a methodical and detailed fashion, whilst Oppositional individuals would fail to conduct routine home care tasks with any Urgency. As a result, it was expected that home owners high in Compulsivity and low in Oppositionality would have a reduced need to claim. However, in this sample, no such relationships were observed. In addition, no significant difference between home claimants and non-claimants was observed for the attitudes measure.

Nevertheless, the combination of Deferred-Gratification, Impetuousness and age did successfully classify 66% of respondents (45% of claimants and 75% of non-claimants). Thus, being rash and preferring instant gratification relates to home insurance claims. Still, it appears from this first study that personality and attitudes play a greater role in motor claims than home claims.
It might be the case that attitudes and behaviour have a lesser effect on home insurance claims. A number of possible explanations for the reduced effect are now considered. Home insurance claims tend be of greater value than motor claims (ABI, 2011). It might be the case that regardless of one’s Attitudes Towards Insurance Claims, the financial impact of home claims, suppresses the effect of preferences. Equally, home insurance claims occur less frequently than motor claims (ABI, 2009). This was mirrored in the current sample. Within our sample, 169 had made no home insurance claims, 58 had made a single claim, 15 had made two claims and 4 had made three claims. No-one had submitted more than three claims. In contrast, 94 participants submitted multiple car claims; 23 had submitted three or more claims with the largest number submitted by a single participant being 8. The traits of Compulsivity and Oppositionality may well predict the state of disrepair and general condition of a home, but, as a result of the relatively few instances in which home damage results in a claim, the effects are less pronounced.

Further, most of the home insurance owners in our sample21 were married (67.9%) or living with a partner (11%). It might be the case that ‘household’ personality is most closely related to home claims. One member of the household might be low in Compulsivity whilst other members are opposite meaning that any individual effect might be suppressed.

4.4.4 The Central Impulsivity-related Traits

Of the six Impulsivity-related domains proposed in Chapter 3 (Tables 1 and 2), five were assessed here, four as they were considered central to a wide range of economic behaviour and Sensation Seeking because of its salience to driving behaviour. All five traits: were returned by EFA, were shown by CFA to conform to single factor solutions, evidenced collective fit as part of a measurement model, and offered unique

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21 48% of the UK population is either married or cohabiting.
predictive variance. All of these results provide support for the main arguments raised in Chapter Three. First, that the constructs posited as the six main Impulsivity-related traits are related yet distinct. Second, that each can be assessed using a psychometric tool. Third, they offer unique information in prediction. Finally, all four ‘central’ traits were correlated with Attitudes Towards Insurance Claims (Deferred-Gratification, Consideration of Future Consequences and Self-Regulation accounting for unique variance) but Sensation Seeking was not. Thus, the study provides initial support for the assertion that Impetuousness, Deferred-Gratification, Consideration of Future Consequences and Self-Regulation can be considered ‘central’ to a wide range of economic behaviours.

The trait of greatest salience in the first study was Deferred-Gratification. Deferred-Gratification was observed to be the single best predictor of Attitudes Towards Insurance Claims and proved to be a generalisable predictor of claims across different forms of insurance. Accordingly, "sensitivity to reward that is manifest in the willingness/ability to pass up enjoyment or something of value now with the aim of achieving something of greater enjoyment or value in the future" appears to be of particular relevance to insurance claims behaviour. This is a particularly important finding as current conceptions and measures of Impulsivity do not include any metric of Deferred-Gratification. If Deferred-Gratification proves to be of equal or similar importance in the subsequent studies, this would serve as a real impetus to develop a new, more thorough, measure of the construct and a broader scoped Impulsivity-related trait measure. In sum, this study provides further evidence of the utility of discriminating amongst Impulsivity-related traits and choosing traits in a theoretically and empirically driven manner when seeking to understand economic outcomes.
4.4.5 Limitations

A number of limitations must be considered when interpreting the results of the current investigation. First, the cross-sectional nature of the study precludes firm conclusions regarding the direction of causality. Although it is unlikely that past insurance claims influence personality, a cross-sectional design cannot fully rule this out. Further, the reliance on self-report measures of both the personality and attitude may have resulted in common method bias, which may have artificially inflated the magnitude of observed correlations. However, a number of small, non-significant correlations were observed and SEM models fit the data adequately suggesting that ‘method variance’ was not especially problematic within this study (e.g. Brannick, et al., 2010; Podsakoff, et al., 2003). Socially desirable responding can also be an issue within self-report studies. Correlations with a short Social Desirability measure were no more than moderate, ranging from .032 to .28 suggesting that socially desirable responding was not a large problem in this data. However, it must be noted that self-report measures of Social Desirability are also open to response distortion and so caution must be placed on any conclusions.

Further, the reliance on retrospective and self-reported claims history is less than ideal. This method of data collection is open to bias and error in two main forms. The first possible source of error is socially desirable responding. However, t-tests revealed no significant differences between claimants and non-claimants on a short measure of social desirability ($t = 0.215, p = 0.401$). Thus, it is unlikely that the number of claims reported was heavily influence by socially desirable responding. Second, self-reported claims history is subject to error in the form of participants actually forgetting previous claims. Unfortunately, no amount of statistical analysis can allay such problems. In order to counteract such problems, objective measures of claims history would be ideal. However, in terms of the current thesis, despite over a year of negotiations, insurers were reluctant to
share such data. Given the three year time span of this thesis, self-reported claims history was the only feasible dependent measure.

A further limitation worthy of consideration is the modest sample (N = 377) recruited via snowball sampling predominantly using on-line social network sites. In comparison to the UK population, the sample had higher average earnings, occupational status and educational attainment. Nevertheless, the sample was on the whole, well distributed, diverse and representative of the UK population in terms of age, marital status and ethnicity. The sample is more representative than much of the previous economic-psychological research concerning personality, a large proportion of which has focussed upon students. Still, the generalisability of these findings is yet to be confirmed. Whilst they cannot be considered direct replications, the remaining studies in this thesis, will provide some insight into the generalisability of the observed effects.

Finally, as discussed in the method, one substantial limitation is reliance on self-reported outcome data due to the failure to obtain objective and independent measures of participants actual insurance claims behaviour.

4.4.6 Summary

Study 1 has revealed that personality is predictive of both Attitudes Towards Insurance Claims and previous claims submission. Further, personality was found to be more influential than demographics in predicting attitudes and added significantly to prediction of previous claims over and above demographic variables.

In addition, the results have largely supported the model of Impulsivity-related traits developed as part of the literature review. Measures of five of the six factors were assessed in this study. Both EFA and CFA support their psychometric existence and uniqueness. In addition, the various regression models provide support for the differential prediction offered by each trait. Further, the notion of central traits was supported by the result that the four Impulsivity-related traits posited as central to
economic behaviour were correlated with Attitudes Towards Insurance Claims, whereas Sensation Seeking was not.

In totality, the results from Study 1 are very positive in terms of the general aims of using personality traits to predict economic behaviour but also in validating the process used to identify likely predictor traits. Further examination of the general hypotheses of the thesis will be carried out in the subsequent studies which will investigate whether similar results are observed in relation to insurance fraud and credit use.
Chapter 5

Study 2: Personality and Insurance Fraud

The first study has shown that a carefully selected set of narrow personality traits are related to both attitudes towards the submission of insurance claims and the number of historically submitted motor and home insurance claims. Further, it has shown that personality is superior to demographic measures in predicting intentions to claim and adds supplementary prediction of past claims submission.

Building upon the positive results obtained in Study 1, the second empirical study examines the phenomenon of insurance fraud. Specifically, potential antecedents of the willingness to commit insurance fraud are investigated. In-line with the central hypothesis of this thesis, namely, that certain personality traits predict economic behaviour in multiple domains, the central Impulsivity-related traits of Impetuousness, Self-Regulation, Deferred-Gratification and Consideration of Future Consequences as well as a set of carefully selected outcome specific traits, were examined in order to discover their relationship with Attitudes Towards Insurance Fraud. Again, information regarding the number of previously submitted motor and home claims was collected in order to examine whether Attitudes Towards Insurance Fraud and personality traits differentiated between claimants and non-claimants.

5.1 Introduction

Fraudulent insurance claims cost the industry billions of pounds every year. These costs are largely passed on to customers who face hiked premiums. Newspapers often report stories of people faking death or deliberately damaging property (e.g. burning down a business) in order to gain compensation. However, the vast majority of insurance fraud does not come in the form of premeditated acts of blatant criminality. Most insurance fraud is unplanned, small in magnitude and opportunistic (Clarke, 1989; 1990; Stewart, 1997; Tennyson, 2007; Viaene & Dedene, 2004). “Claim padding”, the
act of inflating a genuine claim, is the most prevalent form of opportunistic insurance fraud. Claim padding often falls short of the legal definition of fraud, making it a difficult phenomenon to deal with. The second most common source of fraud is customers deliberately misinforming the insurer. For example, consumers seeking a reduced premium sometimes engage in “fronting”, a process whereby a parent will be named as the principal driver of a car when in fact it is a child who is the main driver.

Many fraudulent insurance claims go undetected or are dealt with indirectly (e.g. the customer withdraws claim when suspicions are raised, or insurers pay out small fraudulent claims), thus estimating the true prevalence of fraud is difficult (Litton, 1990). Nevertheless, all estimates reveal the problem to be substantial (Clarke, 1989; 1990; Derrig, 2002; Tennyson, 2008; Viaene & Dedene, 2004). For instance the Association of British Insurers (ABI) reported that in 2008, detected fraudulent claims in the UK alone totalled £730 million, and undetected fraud is estimated to stand at around £1.3 billion, which in real terms adds around 6% per annum to policy holders’ premiums (ABI, 2009). The equivalent figures for the U.S.A are staggering, with estimates of between 40-96 billion dollars (Derrig, 2002; Federal Bureau of Investigation, 2008). By 2010, the UK figures had increased to £960 million in detected claims and an estimated £2.1 billion in undetected fraud (ABI, 2009). This is equivalent to fraudulent payouts of £5.9 million every day. These figures do not take account of the indirect costs of fraudulent claims (e.g. fraud squads, loss adjusters, legal fees). The effects of fraudulent activity are felt not only by the profit margins of insurers but also by honest, responsible and legitimate customers across the country, to the tune of indiscriminate premium hikes of around 8% (ABI, 2009).

It is common for insurers to view insurance fraud as simply part of their business model. Although insurers have specialist fraud teams and a number of detection systems in place (e.g. Derrig, 2002; Tennyson, 2008; Viaene & Dedene, 2004;
Vianene, Derrig, Baesens, & Dedene, 2002), insurers can be somewhat powerless to deal with fraud (Clarke, 1989; 1990). Even in cases where fraudulent claims are suspected or detected, the costs of challenging such claims can be substantial, often outstripping the claim value (Litton, 1990; Clarke, 1990). Thus, few instances of fraud are reported to the police (Litton, 1990). Insurers instead prefer to challenge the customer and give the ‘opportunity’\textsuperscript{22} to withdraw the claim without any penalty.

Such approaches can create additional problems. For instance, if the insurer is wrong and accuses a customer of fraud, they run the risk of alienating that particular customer. A number of such cases could also lead to poor press coverage and damaged reputation for the firm. Reputation is especially important for insurers as an untrustworthy appearance and a reputation for being unfair in the eyes of customers can escalate the problem of fraud as customers who view insurers to lack fairness are more willing to submit fraudulent claims (Cialdini, 1989; Tennyson, 2008).

Evidently, identifying and dealing with insurance fraud is a very challenging business. The challenge becomes even greater when, as discussed above, the vast majority of fraud comes in the form of exaggerated legitimate claims: “claim padding”. For example, in a report commissioned by the Insurance Research Council, Stewart (1997) reported that elements of fraudulence were involved in 36\% of motor injury claims. Eight percent of that fraudulent activity could be described as blatant criminality (e.g. fake accidents or planned schemes). The remaining 92\% of fraudulent claims were not planned, rather, otherwise ‘honest’ individuals who decided to take advantage of a legitimate claims opportunity by inflating the claim value.

\textsuperscript{22} During one interview with a senior claims manager at a large insurer, I was told that if there is a suspicion of fraud, claims handlers are trained to “Give ‘em hell” in order to encourage the customer to drop the claim. Common tactics include telling customers they have been flagged by the fraud detection system (whether true or not) that their voice indicates fraudulent activity (whether true or not) or simply that the company do not believe the claim to be genuine. All quite hostile approaches, unlikely to lead to high customer satisfaction!
If it was possible for insurers to identify upfront, during the underwriting process, customers who pose a greater risk of claim padding, they could tailor premiums accordingly, in turn improving customer-premium fit and bottom line profit. Once again, personality provides an intriguing area of investigation. Is it the case that those who view insurance fraud (e.g. fabricated claims, misinforming insurers, claim padding) as acceptable have different personality ‘profiles’ than those who would never consider such options? The current study sought to examine this question.

5.1.1 Psychology of Fraud

Broadly speaking, fraud can be considered to be the act of “obtaining something of value or avoiding an obligation by means of deception” whilst insurance fraud, like tax evasion is an example of “Fraud committed against an organisation by a client” (Duffield & Grabosky, 2001, p.1). Fraudulent acts can be considered to consist of four components, namely, motivation to offend, opportunity to offend, rationalisation of the offence and the lack of safeguards or deterrents (Duffield & Grabosky, 2001; Wallang & Taylor, 2012).

The literature reviews documented within this thesis and the results of Study 1 suggest that personality is likely to be influential in the first three components of fraud. The most commonly cited motive for committing fraud is financial difficulty, often resulting from excessive spending, gambling and an inability to repay debts. In addition, the opportunity to commit insurance, especially claim padding, often arises following a legitimate accident. Given the discussions in Chapter Three linking the central Impulsivity-related traits to propensity for fiscal irresponsibility, and the results of Study 1 linking these personality traits to the propensity to submit claims, it is likely that these same traits will be of relevance to insurance fraud. As Duffield and Grabosky (2001, p.2) state: “Motivation is therefore a combination of an individual’s personality and the situation in which they find themselves”.
In addition, a cognitive process whereby criminal activity can be rationalised is likely a function of a number of anti-social personality traits that lead a person to view others as less important than themselves, have little moral obligation and generally show disregard for the well-being of others. A number of such traits will be discussed in greater detail in sections 5.1.6 – 5.1.8.

5.1.2 Psychology of Insurance Fraud

Little theoretical and empirical research has examined the psychology of insurance fraud, and fraud in general. There is, however, a small but informative body of research that mostly focuses on motivations and perceptions of fraudulent acts. It has been suggested that one of the main drivers of opportunistic insurance fraud is the consumer’s perception of the organisation (e.g. Axelrod, 1986). Specifically, consumers’ perceptions of the fairness of an institution affect its perceived legitimacy (Cialdini, 1989). For insurers, it is important that the manner in which they allocate premiums and compensation payouts are seen as fair and just, as customers who view insurers to lack fairness are more willing to submit fraudulent claims (Cialdini, 1989; Stewart, 1997; Tennyson, 1997). For example, in comparison to those who trust insurers, those who believe insurers use fraud as an excuse not to pay legitimate claims were significantly more likely to see claim padding and misrepresentation as acceptable (Tennyson, 1997).

One might also wonder why it is that opportunistic fraud is so common, yet planned fraud is typically quite rare. A number of recent studies headed up by Dan Ariely (2012) might shed some light on this. Ariely and colleagues conducted a series of laboratory studies, field experiments and surveys in order to gauge levels of dishonesty and cheating in a range of areas from tax to golf. Two consistent findings seem pertinent here, namely, that cheating and dishonesty are widespread and that people tend to cheat, steal and lie in ‘small’ amounts. For example, Ariely and colleague’s (2012)
Lab studies revolve around a matrix task in which participants are asked to solve maths problems. Participants receive a financial reward for each correct answer. In each of Ariely’s studies, there are generally two conditions: (i) an honest condition, in which participants answer in the given time and hand in their sheets and, (ii) a cheat condition, whereby participants self-report how many maths problems they answered correctly, before shredding their answers sheets. Compared to participants in the honest condition, those in the cheat condition scored consistently higher, but only slightly so. The honest condition average was 4 correct answers but in the cheat condition, the average was 6 correct answers. The samples were large and the differences unlikely to be due to chance. Similar results were observed in several other studies in different settings.

Similar results have been found in studies of cheating on psychometric tests. People are able and willing to cheat, but do so only by a little, even in high stakes scenarios (Arthur, Glaze, Villado, & Taylor, 2009; 2010).

Why did people say they solved six problems, why not 8 or 10 or the maximum 20? The sheets were shredded and lying about solving one extra problem is surely the same as lying about ten, they are both dishonest, but lying about ten brings greater rewards. Perhaps one explanation is that we believe we are less likely to be caught if we only cheat a little. In addition, Ariely (2012) suggests a person’s desire to preserve a positive self-image is one reason people cheat but only a little. The vast majority of us need to able to look in the mirror and believe ourselves to be ‘good people’. The authors believe that we find it easier to justify ‘small’ acts of dishonesty over large ones. After all, it is only a ‘white lie’; I only used Google for one crossword answer; I could have stolen the whole box of pens; I could have stolen the bed linen, carpets, towels and light

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23 The authors report that around 1% of participants in the cheating condition claimed to have answered all 20 correctly whilst not a single person answered 20 correctly in the honest condition; it was an impossible feat in the time allowed. It seems that this 1% perhaps possess extreme variations of dishonest traits, perhaps indicative of high Callousness or Psychopathy. Maybe the 1% is also the cadre of people who commit blatant, premeditated acts of fraud.
fittings not just the hotel soap and teabags; I’ve only exaggerated my insurance claim by £50. I am still on the whole a good person.

5.1.3 Personality and Fraud

When it comes to the role of personality in insurance fraud, research is virtually non-existent. The personality antecedents of insurance fraud and economic crime in general remain heavily under-researched. Perhaps the main reason for the limited research is the influential work of Edwin H Sutherland (1940; 1949; 1983) and his Differential Association theory. Sutherland argued that economic crime (fraud, embezzlement etc.) was a product of organisational and societal laws and cultures rather than individuals. Sutherland suggested that economic crime is unrelated to socio-economic status and noted that "white-collar" criminals do not possess “flawed character” (Sutherland, 1940) and are generally psychologically stable. This ‘stability’ was taken as evidence that there was no value in examining psychological determinants of economic crime. Characteristics such as personality were adjudged to have “no relevance” (Sutherland, 1940).

There is an obvious flaw in Sutherland’s suppositions. Not all persons act alike or commit economic crime. Despite lying under the same skies and being educated alike, individual differences in behaviour and criminality are abundant. Such diversity suggests a role for individual level characteristics such as personality. Nevertheless, Sutherland’s influence was substantial. As a result, very little theoretical or empirical research concerning economic crime and psychological characteristics was conducted during the twentieth century.

The first real examination of personality and economic crime was conducted by Collins and Schmidt (1993). Their investigation revealed that those who had committed

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24 White collar crime is essentially economic crime committed by "a person of respectability and high social status in the course of his occupation" (Sutherland, 1940). In research, this grouping is often operationalised as managers within organisations.
economic crimes including fraud, embezzlement and counterfeiting were less reliable, responsible, had lower self-control and regard for rules and social norms. Thus, it appeared that personality was related to economic crime.

Since Collins and Schmidt’s pioneering work, a small number of studies have examined the personality correlates of economic crime (e.g. Alaheto, 2003; Bauwens & Egan, 2011; Blickle, Schlegel, Fassbender, & Klein, 2006; Collins & Schmidt, 1993; Miyazaki, 2009; Terpstra, Rozzell, & Robinson, 1993). The vast majority of this research has adopted the FFM framework and focused on personality differences between managerial white-collar criminals and non-criminal (or non-caught) managers.

For instance, Alaheto (2003) conducted the first non-American assessment of personality and economic crime just nine years ago in his paper “Economic Crime: Does Personality Matter?”. Alaheto found that those with higher levels of Extraversion and Neuroticism and lower levels of Agreeableness were more likely to have committed economic crime. The next study concerning economic crime and personality was conducted by Blickle, et al. (2006). The authors were unaware of the Alaheto (2003) study and believed their study to be first study conducted outside of America, showing the scarcity of comparable research. Blickle et al. (2006) found that those who had committed economic crimes were more hedonistic and narcissistic. Collectively, these results suggest that “the psychological study of white-collar crime is indeed worthwhile” (Blickle et al., p. 227) and that “personality does matter in economic crime” (Alaheto, 2003, p.351).

Despite the recent increase in interest and empirical research concerning personality and economic crime, the area remains in its infancy and the personality-insurance fraud relationship has been particularly neglected. There has been only one examination of personality and insurance fraud to date (Ganon & Donegan, 2006). A couple of personality-type measures were used, three of which were taken from the JPI-
R (Jackson, 1994) and the others, despite tapping into reasonably well known characteristics, were developed by the study authors and were not validated. Regardless of the methodological concerns, Ganon and Donegan’s (2006) results are of interest, finding that scales labelled immediate gratification, risk and responsibility were correlated with yes/no responses to the question “have you ever exaggerated an insurance claim”.

What little research there is does suggest a number of personality traits that might be of importance. In addition, research concerning personality and behaviours analogous to insurance fraud such as general crime, unethical, antisocial and dishonest behaviour also highlight a number of candidate personality traits. The following sections will consider this evidence and present the traits to be examined.

5.1.4 Central Impulsivity-Related Traits

The four central Impulsivity-related traits of Impetuosity, Self-Regulation, Deferred-Gratification and Consideration of Future Consequences are assessed here, primarily as they are believed to be of relevance to all economic behaviour whether ethical or not. The concept of impulsiveness in different guises has also been investigated within the economic crime literature and is implicated as an important individual difference in unethical and criminal behaviour. The following section will briefly review that evidence in line with the structure of Impulsivity-related traits posited in Chapter Three.

One of the overarching motivations of research concerning economic crime is the desire to find a theory that explains both economic and traditional crime (e.g. burglary, violent crimes etc.). According to O’Connor (2011, p1) “Risk-Taking and recklessness are personality characteristics shared by both white collar criminals and ordinary criminals, although with ordinary criminals, the trait is most often referred to by the master concept of impulsiveness (or inability to defer gratification)”. Such a
statement summarising personality-crime research is reminiscent of general attempts to define Impulsivity. Impulsivity is seen as either a global construct which houses numerous traits, or a trait that is equivalently measured by a number of constructs. As discussed during Chapter Three, this is not the case and as evidenced by prior research and Study 1 of this thesis, a more considered approach to Impulsivity-related traits often yields better explanation, understanding and prediction of financial behaviour (e.g. Billieux et al., 2008; Smith et al., 2007; Hughes et al., 2011a; 2011b; Wang et al., 2011). It is expected that assessment of the four central traits of Impetuousness, Self-control, Deferred-Gratification and Consideration of Future Consequences, derived from the systematic review of the Impulsivity literature will yield a more precise picture of the personality drivers of insurance fraud.

One of the most widely cited theories of crime, namely, Gottfredson and Hirschi’s (1990) general theory of crime, defines crime as “acts of force or fraud undertaken in pursuit of self-interest” (pg. 15) and places ‘self-control’ as a central pillar of criminality. Gottfredson and Hirschi (1990) view criminal acts as motivated by a desire for immediate reward and satisfaction, which are often accompanied by long-term negative consequences. Further, Gottfredson and Hirschi (1990) suggest that criminal acts tend to be committed impulsively with little forethought or planning.

The four central traits would appear to match much of the description of criminality posed by Gottfredson and Hirschi (1990). From this theoretical view alone, it is hypothesised that all four of the central traits will be significantly correlated with insurance fraud.

In addition, empirical work has shown that the four central traits are related to unethical behaviour, in addition to general and economic crime. For example, low self-control has been found to correlate with dishonest and unethical behaviours such as plagiarism and employee theft (e.g. Blankenship & Whitley, 2000; Bolin, 2004;
Langton, Piquero, & Hollinger, 2006). Further, low levels of self-control have been found to relate to economic fraud in the form of credit card fraud (Holtfreter, Resig, Piquero, & Piquero, 2010), counterfeiting, embezzlement, fraudulent bankruptcy and tax evasion (Blickle et al., 2006). All in all, the available literature suggests a consistent relationship between low self-control and unethical and fraudulent behaviours. Here, self control is operationalised as trait Self-Regulation. From the theoretical and empirical research, it is clear that Self-Regulation is important to crime and dishonesty. Thus, it is hypothesised that Self-Regulation will be negatively correlated with positive Attitudes Towards Insurance Fraud.

Scales akin to Impetuousness have been shown to correlate with general delinquency (White et al., 1994), academic cheating and dishonesty (Anderman, Cupp, & Lane, 2010), criminal convictions (Gordon & Egan, 2011) and unethical consumer behaviour such as buying things one cannot afford with a view to returning them after use (Wachter, Vitell, Shelton, & Park, 2012). In addition, classical Impulsivity measures and concepts akin to Impetuousness have been argued (Duffield & Grabosky, 2001; Wallang & Taylor, 2012) and shown empirically to correlate with financial fraud (Piquero & Rosay, 1998). Further, Kleptomania, the central feature of which is impetuousness, has long been implicated in theft, fraud and deception offences (Wallang & Taylor, 2012). Thus, it is hypothesised that Impetuousness will be positively correlated with positive Attitudes Towards Insurance Fraud.

There is surprisingly little research concerning Deferred-Gratification and criminal, unethical or dishonest behaviour. This is especially surprising given the notion of ‘immediacy of gratification’ being proposed as a key motivation for criminal acts (e.g. Gottfredson & Hirschi, 1990). Promisingly, Ganon and Donegan (2006) reported that a measure of immediacy of gratification was correlated with involvement in
insurance fraud. Extrapolating from this, it is hypothesised that Deferred-Gratification will be negatively correlated with Attitudes Towards Insurance Fraud.

Though research concerning delinquent, unethical and criminal behaviour that uses the Consideration of Future Consequences scale is non-existent, there are a few studies which show empirical evidence of relationships with closely aligned scales. For example, measures assessing planning and future orientation (the essence of Consideration of Future Consequences) have been shown to relate to delinquency (White et al., 1994), and Nagin and Pogarsky (2003) found that a present orientation was predictive of cheating in an experimental setting. Further, Lynam and Miller (2004) found that of the UPPS factors (Whiteside & Lynam, 2001); Premeditation (akin to forethought) was the best predictor of conduct problems, antisocial behaviour and drug use. Thus, it is hypothesised that the tendency to show forethought and behaviour in a manner consistent with future desires, operationalised by Consideration of Future Consequences will be negatively correlated with Attitudes Towards Insurance Fraud.

5.1.5 Outcome Specific Traits

In addition to the central Impulsivity-related traits, it is hypothesised that willingness to commit insurance fraud will be influenced by a number of specific personality traits that are less central to economic behaviour en masse. Focusing on research examining economic crime and closely related outcomes such as delinquency, dishonesty and general crime, the next sections outline the outcome specific traits to be examined.

5.1.6 Integrity

Perhaps the most obvious trait that is likely to be related to dishonest, unethical and fraudulent insurance claims is Integrity. Integrity is loosely defined as being honest and moral. The literature surrounding integrity is a little muddy as scales which have almost identical item content are referred to by names such as honesty, authenticity,
ethicality, morality and even honesty/integrity (c.f. Berry, Sackett, & Weimann, 2007; Ones, Viswesvaran & Schmidt, 1993). Results concerning all of these scales will be discussed here.

In the few studies that have examined personality and economic crime, integrity has been most often studied, and found to play a role. For instance in their pivotal study, Collins and Schmidt (1993) noted that those convicted of white-collar offenses showed a greater tendency toward irresponsibility, lack of dependability, and a disregard for rules and social conventions, than did a managerial control group. Collins and Schmidt interpreted these results as indicative of social conscientiousness, which they found to be best measured by a personality-based integrity test.

In addition, integrity was shown by Porcano (1988), Ghosh and Crain (1995) and by Eisenhauer, Geide-Stevenson, and Ferro (2011) to relate to self-reported tax evasion. Integrity scales have also been shown to correlate with general dishonesty and counterproductive behaviours such as violence, stealing (e.g. Ones, Viswesvaran, & Schmidt, 1993), rule breaking and pilferage (Mikulay & Goffin, 1998). Further, dishonest behaviour in other domains has been shown to correlate with insurance fraud. Ganon and Donegan (2006) found that what they term as ‘imprudent behaviours’ (e.g. tax evasion, moving violations, lying on one’s CV) were predictive of involvement in insurance fraud. Thus, suggesting that integrity and honesty is domain general. In the light of the available literature examining integrity and economic crime, it is hypothesised that integrity will be negatively correlated with insurance fraud.

### 5.1.7 Psychopathy and Anti-social traits

Much of the research examining the personal characteristics of general and economic criminals has focussed on psychopathy and anti-social traits. By far the most established area of research in the psychology-fraud literature is that of “corporate psychopaths” who are described as charming, cunning liars who callously pursue their
own goals (often power, money and prestige) with little regard for the welfare of others (Babiak & Hare 2006; Babiak, Neumann, & Hare, 2010).

Hayes and Prenzler (2003) suggest that the lack of conscience, higher than average disregard for the feelings and rights of others, and the desire for immediate gratification makes it “likely that [psychopaths] will be motivated more often to commit fraudulent offenses”. Numerous other researchers have come to similar conclusions (Bauwens & Egan, 2011; Benn, 1986; Blum, 1972; Duffield & Graborsky, 2001; Price & Norris, 2009; Wallang & Taylor, 2012).

Despite the evident links between psychopathy, anti-social personality and fraudulence, it has been argued that, as these personality disorders are so rare, they will likely make up only a small proportion of fraudsters (Ariely, 2012; Wallang & Taylor, 2012). Whilst it is true that the number of people with such clinical diagnoses is small (1-3% of the general population; Duffield & Grabosky, 2001), we all possess these traits to a greater or (often much) lesser extent. Thus, it is likely that higher levels of such traits, even if subclinical in magnitude, are more likely to lead to dishonest, unethical, illegal behaviour and of significance here, insurance fraud.

Empirical research has also been conducted that supports the theoretical associations between antisocial and psychopathic traits and economic crime. For instance, Bauwens and Egan (2011) found narcissistic and antisocial traits to be higher amongst convicted white collar criminals than managerial controls. Similarly, personality scale assessed conduct problems (e.g., Loeber & Farrington, 1998; Loeber et al., 1998; Fridell, Hesse, Jaeger, & Kulhom, 2008) and conduct disorder assessed through the number of previously committed crimes (Ganon & Donegan, 2006) have been shown to relate to fraudulent crime.

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25 As discussed previously, personality traits have historically been viewed as fitting into one of two discrete categories, namely, “normal” or “abnormal”. However, there has recently been increasing evidence to suggest that abnormal personality can be modelled as extremes of normal personality (c.f. Markon, Kreuger & Watson, 2005; O’Connor & Dyce, 2001).
Evidently, psychopathic, callous, anti-social personality traits that result in conduct disorder are of relevance to delinquency and crime. Two scales that are likely to provide excellent measurement of such antisocial and psychopathic personality traits are taken from the DAPP-BQ\textsuperscript{26} (Livesley & Jackson, 2009).

The first is entitled Conduct-Problems and is said by the authors to “represent the behavioural component of psychopathy” which assesses “tendencies toward violence ... a history of antisocial behaviour ... and a tendency to violate social norms and engage in unlawful activities” (Livesley & Jackson, 2009; p.49).

The second scale is entitled Callousness and measures “a lack of empathy and remorse. [High scorers] tend to disregard ... the feelings and well being of others... have a cynical attitude towards other people, [but] they can be charming ... when it suits. High scorers also tend to have little sense of moral obligation to others or society [and] are dominated by self-interest” (Livesley & Jackson, 2009; p.46).

On the basis of extant theoretical and empirical work, it is hypothesised that higher scores on Conduct-Problems and Callousness will be predisposed to greater willingness to defraud insurance companies.

5.1.8 Machiavellianism

In addition to Conduct Problems and Callousness, Machiavellianism is also a trait implicated in economic and white collar crime. Machiavellianism is a sub-clinical personality trait characterised by cunning, deceit and manipulation carried out in order to achieve one’s goals by any means necessary (e.g. Christie & Geis, 1970; Judge et al., 2009).

A number of studies have shown correlations between levels of Machiavellianism and behaviours analogous to insurance fraud. For example,

\textsuperscript{26}It could be argued that Eysenck’s Psychoticism factor would be a worthy contender. However, this traits measure is a higher-order multifaceted scale that whilst assessing tendencies towards aggression and interpersonal hostility, also measures elements of impulsiveness (well assessed by other measures) and tough mindedness.
Machiavellianism has been shown to correlate with unethical behaviour (e.g. Rayburn & Rayburn 1996; Singhapkadi, 1993; Tang, Chen & Sutarso, 2008), and manipulation and deceit (e.g. Christie & Geis, 1970; Shafer and Simmons 2008; Wowra, 2007). Machiavellianism has also been implicated in economic crimes such as tax avoidance (Shafer & Simmons 2008) and general white-collar crime (Knecht, 2006; Winter, Stylianou, & Giacalone, 2004). Further, Machiavellianism scores tend to be higher in populations of economic criminals than general criminals, suggesting it is an important component of economic crime (Ragatz, Fremouw, & Baker, 2012).

It stands to reason that an individual who has a tendency towards deception, manipulation and dishonesty would be more likely to commit insurance fraud; this link is supported by the extant evidence described above. In consequence, it is expected that Machiavellianism will be positively correlated with insurance fraud.

**5.1.9 Risk-Taking**

Risk-Taking is also hypothesised to be an influential trait in fraudulent claims behaviour. Individuals with greater Risk-Taking propensity are more likely to engage in activities that involve a high degree of danger and potentially negative consequences, such as drug use (Cherpitel, 1999) and unsafe sexual activities (Yeh, 2002). In addition, Risk-Taking is one of the constructs identified in Gottfredson and Hirschi’s (1990) general theory of crime which they suggest is an important characteristic of criminals of all types.

Empirical research supports the link between Risk-Taking and crime (e.g., Junger, West, & Timman, 2001). A few studies have also examined the relationship between Risk-Taking and economic crime. The findings have generally been consistent, showing mild to moderate associations, suggesting that the greater the levels of Risk-Taking the greater the involvement in economic crime (e.g., Collins & Schmidt, 1993; Piquero & Rosay, 1998). This trend continues in relation to insurance fraud: Ganon and
Donegan (2006) found that a measure of Risk-Taking was predictive of involvement in insurance fraud; more so than measures of “immediacy of gratification” and “long-term planning”.

Extant research clearly suggests that a greater level of Risk-Taking is correlated with criminal behaviour and fraud. Committing insurance fraud, either by lodging a false claim, inflating a legitimate one or providing misinformation is, by definition, a risk. Should one be found out, the potential consequences are significant, ranging from policy invalidation to refusal to compensate and even criminal proceedings. A claimant who is largely risk-averse with a low tolerance for Risk-Taking would no doubt choose the lawful and risk-free approach to claiming. Thus, it is hypothesised that insurance fraud will be positively correlated with participants’ levels of Risk-Taking.

5.1.10 Optimism

Focusing on business related white collar crime, Kapardis and Krambia-Kapardis (2004) suggest that economic criminals can be loosely categorised according to motives and characteristics. In their view, there are typologies of offenders. For example, economic criminals who can be viewed as professional conmen with a criminal record; people who commit an isolated act of fraud to solve a serious personal or business related financial problem27; unscrupulous high fliers; and “over-optimistic opportunists”. Often the opportunists will be investors or gamblers “whose excessive optimism that ‘things will soon improve’ leads them into committing a spate of deception offences” (p.197).

The notion that optimism is a characteristic of criminals is endorsed by the authors of the Psychological Inventory of Criminal Thinking Styles which includes such a measure (PICTS; Walters & Geyer, 2005). The “super-optimism” domain of the

27 Although research has shown that one instance of fraud (and crime in general) tends to lead to multiple offences (e.g. Clarke, 1989; 1990; Derrig, 2002): Often following the first offence, individuals will continue to behave in a fraudulent manner, often with escalating seriousness until they are caught.
PICTS scale measures the extent to which criminals overestimate the chances of avoiding the negative consequences of criminal behaviour: A sense of invulnerability (Walters & Geyer, 2004). The super-optimism domain of the PICTS has been shown to correlate with involvement in unethical and criminal behaviour (e.g. Ragatz, et al., 2012).

Optimism can be a transient state: At certain times and in certain situations we are more optimistic than others (Scheier & Carver, 1992). However, trait or dispositional optimism is also widely discussed in the psychological literature (c.f. Scheier & Carver, 1992) as a tendency to have a generally positive outlook on life (Dember et al., 1989) and a positive view of future outcomes (Scheier & Carver, 1985). It seems plausible that those who have a more optimistic outlook on life and believe the future will be kind to them, will believe that they will “get away” with the wrongdoing of committing insurance fraud and may see the opportunity to inflate a claim positively, as a chance to make ‘improvements’ to their financial situation. Thus, it is hypothesised that trait optimism will be positively correlated with insurance fraud.

However, it has to be noted that the theoretical reasoning around optimism and crime is not straightforward. It has been noted that honest law abiding people tend to be more optimistic than do criminals and offenders instead feel a sense of disenfranchisement and view the world negatively (e.g. Gottfredson & Hirschi, 1990). Thus, it is a real possibility that optimism might be negatively correlated with insurance fraud. However, as most insurance fraud is opportunistic and depends on a belief that one will not get caught, it is suggested that it is more likely to be positively correlated.

28 Common phraseology concerning optimists is that they have a tendency to make good of a bad situation, to “make lemonade out of lemons”. Perhaps this will hold true in relation to the submission of an inflated claim (lemonade) following a genuine accident (lemons).
5.1.11 Opportunism

The vast majority of insurance fraud is not planned, it is opportunistic in nature. Customers do not aim to be fraudulent, yet, following a genuine need to claim (a legitimate car accident, home damage), customers see fit to increase the value of the legitimate claim. Taking motor injury claims, an Insurance Research Council study (Stewart, 1997) found that some element of fraud was involved in 36% of all auto injury claims. Only a small proportion of this fraud (8%) involved fabricated accidents and blatant criminality. In the remaining 92% of fraudulent claims, customers did not plan to be fraudulent, yet still inflated or distorted their claims.

So, 33% of all customers who filed a motor injury claim had not planned to, but had opportunistically inflated claims. Presumably, the same opportunity was present in many (if not all) of the 64% legitimate claims. This leads to the question: What is different about those who endeavour to defraud insurance companies? The personality traits discussed above are likely to play a core role. In addition, it is hypothesised here that opportunism itself might be a trait individual difference that can be measured psychometrically. If this is the case, it is likely to be an antecedent of insurance fraud.

No previous research has examined individual trait Opportunism. Thus, there is no previous empirical work to examine. Should trait opportunism exist and should it be possible to measure it, the argument for a correlation between Opportunism and insurance fraud is straightforward. It is expected that there would be a positive correlation between a person’s general tendencies toward opportunistic exploitation and insurance fraud that is largely an expression of opportunistic behaviour.

Previous research has identified opportunism as a cultural variable within organisations. Within this body of research, Opportunism is defined as self-interest seeking with guile, and includes activities such as stealing, cheating, breach of contract, dishonesty, distorting data, withholding information, and misrepresentation (Anderson,
Each of these acts is akin to the main types of insurance fraud, namely, claim padding, false claims and misinformation given during underwriting.

To date, only one published scale of Opportunism exists; it was designed by John (1984) to assess opportunistic acts within marketing channels. Using a modified and expanded version of John’s two-item scale, the current author has shown that levels of Organisational Opportunism interact with sales persons’ trait Machiavellianism to predict sales performance (Hughes, Irwing, & Wacker, 2011). Taking this prior research as a base, John’s scale will again be modified and additional items generated to operationalise Opportunism as an individual level trait. Provided this measure holds psychometrically, it is hypothesised that those high in Opportunism will be more willing to commit insurance fraud.

5.1.12 Summary and Hypotheses

The personality antecedents of economic crime of any variety remain heavily under researched, due in the main to Sutherland’s influential addresses and papers (1940; 1949; 1983). The origins of research of any kind concerning the personality-economic crime link can be traced back just twenty-one years (Collins & Schimidt, 1993). Since then, a few papers have considered personality and economic crime. These studies have focused on only a few personality traits, most commonly the FFM. There has been in this time only one examination of personality and insurance fraud (Ganon & Donegan, 2006) which is limited in impact due to methodological weaknesses in the measures used. The current study, which examines the relationship between insurance fraud and eleven personality traits, has the potential to make a real contribution to our knowledge of the antecedents of opportunist and fraudulent economic behaviour.

It is hypothesised that endorsement of insurance fraud or positive Attitudes Towards Insurance Fraud will be positively correlated with Impetuousness, Conduct
Problems, Callousness, Machiavellianism, Risk-Taking, Optimism and Opportunism and negatively correlated with Self-Regulation, Deferred-Gratification, Consideration of Future Consequences and Integrity.

5.2 Method

5.2.1 Sample

A general population sample numbering 475 was gathered using snowball sampling. The sample was 52.6% male and 47.4% female with ages ranging from 19 to 65 ($M=36.7$, $SD=11.2$). A full demographic breakdown of the sample with regards to ethnicity, marital status, educational attainment, employment and salary is shown in Table 5.1.

Table 5.1

<table>
<thead>
<tr>
<th>Demographic characteristics of sample by frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
</tr>
<tr>
<td>Male 300 (52.6)</td>
</tr>
<tr>
<td>Female 275 (47.4)</td>
</tr>
<tr>
<td><strong>Dependents</strong></td>
</tr>
<tr>
<td>0 278 (58.5)</td>
</tr>
<tr>
<td>1 64 (13.5)</td>
</tr>
<tr>
<td>2 94 (19.8)</td>
</tr>
<tr>
<td>3 30 (6.3)</td>
</tr>
<tr>
<td>4 7 (1.5)</td>
</tr>
<tr>
<td>5 2 (0.4)</td>
</tr>
<tr>
<td><strong>Ethnicity</strong></td>
</tr>
<tr>
<td>White 387 (81.5)</td>
</tr>
<tr>
<td>Mixed 14 (2.9)</td>
</tr>
<tr>
<td>Asian 50 (10.5)</td>
</tr>
<tr>
<td>Black 6 (1.3)</td>
</tr>
<tr>
<td>Chinese 16 (3.4)</td>
</tr>
<tr>
<td>Other 2 (0.4)</td>
</tr>
<tr>
<td><strong>Marital Status</strong></td>
</tr>
<tr>
<td>Single 162 (34.1)</td>
</tr>
<tr>
<td>Never Married 222 (46.7)</td>
</tr>
<tr>
<td>Married 18 (3.8)</td>
</tr>
<tr>
<td>Divorced 6 (1.3)</td>
</tr>
<tr>
<td>Remarried 52 (10.9)</td>
</tr>
<tr>
<td>Living with Partner 7 (1.5)</td>
</tr>
<tr>
<td>Separated 6 (1.3)</td>
</tr>
<tr>
<td>Widowed 2 (0.4)</td>
</tr>
<tr>
<td><strong>Education</strong></td>
</tr>
<tr>
<td>No Schooling 6 (1.3)</td>
</tr>
<tr>
<td>Secondary age 16 28 (5.9)</td>
</tr>
<tr>
<td>Secondary age 18 15 (3.2)</td>
</tr>
<tr>
<td>Non-University Higher 29 (6.1)</td>
</tr>
<tr>
<td>University 397 (83.6)</td>
</tr>
<tr>
<td><strong>Employment Status</strong></td>
</tr>
<tr>
<td>Full-Time 292 (61.5)</td>
</tr>
<tr>
<td>Part-Time 27</td>
</tr>
<tr>
<td>Self-Employed 62 (13.1)</td>
</tr>
<tr>
<td>Unemployed 18 (3.8)</td>
</tr>
<tr>
<td>Student 64 (13.5)</td>
</tr>
<tr>
<td>Retired 2 (0.4)</td>
</tr>
<tr>
<td>Other 10 (2.1)</td>
</tr>
<tr>
<td><strong>Occupational Group</strong></td>
</tr>
<tr>
<td>Professional/Senior Manager 257 (54.1)</td>
</tr>
<tr>
<td>Junior Manager 41 (8.6)</td>
</tr>
<tr>
<td>Other White Collar/Service 34 (7.2)</td>
</tr>
<tr>
<td>Skilled Worker 33 (6.9)</td>
</tr>
<tr>
<td>Semi/Unskilled Worker 22 (4.6)</td>
</tr>
<tr>
<td>Other 88 (18.5)</td>
</tr>
<tr>
<td><strong>Annual Salary</strong></td>
</tr>
<tr>
<td>&lt; 10k 52 (10.9)</td>
</tr>
<tr>
<td>10k – 15k 41 (8.6)</td>
</tr>
<tr>
<td>15k – 20k 41 (8.6)</td>
</tr>
<tr>
<td>20k – 30k 52 (10.9)</td>
</tr>
<tr>
<td>30k – 40k 70 (14.7)</td>
</tr>
<tr>
<td>40k – 50k 60 (12.7)</td>
</tr>
<tr>
<td>50k – 60k 45 (9.6)</td>
</tr>
<tr>
<td>60k – 70k 36 (7.6)</td>
</tr>
<tr>
<td>70k – 100k 31 (6.5)</td>
</tr>
<tr>
<td>&gt; 100k 26 (5.5)</td>
</tr>
</tbody>
</table>

The sample was relatively well spread across all demographic measures showing support for the assertion that snowballing using on-line methods allows for data to be
collected with geographical diversity. In relation to UK population estimates, the sample is almost equivalent in terms of ethnicity. However, it contains slightly more males (49% of the UK population is male), is slightly younger (average UK age is 39.5) and is educated to a higher level (across the population, 29% have degrees).

5.2.2 Measures

Eleven personality scales (Callousness, Consideration of Future Consequences, Conduct-Problems, Deferred-Gratification, Impulsivity, Integrity, Machiavellianism, Opportunism, Optimism, Risk-Taking, Social Desirability), a newly developed scale measuring Attitudes Towards Insurance Fraud, a motor claims history scale and demographic questions (see Table 5.2) were collated into a single questionnaire. Data were collected using a close-ended questionnaire provided in both online and paper format. Online measures have been shown to attract samples that are diverse with regard to age, gender, geographic region and socio-economic status (Gosling, et al., 2004), whilst paper questionnaires allow for data to be collected from those who do not have internet access.

5.2.3 Attitudes Towards Insurance Fraud

In the absence of any measures of individual’s Attitudes Towards Insurance Fraud, a new scale was developed specifically for this study. Information gathered from academic articles, insurers, insurance customers and news websites was used to determine the most common examples of insurance fraud and the rationales individual’s use to justify these frauds. Following the creation of a database of regularly occurring frauds, eight semi-structured interviews, four with currently employed insurers and four with members of the general population, were conducted. The aim of the interviews was to gauge reactions to the types of fraud suggested as most common and assess which would be best to assess using the Attitudes Towards Insurance Fraud scale. Following
these interviews, eight of the most common fraudulent insurance claims behaviours were taken as the subject matter for the scale items.

When generating the Attitudes Towards Insurance Fraud items, a number of question formats were considered. The first was a traditional likert-type scale. However, it was quickly apparent that a standard Likert-type item set represented an inadequate measurement approach. For example, it was difficult to generate items that were obtuse regarding their nature. In general, most items consisted of listing types of fraud and asking whether participants agreed or disagreed (e.g. Increasing the value of an insurance claim acceptable). In addition, instances of insurance fraud tend to be embedded within quite specific social situations and are often the response to a particular event (e.g. recently hit financial hardship and so consider fraud following a legitimate accident as a source of income). Trying to include such information in normal format items proved difficult. Items became cumbersome and convoluted. In response to these difficulties, a more novel vignette style approach was taken. It was believed that vignettes would allow the insurance fraud to be placed and discussed within an (artificial) social environment which would allow for more coherent items, and may also serve to reduce (if only slightly) the obviousness of the items and any corresponding response bias.

The final scale consisted of eight scenarios. Participants were asked to imagine themselves within each scenario and were given two possible courses of action to take in response to each scenario. Participants indicated which course of action they would take and with what level of certainty they would choose that particular response. Responses were on a 7-point Likert-type scale ranging from “Definitely A” to “Definitely B”. The full scale with participant instructions is displayed in Table 6.2. Exploratory and Confirmatory Factor Analysis showed that the scale fitted a single
factor solution, and the Cronbach’s alpha was 0.84 and the composite reliability was 0.93.

Table 5.2

Attitudes Towards Insurance Fraud scale

Consider the following dilemmas: these are hypothetical situations in which there is a decision to make or problem to solve. There are no right or wrong answers. The best way to answer is to imagine that you are actually in each of the situations: think about how it makes you feel and what it means to you, before completing each item.

Having read the dilemma, which of the two alternative actions do you think you would take? (Remember that no other options can be considered). You can indicate your choice by circling one of the options to the left (for A) or right (B) of the grid. For example, if you were deciding which colour to paint your living room the example shows a response which indicates you would probably use red paint.

<table>
<thead>
<tr>
<th></th>
<th>A. Red</th>
<th></th>
<th>B. Blue</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Definitely A</td>
<td>Probably A</td>
<td>Maybe A</td>
</tr>
<tr>
<td>B</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. A good friend of yours and their partner have been involved in a minor car accident (no injuries were sustained) they could do with an extra bit of cash. They have come to ask what your advice is regarding their plan to claim compensation for whiplash, giving the rationale that “everyone does it these days”

A) Do not do it, it is wrong.  B) Yes go for it.

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th></th>
<th>B</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Definitely A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. One of your work colleagues has just dropped their brand new laptop and it is no longer working. What advice do you give?

A) Ring your insurance provider and tell them it was stolen.  B) I guess you should have bought the protective casing.

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th></th>
<th>B</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Definitely A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3. It’s coming up to the world cup and a friend has organised a party for all of your friends to watch the final at his house. His TV is relatively small and he thinks he could do with a bigger one; he has the idea to drop his TV on the floor and claim it on his “old for new” contents insurance.

A) How will they know if you’re lying?  B) I wouldn’t do it if I were you.

Looks like a win-win situation to me.

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th></th>
<th>B</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Definitely A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Attitudes Towards Insurance Fraud scale

**4.** Your cousin has had his home burgled and he is most upset that his guitar has been stolen, he always looks for the positive in every situation and has the view that “insurance companies make loads of profit; they can afford my claim so I’ll tell them my guitar was a vintage 1948 Gibson Les Paul worth £3,000.”

<table>
<thead>
<tr>
<th>A) It certainly was vintage but not worth that amount; you can’t do that.</th>
<th>B) I am sure they can afford it; you might as well get what you can.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Definitely A</td>
<td>Probably A</td>
</tr>
<tr>
<td>Maybe B</td>
<td>Not Certain</td>
</tr>
</tbody>
</table>

**5.** You are driving a friend’s car and have an accident. It is not serious and you sustain no injuries. The cost to fix the damage is likely to be around £650. You only have third party insurance. Your friend (the car owner) offers to claim they were driving but that you pay the excess of £150.

<table>
<thead>
<tr>
<th>A) That would be great it will only cost me £150, let’s do it.</th>
<th>B) Thank you for the offer, but no thanks, it was my mistake I will pay for it.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Definitely A</td>
<td>Probably B</td>
</tr>
<tr>
<td>Maybe B</td>
<td>Not Certain</td>
</tr>
</tbody>
</table>

**6.** During a conversation at work one of your co-workers begins talking about insurance and has the view that “When it comes to insurance, claim at every opportunity and claim as much as you can, get your money’s worth”

<table>
<thead>
<tr>
<th>A) I agree.</th>
<th>B) I disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Definitely A</td>
<td>Probably B</td>
</tr>
<tr>
<td>Maybe B</td>
<td>Not Certain</td>
</tr>
</tbody>
</table>

**7.** You are constantly complaining about how old your car is, and how you would love to get a new one but just can’t afford it. A friend tells you they would be willing to take your car and burn it on a field so you can get a new one via an insurance claim.

<table>
<thead>
<tr>
<th>A) No chance! I couldn’t and wouldn’t ask that of you, besides it’s illegal.</th>
<th>B) That is a little risky but if you’re willing to do it then yes.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Definitely A</td>
<td>Probably B</td>
</tr>
<tr>
<td>Maybe B</td>
<td>Not Certain</td>
</tr>
</tbody>
</table>

**8.** You would do anything for your partner and you know they have seen and would love a new bathroom suite that costs £3,500. There is no way you can shell out for it at the moment unless, as a friend suggests, you “drop a hammer on the sink” then claim for a whole new suite.

<table>
<thead>
<tr>
<th>A) I am not even going to consider it; I will just have to save up.</th>
<th>B) I would do anything to make them happy; I will consider it an option.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Definitely A</td>
<td>Probably B</td>
</tr>
<tr>
<td>Maybe B</td>
<td>Not Certain</td>
</tr>
</tbody>
</table>

---
5.2.4 Claims History

Participants’ Claims History was gauged by asking whether or not they currently possessed home and/or motor insurance. Then, they were asked to report how many times in the past five years they had claimed on those insurance policies. The questions can be viewed in Appendix 2.

5.2.5 Personality

Eleven shortened versions of extant measures were used to assess personality. The items retained to measure each personality trait were chosen with a view to: maintaining the breadth of content from the original scale, removing duplicate or synonymous items as these can cause havoc in factor analyses, choosing high loading items as reported in scale manuals, and retaining well-written and unambiguous items. Decisions regarding which items to retain were taken by the researcher and two additional subject matter experts who have had extensive dealings with both the construction and analysis of personality scales. A full list of all the items used can be found in Appendix 2 and the final items retained following Exploratory Factor Analysis can be found in Table 5.3.

When considered in their entirety, each of the scales have been used in numerous published studies and have been shown by their authors to possess adequate internal consistency ($\alpha = 0.72 – 0.84$). All scales were responded to using a common response format, with individuals choosing from seven options – Very Inaccurate, Moderately Inaccurate, Neither Inaccurate nor Accurate, Moderately Accurate and Very Accurate – in order to rate how accurately each statement described their typical behaviour. Participants were prompted to describe themselves as they generally are, not as they wish to be, and to describe themselves honestly in relation to other people they know of the same sex and roughly the same age.
The scales used to assess the central Impulsivity-related traits of *Impetuousness*, *Self-Regulation*, *Deferred-Gratification* and *Consideration of Future Consequences* and also *Risk-Taking* were the same as those used in Study 1. Please see Chapter 4, section 4.2.4 for a more detailed discussion.

*Integrity* was measured using the IPIP’s Integrity/Honesty scale. Six of the scale’s ten items were retained. An example item is “*I refuse to take credit for work I have not done*”.

*Optimism* was assessed using six items from the IPIP Optimism scale which was designed to mimic the Hope scale developed within the Values in Action questionnaire (Peterson & Seligman, 2004) and consists of items such as “*I can find the positive in what seems negative to others*”.

*Machiavellianism* describes an individual’s tendency to influence and manipulate others for personal gain. This trait was assessed using six items from the IPIP Machiavellianism scale which was designed to be conceptually similar to the Jackson Personality Inventory scale of Social Astuteness (Jackson, 1994) and consists of items such as “*I find it easy to manipulate others*”.

There are no extant published scales that measure individual level *Opportunism*. John (1984) created a scale of organisational opportunism that has been widely used in marketing and business research. For the purpose of the current study, John’s (1984) scale was adapted to measure opportunism at the individual level. The scale consisted of six items such as “*If the opportunity arose to cheat and improve a test score I would take it*”.

*Callousness* is characterised by a lack of empathy and remorse and is measured here using The Dimensional Assessment of Personality Pathology - Basic Questionnaire (DAPP-BQ-BQ; Livesley &Jackson, 2009) Callousness scale. For the current study, eight of the original sixteen items were used, an example being “*I do not feel guilty*
when I hurt someone’s feelings”. High scorers on this scale tend to disregard the feelings and well being of others and tend to have a limited sense of moral obligation to others and/or society, whilst their interactions with others are dominated by self-interest.

The DAPP-BQ-BQ was again utilised to measure Conduct-Problems. This scale represents the behavioural component of psychopathy and assesses tendencies toward violence. High scores are associated with a history of antisocial behaviour in childhood and adolescence, and a tendency to violate social norms and engage in unlawful activities, whilst low scorers are likely to be law abiding and accepting of traditional rules and laws. Eight of the original scale’s sixteen items were used in the current investigation. An example item is “As a child, I started fires that damaged property”,

Given the sensitive nature of the data collected, it is possible that participants might respond dishonestly. Accordingly, a measure of Social Desirability was also used so that correlations between the scale and the Attitudes Towards Insurance Fraud scale could be estimated. Social desirability was assessed using six items from Stöber’s social desirability scale (SDS17; Stöber, 2001) through items such as “I take my bad moods out on others now and then”.

5.2.6 Demographic Measures

Nine demographic measures were used in this study, namely, Age, Sex, Number of Dependents, Ethnicity, Marital Status, Educational Attainment, Employment Status, Occupational Group, and Annual Salary not including bonuses. All measures were the same as those used in Study 1. For further details please refer to section 4.2.5 and Appendix 2.

5.2.7 Procedure

Data collection lasted for approximately eight weeks. During this period, participants were presented with either a paper questionnaire in the presence of the researcher or were directed via one of three social networking sites (LinkedIn, Facebook
and Twitter) to the online questionnaire. Both formats were identical. The questionnaire was accompanied with a brief paragraph of information detailing the purpose of the study (to measure links between personality and attitudes towards insurance) and closed with a detailed debriefing page. Participants recruited online would have seen a request for participation in the format of a Facebook status, Twitter tweet, or a message in a LinkedIn group. An example request can be found along with the full questionnaire in Appendix 2.

5.2.8 Missing Data

Missing data accounted for 5.4% of the recorded responses. All participants had completed the Attitudes Towards Insurance Fraud scale as this section was presented first, so responses from all participants were used during the factor analysis of the Attitudes Towards Insurance Fraud scale. With regards to the latter sections of the questionnaire, participants who had completed less than 50% of the remaining items were deleted in a listwise fashion, whilst incomplete data for those who had completed above 50% of the survey were imputed using the expectation-maximisation method of estimation within SPSS 16.

5.2.9 Analysis Strategy

The analysis strategy and techniques utilised largely mirror those adopted in Study 1. In the interests of brevity and to avoid repetition, the description of the methods used will be kept to a minimum, but detailed enough to allow replication. For a fuller discussion of each method and the rationale for its selection, please see the relevant sections in Chapter Four. First, the structure of the items was examined using a combination of Exploratory (EFA) and Confirmatory (CFA) Factor Analysis. Next, a series of stepwise latent variable regression models were estimated in order to examine the extent to which personality and demographic variables predicted Attitudes Towards Insurance Fraud. Finally, logistic regression analyses were conducted in order to
examine the extent to which the demographic, attitude, and personality variables were able to account for participants’ motor and home claims history. Analyses were conducted using the combination of Mplus 6.0 and SPSS 16.

5.3 Results

5.3.1 Exploratory Factor Analysis

EFAs were conducted in Mplus using the Weighted Least Squares Means and Variances (WLSMV) method of estimation and the Oblique, Geomin rotation. The results of a scree test (Cattell, 1966) and parallel analysis (Horn, 1965) were used to establish a plausible range of underlying factors, with the scree test suggesting the upper end of the range and the parallel analysis suggesting the lower end.

In order to find the most satisfactory solution, each of the solutions within this range were tested on the basis of four further criteria: (i) each factor was required to be identified by at least 3 salient items loading greater than 0.3; (ii) individual items had to load onto one factor at 0.3 or greater; (iii) solutions were preferred which minimised the number of cross loadings and (iv) factors were expected to be theoretically coherent and interpretable (Kline, 1994).

5.3.2 EFA of Attitudes Towards Insurance Fraud

Results from both a parallel analysis and scree test were unambiguous in suggesting that the Attitudes Towards Insurance Fraud scale (ATIF) conformed to a single factor solution (eigenvalue = 4.29) which accounted for 47.68% of the variance. The solution retained all 8 of the items with loadings ranging from -.403 to .781. The resultant scale yielded an acceptable Cronbach’s alpha coefficient of 0.84 and a mean score of 2.23 (SD= 1.06).

Responses to the Attitudes Towards Insurance Fraud scale revealed that 24% of respondents condoned at least one form of insurance fraud when termed in the first person, and that 30% would encourage a friend or family member to do so. These
results are in line with previous surveys conducted by the ABI (2011) which asked whether or not people had previously submitted fraudulent claims. The three most endorsed scenarios were scenario six (claim at every opportunity), scenario one (false whiplash claim) and scenario five (claim a different driver was driving following an accident) which were condoned by 145 (30%), 108 (23%) and, 92 (20%) participants respectively. Scenarios two, three and four was endorsed by between 10% and 15% of the sample, whilst scenarios seven (friend steals and burns car) and eight (deliberately cause damage to own property), which are the most clear examples of illegal behaviour, were condoned by 3% and 6% of the sample respectively.

5.3.3 EFA of Personality

A Kaiser-Meyer-Olkin (KMO) value of .77 and a significant Bartlett's Sphericity test ($\chi^2 = 16725 (2,850), p= 0.001$) revealed that both the sampling adequacy and strength of variable relations were sufficient to justify a factor analysis of all 74 personality items. The items were drawn from 11 scales entitled: Impetuousness, Self-Regulation, Deferred-Gratification, Consideration of Future Consequences, Callousness, Conduct-Problems, Integrity, Machiavellianism, Opportunism, Optimism, and Risk-Taking.

The EFA revealed that 20 factors had eigenvalues greater than unity. The first ten factors were shown to yield eigenvalues greater than the corresponding factors suggested by parallel analysis, whilst the scree test indicated discontinuity in the region of 10 to 12 factors. Thus, factor solutions ranging from 8 to 13 were examined.

The 11, 12 and 13 factor solutions both had factors that were underidentified (loaded by less than three factor indicators) and thus were discounted. The 8 and 9 factor solutions appeared acceptable but in each solution, one of the factors was incoherent and didn’t appear to measure a single personality trait. Further, each of these solutions resulted in the removal of a large proportion of the items (21 and 23
respectively). The 10 factor solution, which is discussed below appeared the best on the basis of the criteria outlined above.

The initial 10 factor solution offered 10 coherent factors and produced the fewest number (7) of cross factor loadings larger than 0.20. A number of items, however, failed to load on any factor above the 0.3 cut off. Each of the low loading items were removed one at a time, and following the removal of each low loading item the 10 factor solution was re-estimated until the solution satisfied all criteria. The final 10 factor solution accounted for 52.5% of the variance in the data, and retained 62 of the original 74 items (83%). Thus, the 10 factor solution was deemed to be the best fit to the data. The pattern matrix generated by the final 10 factor solution is displayed in Table 5.3.

5.3.4 Factor interpretation

Factor one was predominantly loaded by items from the Ray and Najman Delayed-Gratification scale and as such I interpret this factor as Deferred-Gratification. The three highest loading items of the scale refer to the deferment of gratification in a financial sense. For instance the highest loading item is “I am good at saving money rather than spending it straight away”.

The second is interpreted as Callousness as it comprises all but one of the items originally taken from the DAPP-BQ Callousness scale and is supplemented by several items from other scales that also tap into callous behaviours. A typical item is “I do not feel guilty when I hurt someone’s feelings”.

Factor three is predominantly loaded by items taken from the IPIP Machiavellian scale (Goldberg, 1999a). An example item is “I find it easy to manipulate others”. For these reasons the scale was interpreted as a measure of Machiavellianism.
Factor four consists of all 6 items taken from the Consideration of Future Consequences scale (Strathman et al., 1994) and is characterised by items such as “I only act to satisfy immediate concerns figuring the future will take care of itself”. For these reasons the scale was interpreted as a measure of Consideration of Future Consequences.

The fifth factor is loaded by two items from the Impetuousness scale and two items from the Self-Regulation scale. The items are primarily concerned with the regulation of impulses and temptations. Accordingly the scale is here defined as a measure of Self-Regulation. Example items are “I can always say enough is enough” and “I easily resist temptations”.

The sixth factor is predominantly loaded by Impetuousness items. The highest loading item is “I take my bad moods out on others now and then” whilst other high loading items are “I act impulsively” and “I often do things I later regret”. Higher scorers on this scale would describe themselves as often barging in on conversation, using swearwords, being over taken by urges to binge eat and do things they later regret. This scale was taken to be a measure of Impetuousness.

Factor seven is loaded by four items taken from the DAPP-BQ-BQ Conduct-Problems scale that gauge criminal behaviours such as childhood theft and vandalism. This factor was interpreted as a measure of Conduct-Problems. An example item is “As a child and young teenager, I often stole things”.

Factor eight does not fit the description of any of the pre-defined scales. It is suggested that Dishonest-Opportunism is an appropriate label since it represents behaviours that are both dishonest and opportunistic in nature. The scale is a composite of Integrity and Opportunism items such as “I would do something against the law if I knew I would not get caught” and “If the opportunity arose for me to cheat and improve a test score I would take it”.

The ninth factor is identified by four items from the IPIP Optimism scale and as such is labelled *Optimism*.

Factor ten is predominantly loaded by items taken from the IPIP Risk-Taking scale that measures risky and rule breaking behaviours for example “I take risks” positively loads and “I stick to the rules” negatively loads. Thus, the scale was entitled *Risk-Taking*. 
Table 5.3  
*Factor Loadings of personality items*

<table>
<thead>
<tr>
<th>Items</th>
<th>Factor</th>
<th>Loading</th>
<th>Cross Loadings &gt;.2 Factor (loading estimate)</th>
</tr>
</thead>
<tbody>
<tr>
<td>I am good at saving money rather than spending it straight away.</td>
<td>1</td>
<td>-.798</td>
<td></td>
</tr>
<tr>
<td>I never spend more than I can afford.</td>
<td>1</td>
<td>-.564</td>
<td></td>
</tr>
<tr>
<td>I like to spend money as soon as I get it.</td>
<td>1</td>
<td>.549</td>
<td></td>
</tr>
<tr>
<td>I am good at planning things way in advance.</td>
<td>1</td>
<td>-.427</td>
<td>5 (.35)</td>
</tr>
<tr>
<td>I enjoy things all the more because I have to wait for it and plan for it.</td>
<td>1</td>
<td>-.418</td>
<td></td>
</tr>
<tr>
<td>It doesn’t bother me if my actions cause problems for someone else.</td>
<td>2</td>
<td>.789</td>
<td></td>
</tr>
<tr>
<td>If I really need something, I don’t mind using someone to get it.</td>
<td>2</td>
<td>.619</td>
<td></td>
</tr>
<tr>
<td>I tend to put my own needs first in almost everything I do.</td>
<td>2</td>
<td>.590</td>
<td></td>
</tr>
<tr>
<td>I think you have to be ruthless to get on in life.</td>
<td>2</td>
<td>.533</td>
<td></td>
</tr>
<tr>
<td>I try to make friends with people who can be useful.</td>
<td>2</td>
<td>.491</td>
<td></td>
</tr>
<tr>
<td>In team sports, I think it’s alright to hurt your opponents.</td>
<td>2</td>
<td>.488</td>
<td></td>
</tr>
<tr>
<td>If I found someone’s wallet, I would not feel guilty about keeping the money.</td>
<td>2</td>
<td>.461</td>
<td></td>
</tr>
<tr>
<td>I can be trusted to keep my promises.</td>
<td>2</td>
<td>.391</td>
<td></td>
</tr>
<tr>
<td>I refuse to take credit for work I haven’t done.</td>
<td>2</td>
<td>.374</td>
<td></td>
</tr>
<tr>
<td>When I disagree with someone, I sometimes threaten them with violence.</td>
<td>2</td>
<td>.302</td>
<td></td>
</tr>
<tr>
<td>I lack the talent for manipulating others.</td>
<td>3</td>
<td>.819</td>
<td></td>
</tr>
<tr>
<td>I can talk others into doing things.</td>
<td>3</td>
<td>-.747</td>
<td></td>
</tr>
<tr>
<td>I have a natural talent for influencing people.</td>
<td>3</td>
<td>.709</td>
<td></td>
</tr>
<tr>
<td>I know how to get around the rules.</td>
<td>3</td>
<td>.672</td>
<td></td>
</tr>
<tr>
<td>I hate being the centre of attention.</td>
<td>3</td>
<td>.436</td>
<td>10 (.26)</td>
</tr>
<tr>
<td>I only act to satisfy immediate concerns, figuring the future will take care of itself.</td>
<td>4</td>
<td>.749</td>
<td></td>
</tr>
<tr>
<td>I only act to satisfy immediate concerns, figuring that I will take care of future problems when they arise.</td>
<td>4</td>
<td>.733</td>
<td></td>
</tr>
<tr>
<td>I think that sacrificing now is usually unnecessary since future outcomes can be dealt with at a later time.</td>
<td>4</td>
<td>.615</td>
<td></td>
</tr>
<tr>
<td>Often I engage in a particular behaviour in order to achieve outcomes that may not result for many years.</td>
<td>4</td>
<td>-.521</td>
<td></td>
</tr>
<tr>
<td>I am willing to sacrifice my immediate happiness or well-being in order to achieve future outcomes.</td>
<td>4</td>
<td>-.477</td>
<td></td>
</tr>
<tr>
<td>I consider how things might be in the future, and try to influence those things with my day to day behaviour.</td>
<td>4</td>
<td>-.451</td>
<td>9 (.27)</td>
</tr>
<tr>
<td>I can always say &quot;enough is enough.&quot;.</td>
<td>5</td>
<td>.785</td>
<td></td>
</tr>
<tr>
<td>I am a highly disciplined person.</td>
<td>5</td>
<td>.604</td>
<td></td>
</tr>
<tr>
<td>I easily resist temptations.</td>
<td>5</td>
<td>.370</td>
<td></td>
</tr>
<tr>
<td>I keep my emotions under control.</td>
<td>5</td>
<td>.341</td>
<td></td>
</tr>
</tbody>
</table>
## Table 5.3 continued

*Factor Loadings of personality item*

<table>
<thead>
<tr>
<th>Items</th>
<th>Factor</th>
<th>Loading</th>
<th>Cross Loadings &gt;.2. Factor (loading estimate)</th>
</tr>
</thead>
<tbody>
<tr>
<td>I take my bad moods out on others now and then.</td>
<td>6</td>
<td>.505</td>
<td></td>
</tr>
<tr>
<td>I occasionally speak badly of others behind their back.</td>
<td>6</td>
<td>.459</td>
<td></td>
</tr>
<tr>
<td>I act rashly.</td>
<td>6</td>
<td>.455</td>
<td>4 (.29)</td>
</tr>
<tr>
<td>I barge in on conversations.</td>
<td>6</td>
<td>.452</td>
<td></td>
</tr>
<tr>
<td>I am easily excited.</td>
<td>6</td>
<td>.450</td>
<td>4 (.28)</td>
</tr>
<tr>
<td>I do things I later regret.</td>
<td>6</td>
<td>.431</td>
<td></td>
</tr>
<tr>
<td>I use swear words.</td>
<td>6</td>
<td>.429</td>
<td></td>
</tr>
<tr>
<td>I let myself be taken over by urges to eat too much.</td>
<td>6</td>
<td>.423</td>
<td></td>
</tr>
<tr>
<td>I expect the worst.</td>
<td>6</td>
<td>.353</td>
<td></td>
</tr>
<tr>
<td>As a child and young teenager, I often stole things.</td>
<td>7</td>
<td>.747</td>
<td></td>
</tr>
<tr>
<td>I have taken things that were not mine.</td>
<td>7</td>
<td>.653</td>
<td></td>
</tr>
<tr>
<td>When I was young, I deliberately damaged property that didn’t belong to me.</td>
<td>7</td>
<td>.526</td>
<td></td>
</tr>
<tr>
<td>I would do something against the law if I knew I would not get caught.</td>
<td>7</td>
<td>.315</td>
<td>2 (.26)</td>
</tr>
<tr>
<td>I have been involved in several fights since my teenage years.</td>
<td>8</td>
<td>-.542</td>
<td></td>
</tr>
<tr>
<td>If the opportunity arose for me to cheat and improve a test score I would take it.</td>
<td>8</td>
<td>-.488</td>
<td></td>
</tr>
<tr>
<td>Everyone would steal if they knew they wouldn’t get caught.</td>
<td>8</td>
<td>-.451</td>
<td></td>
</tr>
<tr>
<td>Sometimes, I have to alter the facts slightly in order to get what I need.</td>
<td>8</td>
<td>-.388</td>
<td></td>
</tr>
<tr>
<td>I lie to get myself out of trouble.</td>
<td>8</td>
<td>-.377</td>
<td>6 (.26)</td>
</tr>
<tr>
<td>If you are selling a used car, you are obliged to inform the prospective buyer of all its defects.</td>
<td>8</td>
<td>.358</td>
<td></td>
</tr>
<tr>
<td>Someone who is applying for health insurance has the right to keep quiet about some illnesses, so as not to increase the premium.</td>
<td>8</td>
<td>-.329</td>
<td></td>
</tr>
<tr>
<td>I remain hopeful despite challenges.</td>
<td>9</td>
<td>.581</td>
<td></td>
</tr>
<tr>
<td>I can find the positive in what seems negative to others.</td>
<td>9</td>
<td>.524</td>
<td></td>
</tr>
<tr>
<td>I think about what is good in my life when I feel down.</td>
<td>9</td>
<td>.491</td>
<td></td>
</tr>
<tr>
<td>I am trusted to keep secrets.</td>
<td>9</td>
<td>.378</td>
<td></td>
</tr>
<tr>
<td>I take risks.</td>
<td>10</td>
<td>-.546</td>
<td></td>
</tr>
<tr>
<td>I stick to the rules.</td>
<td>10</td>
<td>.522</td>
<td></td>
</tr>
<tr>
<td>I avoid dangerous situations.</td>
<td>10</td>
<td>.466</td>
<td></td>
</tr>
<tr>
<td>I would never make a high risk investment.</td>
<td>10</td>
<td>.465</td>
<td></td>
</tr>
<tr>
<td>When rules are inconvenient, I break them.</td>
<td>10</td>
<td>-.408</td>
<td></td>
</tr>
<tr>
<td>Cronbach’s alpha Factors 1 -10 in order</td>
<td></td>
<td>0.75, 0.81, 0.81, 0.81, 0.66, 0.72, 0.67, 0.77, 0.64, 0.67</td>
<td></td>
</tr>
</tbody>
</table>

Note: F1 = Deferred-Gratification, F2 = Callousness, F3 = Machiavellianism, F4 = Consideration of Future Consequences, F5 = Self-Regulation, F6 = Impetuousness, F7 = Conduct-Problems, F8 = Dishonest-Opportunism, F9 = Optimism, F10 = Risk-Taking
5.3.5 Confirmatory Factor Analysis

Next, Confirmatory Factor Analyses (CFA) were conducted to test the robustness of the scales identified using EFA. Where necessary, the factors were amended in order to create more coherent and valid factors that would subsequently be used in regression analyses. Item level models were estimated using WLSMV.

As in Study 1, models were considered to adequately approximate the data at values of ≤ .08 for the Standardised Root Mean Square Residual (SRMR; Spence, 1997) and the Root Mean Square Error of Approximation (RMSEA; Browne & Cudeck, 1993), at less than 1 for the Weighted Root Mean Residual (WRMR) and at ≥ .90 for the Comparative Fit Index (CFI) and the Tucker-Lewis Index (TLI; Bentler & Bonnett, 1980) with values above .95 preferred (Hu and Bentler, 1999).

**Attitudes Towards Insurance Fraud:** An initial item level CFA containing all 8 items showed excellent fit (CFI = 0.986; TLI = 0.980; RMSEA = 0.060; WRMR = 0.595). In line with the cut-offs employed, this model was acceptable. There were no modification indices greater than 5, all factor loadings was above 0.5 (-.515 to .839) and the composite reliability of the scale was 0.93 (Fornell & Larcker, 1981). Thus, it can be argued that the Attitudes Towards Insurance Fraud scale is a reliable unidimensional scale.

**Personality:** All 10 personality scales were subject to individual item level CFAs. As can be gauged from Table 5.4, the scales produced a range of fit indices, some acceptable and others not. Each of the models which failed to fit, were revised until adequate fit was achieved. In totality, the scale revisions lead to the removal of five items (callous2, conduct2, integ3, sds4, sds5) and the modelling of four correlated errors. Each of the five items were removed due to their association with several large modification indices (>20) and low loadings (< 0.5), together suggesting that the items did not represent good indicators of the latent factor.
Table 5.4

Fit statistics derived from all CFA analyses

<table>
<thead>
<tr>
<th>Model</th>
<th>$\chi^2$</th>
<th>DF</th>
<th>SIG.</th>
<th>CFI</th>
<th>TLI</th>
<th>RMSEA</th>
<th>WRMR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitudes Towards Insurance Fraud</td>
<td>53.761</td>
<td>20</td>
<td>P&lt;.001</td>
<td>0.986</td>
<td>0.980</td>
<td>0.060</td>
<td>0.595</td>
</tr>
<tr>
<td>Deferred-Gratification</td>
<td>49.710</td>
<td>5</td>
<td>P&lt;.001</td>
<td>0.970</td>
<td>0.940</td>
<td>0.137</td>
<td>0.781</td>
</tr>
<tr>
<td>Revised</td>
<td>3.311</td>
<td>2</td>
<td>NS</td>
<td>1.000</td>
<td>0.999</td>
<td>0.015</td>
<td>0.175</td>
</tr>
<tr>
<td>Callousness</td>
<td>224.655</td>
<td>44</td>
<td>P&lt;.001</td>
<td>0.901</td>
<td>0.087</td>
<td>0.093</td>
<td>0.852</td>
</tr>
<tr>
<td>Revised</td>
<td>92.728</td>
<td>27</td>
<td>P&lt;.001</td>
<td>0.958</td>
<td>0.938</td>
<td>0.072</td>
<td>0.451</td>
</tr>
<tr>
<td>Machiavellianism</td>
<td>20.732</td>
<td>8</td>
<td>P&lt;.05</td>
<td>0.994</td>
<td>0.989</td>
<td>0.058</td>
<td>0.411</td>
</tr>
<tr>
<td>Consideration of Future Consequences</td>
<td>221.018</td>
<td>15</td>
<td>P&lt;.001</td>
<td>0.912</td>
<td>0.853</td>
<td>0.114</td>
<td>1.012</td>
</tr>
<tr>
<td>Revised</td>
<td>50.018</td>
<td>7</td>
<td>P&lt;.001</td>
<td>0.988</td>
<td>0.975</td>
<td>0.094</td>
<td>0.751</td>
</tr>
<tr>
<td>Self-Regulation</td>
<td>41.255</td>
<td>2</td>
<td>P&lt;.001</td>
<td>0.945</td>
<td>0.935</td>
<td>0.061</td>
<td>0.489</td>
</tr>
<tr>
<td>Impetuousness</td>
<td>247.239</td>
<td>20</td>
<td>P&lt;.001</td>
<td>0.864</td>
<td>0.770</td>
<td>0.155</td>
<td>1.614</td>
</tr>
<tr>
<td>Revised</td>
<td>19.241</td>
<td>10</td>
<td>P&lt;.05</td>
<td>0.984</td>
<td>0.971</td>
<td>0.051</td>
<td>0.535</td>
</tr>
<tr>
<td>Conduct-Problems</td>
<td>11.898</td>
<td>2</td>
<td>P&lt;.05</td>
<td>0.989</td>
<td>0.966</td>
<td>0.062</td>
<td>0.434</td>
</tr>
<tr>
<td>Dishonest-opportunism</td>
<td>85.097</td>
<td>14</td>
<td>P&lt;.001</td>
<td>0.955</td>
<td>0.932</td>
<td>0.103</td>
<td>0.884</td>
</tr>
<tr>
<td>Revised</td>
<td>21.109</td>
<td>9</td>
<td>P&lt;.001</td>
<td>0.991</td>
<td>0.985</td>
<td>0.053</td>
<td>0.473</td>
</tr>
<tr>
<td>Optimism</td>
<td>0.023</td>
<td>2</td>
<td>NS</td>
<td>1.000</td>
<td>1.004</td>
<td>0.001</td>
<td>0.012</td>
</tr>
<tr>
<td>Risk-Taking</td>
<td>84.659</td>
<td>5</td>
<td>P&lt;.001</td>
<td>0.902</td>
<td>0.805</td>
<td>0.183</td>
<td>1.175</td>
</tr>
<tr>
<td>Revised</td>
<td>19.427</td>
<td>4</td>
<td>P&lt;.01</td>
<td>0.981</td>
<td>0.953</td>
<td>0.60</td>
<td>0.392</td>
</tr>
</tbody>
</table>

5.3.6 Measurement Model

Next, in order to further improve the measurement properties of the scales, item parcels were created via the single-factor parcelling methodology whereby items are sequentially assigned to parcels based on their factor loadings from the item level models (Little, et al., 2002; Landis, et al., 2000). However where correlated errors had been modelled, these items were placed in the same parcel regardless of the magnitude of the factor loadings. Where possible, a minimum of three parcels per factor were created. However, some scales (Deferred-Gratification, Self-Regulation, Conduct-Problems, Risk and Optimism) retained too few items to create three parcels. In such instances, two parcels were created and in each of the models their factor loadings were
constrained to equality (Little, et al., 1999). The use of parcels is the subject of debate as although they improve measurement properties, some argue that they only do so by masking error variance.

In order to assess the appropriateness of the parcels, a measurement model was estimated which included all 10 of the personality variables and Attitudes Towards Insurance Fraud. The measurement model showed good levels of fit ($X^2 = 585.399$, $df = 332$, $CFI = .920$, $TLI = .905$, $RMSEA = .057$, $SRMR = .044$). Inspection of the modification indices revealed a number of modification indices greater than 10, however as the measurement model achieved adequate fit, and subsequent models were likely to include a smaller number of variables, no action with regard to the modification indices was taken.

### 5.3.7 Correlational Analysis

Next, the Attitudes Towards Insurance Fraud latent variable was analyzed in terms of its correlations with each of the personality variables. All correlations are shown in Table 5.5. Each of the personality variables were significantly correlated with Attitudes Towards Insurance Fraud. Dishonest-Opportunism ($r = .693$) had the largest correlation with an individual’s Attitudes Towards Insurance Fraud, whilst Callousness ($r = .478$) and Conduct Problems ($r = .409$) also evidenced strong correlations. Each of the remaining seven personality variables were moderately and significantly correlated with Attitudes Towards Insurance Fraud ($r \geq .362$). Correlations with the demographic measures suggest that younger individuals with less formal education, in lower ranking occupational groups and with smaller annual salaries tended to score higher on the Attitudes Towards Insurance Fraud scale. Social desirability shared its largest correlation with Conduct Problems ($r = -.384$) but was no more than moderately correlated with any of the variables.
Table 5.5

Correlations between all variable derived from the standardised measurement model

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
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<tbody>
<tr>
<td>ATIF</td>
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<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Deferred-Gratification</td>
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<td></td>
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<tr>
<td>Callousness</td>
<td>.478**</td>
<td>.110*</td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>Machiavellianism</td>
<td>.153*</td>
<td>.032</td>
<td>.322**</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>CFC</td>
<td>-.338**</td>
<td>.417**</td>
<td>-.166*</td>
<td>.194**</td>
<td>-</td>
<td></td>
<td></td>
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<tr>
<td>Self-Regulation</td>
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<td>.465**</td>
<td>.258**</td>
<td>.076</td>
<td>.422**</td>
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<td></td>
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<tr>
<td>Impetuousness</td>
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<td>.240**</td>
<td>-.043</td>
<td>-.427**</td>
<td>-.366**</td>
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<tr>
<td>Conduct-Problems</td>
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<td>.529**</td>
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<td>-.097</td>
<td>-.179**</td>
<td>.200**</td>
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<tr>
<td>Dishonest-Opportunism</td>
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<td>-.206**</td>
<td>.735**</td>
<td>.246**</td>
<td>-.194**</td>
<td>-.159*</td>
<td>.272**</td>
<td>.591**</td>
<td>-</td>
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<td></td>
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<tr>
<td>Optimism</td>
<td>-.362**</td>
<td>-.132*</td>
<td>.291**</td>
<td>-.179*</td>
<td>-.256**</td>
<td>-.222**</td>
<td>.280**</td>
<td>.093</td>
<td>.330**</td>
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<td>Risk-Taking</td>
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<td>.517**</td>
<td>.530**</td>
<td>.008</td>
<td>-.066</td>
<td>.052</td>
<td>.489**</td>
<td>.521**</td>
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<td>Social Desirability</td>
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<td>.216**</td>
<td>-.263**</td>
<td>-.291**</td>
<td>.153*</td>
<td>-.322**</td>
<td>.221**</td>
<td>-.384*</td>
<td>.313**</td>
<td>.103</td>
<td>.301**</td>
</tr>
</tbody>
</table>

Note: ATIF = Attitudes Towards Insurance Fraud, CFC = Consideration of Future Consequences
* Correlation is significant at the 0.05 level, ** Correlation is significant at the 0.01 level

Table 5.6

Correlations between Attitudes Towards Insurance Fraud and Demographics

<table>
<thead>
<tr>
<th></th>
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<th>2</th>
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<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
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</thead>
<tbody>
<tr>
<td>ATIF</td>
<td>-.065</td>
<td>-.391**</td>
<td>-.211**</td>
<td>-.111</td>
<td>-.145**</td>
<td>0.027</td>
<td>-.293**</td>
<td>-.252**</td>
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</tbody>
</table>

Note: ATIF = Attitudes Towards Insurance Fraud
* Correlation is significant at the 0.05 level **. Correlation is significant at the 0.01 level
5.3.8 Stepwise regression models using Structural Equation Modelling

5.3.8.1 Personality and Attitudes Towards Insurance Fraud

An iterative series of stepwise regressions based on the revised measurement model were estimated using Structural Equation Modelling (SEM). Attitudes Towards Insurance Fraud was first regressed on Dishonest-Oppportunism, the variable with which it correlated most highly (Table 5.7, Model A). Next, a series of models comprised of two predictor variables were estimated in which Dishonest-Oppportunism was sequentially paired with each of the remaining personality traits. The personality traits of Deferred-Gratification, Consideration of Future Consequences and Optimism all accounted for unique variance in Attitudes Towards Insurance Fraud over and above that accounted for by Dishonest-Oppportunism (Table 5.7, Models B - D). Consideration of Future Consequences contributed the largest increment in variance explained and so was retained for the third step of the regression models. The third series of models contained three predictor variables. Both Dishonest-Oppportunism and Consideration of Future Consequences were paired sequentially with Deferred-Gratification and Optimism. Only Optimism explained additional unique variance. At this stage, modelling was stopped as the addition of other personality traits would not result in greater prediction. The final personality only model accounted for 57.6% of the variance in respondents Attitudes Towards Insurance Fraud (Table 5.7, Model E).
Table 5.7

Parameter estimates and fit statistics for selected regression models of Attitudes Towards Insurance Fraud on personality and demographic variables

<table>
<thead>
<tr>
<th>Predictors</th>
<th>Models</th>
<th></th>
<th></th>
<th></th>
<th></th>
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<tbody>
<tr>
<td></td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
<td>E</td>
<td>F</td>
<td>G</td>
<td>H</td>
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<tr>
<td>Dishonest-Opportunism</td>
<td>β</td>
<td>β</td>
<td>β</td>
<td>β</td>
<td>β</td>
<td>β</td>
<td>β</td>
<td>β</td>
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<tr>
<td>Consideration of Future Consequences</td>
<td>-.167**</td>
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<td>-.148**</td>
<td>-.150*</td>
<td>-.100*</td>
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<tr>
<td>Optimism</td>
<td>.124*</td>
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<td>-.101*</td>
<td>.108*</td>
<td>-.111*</td>
<td>-.114*</td>
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<td>Deferred-Gratification</td>
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<td>-.133*</td>
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<tr>
<td>Age</td>
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<td>-.110*</td>
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<td>-.103*</td>
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<td>-.231**</td>
<td></td>
<td>-.229**</td>
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<tr>
<td>$r^2$</td>
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<td>55.1</td>
<td>54.6</td>
<td>57.6</td>
<td>58.2</td>
<td>60.6</td>
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<td></td>
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<tr>
<td>$\chi^2$</td>
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<td>67.872</td>
<td>53.700</td>
<td>64.069</td>
<td>118.589</td>
<td>191.532</td>
<td>149.978</td>
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<tr>
<td>CFI</td>
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<td>0.981</td>
<td>0.973</td>
<td>0.972</td>
<td>0.959</td>
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<td>0.946</td>
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<td>TLI</td>
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<td>0.960</td>
<td>0.961</td>
<td>0.943</td>
<td>0.943</td>
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<td>0.063</td>
<td>0.049</td>
<td>0.051</td>
<td>0.059</td>
<td>0.049</td>
<td>0.060</td>
<td>0.059</td>
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<td>SRMR</td>
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<td>0.029</td>
<td>0.029</td>
<td>0.033</td>
<td>0.032</td>
<td>0.036</td>
<td>0.037</td>
<td>0.038</td>
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</table>
5.3.8.2 Personality, Demographics and Attitudes Towards Insurance Fraud

As the Attitudes Towards Insurance Fraud scale was correlated with several of the demographic variables, I examined whether these variables offered incremental prediction. Each of the demographic variables was regressed sequentially alongside personality model E (Table 5.7). Both Age and Educational Attainment accounted for unique variance beyond that explained by personality (Table 5.7, Models F-H). The final model, depicted in Figure 6.1, consisted of Dishonest-Opportunism, Consideration of Future Consequences, Optimism, Age and Educational Attainment and was able to account for 63% of the variance in Attitudes Towards Insurance Fraud. This is a 5.4% increase on the variance explained by personality alone.

5.3.8.3 Demographics and Attitudes Towards Insurance Fraud

Given the significant correlations between the demographics and Attitudes Towards Insurance Fraud, and the significant contribution in explained variance over and above personality, it was decided to estimate regression models just comprising demographic variables using the procedure outlined above. Only Age ($\beta = -.432, p<.001$) and Educational attainment ($\beta = -.255, p<.001$) accounted for unique variance in Attitudes Towards Insurance Fraud; collectively, accounting for 22.4% of the variance ($\chi^2 = 48.949, \text{CFI} = 0.947, \text{TLI} = 0.907, \text{RMSEA} = 0.104, \text{SRMR} = 0.042$).
Figure 5.1. Model H: Regression of Attitudes Towards Insurance Fraud (ATIF) on Dishonest-Opportunism, Consideration of Future Consequences (CFC), Optimism, Age and Educational Attainment
5.3.9 Differentiating Dishonest-Opportunism and Attitudes Towards Insurance Fraud

In the above models, much of the strong relationship between personality and Attitudes Towards Insurance Fraud is attributable to the Dishonest-Opportunism scale (53.4% shared variance). Given that both of these scales are newly developed within the current study, questions might arise concerning whether or not the two variables are in-essence synonymous. The two scales most certainly ask different questions and show some differential relationships with the other personality variables assessed here (Table 6). Further, Dishonest-Opportunism ($r = .31$) correlated more strongly with Social Desirability than did the Attitudes Towards Insurance Fraud scale ($r = .24$). However, they do seem to tap similar behaviours. Thus, the discriminant validity of the two scales was examined further.

First, an EFA of items from both scales was conducted, using the WLSMV estimator and Geomin rotation. Only two eigenvalues satisfied the Kaiser criterion (factor one, Fraud = 5.276, Factor two, Dishonest-Opportunism = 1.629). The two factors exactly replicated the two scales. There were just two cross factor loadings greater than 0.2, one from the Dishonest-Opportunism item “I admire a really clever scam” onto the Fraud factor (0.286) and one in the other direction (0.233; fraud item six). Thus, the EFA results provide support for the distinctiveness of the two scales.

Second, single and two factor, item level confirmatory models were tested. The a priori two factor model ($\chi^2 = 286.707$, CFI = 0.958, TLI = 0.947, RMSEA = 0.076) fit the data well and considerably better than did the single factor model ($\chi^2 = 421.528$, CFI = 0.914, TLI = 0.899, RMSEA = 0.097). Both the exploratory and confirmatory factor models suggest that the two scales are related but distinct.

Finally, Fornell and Larcker (1981) proposed a test of convergent and discriminant validity of latent variables. According to this method, the average variance
extracted (AVE) from latent variable indicators should be greater than 0.5, which it was for both scales. Further, the correlation coefficients between latent variables should be smaller than the square root of the AVE. The square root of the AVE was 0.730 for the Attitudes Towards Insurance Fraud scale and 0.773 for Dishonest-Opportunism, both greater than the correlation between the two which was 0.693. This validity test thus supports the convergent and discriminant validity of the two scales.

5.3.10 Personality and Attitudes Towards Insurance Fraud – Alternate Model

Despite the various tests demonstrating discriminant validity of the Attitudes Towards Insurance Fraud scale and Dishonest-Opportunism, concerns regarding the conceptual overlap might persist. In order to pre-empt such concerns and to show that the other personality variables examined here are still able to account for a substantial proportion of the variance in Attitudes Towards Insurance Fraud, a further series of regression models were estimated following the same stepwise regression procedure. However, Dishonest-Opportunism was excluded from all analyses. The final alternate personality only ($\chi^2 = 235.004$, CFI = 0.944, TLI = 0.939, RMSEA = 0.052, SRMR = .043) and combined personality and demographic variable ($\chi^2 = 293.517$, CFI = 0.934, TLI = 0.910, RMSEA = 0.059, SRMR = .040) models are displayed in Table 10 (Models J-K). The four personality variables of Callousness, Deferred-Gratification, Optimism and Conduct Problems collectively explained 36.5% of the variance in Attitudes Towards Insurance Fraud. The final combined model consisted of the same four personality variables, but was supplemented by age and educational attainment, which model accounted for 43.8% of the variance; the demographic variables explaining an additional 7.3% of the variance.
Table 5.8

Parameter estimates and fit statistics for the alternate personality and demographic latent variable regression models

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<td></td>
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<tr>
<td>Callousness</td>
<td>-.381**</td>
<td>.363**</td>
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<tr>
<td>Deferred-Gratification</td>
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<tr>
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<td>-.209**</td>
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<td>$r^2$</td>
<td>$r^2$</td>
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<tr>
<td></td>
<td>36.5</td>
<td>43.8</td>
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5.3.11 Claims History

Alongside prediction of Attitudes Towards Insurance Fraud, the present study also collected information pertaining to participants’ claims history (i.e. the number of claims previously made). The general goal here was to examine whether personality and attitudes to fraud relate to the quantity of previously submitted insurance claims. Participants were split into two groups, those who had previously claimed and those who had never claimed.

5.3.12 Motor Insurance Claims History

Of the sample, 249 participants had made one or more insurance claims, 226 had made no claims. Of the 249 claimants, 133 had made one claim, 71 had made two claims, 32 had made three claims, 6 had made four claims, 2 had made 5 claims and 5 had made more than five claims. One-hundred and fifty-six of the claimants were male and 93 were female. The mean age of claimants was 44.3 and 39.6 for non-claimants.

In order to explore differences in personality and Attitude Towards Insurance Fraud between claimants and non-claimants a multivariate analysis of covariance
(MANCOVA) was computed. Whether a person had claimed or not was used as the grouping variable, the personality traits and Attitudes Towards Insurance Fraud were the outcome variables, and the demographic variables of age, sex, marital status, employment, salary were entered as covariates. A significant main multivariate effect was observed (Pillai’s Trace = 0.118; F = 4.058, p < 0.001, ηp² = 0.118). Follow up univariate analyses revealed that only Attitudes Towards Insurance Fraud, Deferred-Gratification, Dishonest-Opportunism and Risk-Taking differed significantly between claimants and non-claimants. The results are shown in Table 5.9.

Table 5.9

<table>
<thead>
<tr>
<th>Personality differences between more claimants and non-claimants</th>
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<td></td>
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<td><strong>Claimants</strong></td>
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</tr>
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</tr>
<tr>
<td>Impetuousness</td>
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<tr>
<td>Self-Regulation</td>
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<td>Deferred-Gratification</td>
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<tr>
<td>Consideration of Future Consequences</td>
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<tr>
<td>Callousness</td>
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<td>Conduct Problems</td>
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<td>Machiavellianism</td>
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<tr>
<td>Dishonest-Opportunism</td>
</tr>
<tr>
<td>Risk-Taking</td>
</tr>
</tbody>
</table>

5.1.13 Logistic Regression of Motor Claims

Stepwise forward maximum likelihood binary logistic regression analyses were used to build a model that could best explain group membership (non-claimant vs. claimant). The base model, which predicted group membership by entering all cases into the most frequently occurring category, classified participants as claimants or non-
claimants correctly in 47.3% of cases. This model was used as a comparator to evaluate three subsequent models, namely, a personality only model, a demographic and personality model, and a demographic, attitude and personality model.

The first model specified was the personality only model. All 10 personality variables were simultaneously regressed on claims history. The model whilst reliable (Hosmer & Lemeshow: $X^2 = 133.8, df = 4, p = .0005$) offered only slightly improved classification of 53%.

The second model tested was both hierarchical and stepwise in nature. In step one, the demographic variables were entered. In the second step, all 10 personality variables were entered. The resultant model was shown to be reliable by the non-significant Hosmer and Lemeshow test: $X^2 = 7.67, df = 8, p = .466$ and showed a substantial increase in successful group classification, correctly categorising 72% of the participants. The model which consisted of Age (Exp($\beta$) = 1.073)\(^{29}\), Risk-Taking (Exp($\beta$) = 1.340), Dishonest-Opportunism (Exp($\beta$) = 1.462), Conduct Problems (Exp($\beta$) = 1.223) and Deferred-Gratification (Exp($\beta$) = 0.804) proved to be more adept in identifying those who had claimed (79% classified correctly) than those who had never claimed (65.1% classified correctly). Further, the model proved to be particularly adept in identifying participants considered frequent claimants (3 or more claims) with 83% of frequent claimants correctly classified.

Overall the model indicates that the older, the more dishonest, opportunistic, ‘risky’ and tolerant of fraudulent behaviour an individual was, the greater the probability that they had previously made a car insurance claim. Interestingly participants’ gender, number of dependants, marital status, employment status, level of

\(^{29}\) Exp(B) coefficients greater than 1 (e.g. 1.2) suggest a positive relationship whilst those smaller than 1 (e.g. 0.8) suggest a negative relationship. The greater the difference between the Exp(B) and 1, the more influential the predictor.
education and annual salary failed to contribute to prediction of whether participants had submitted an insurance claim.

The third and final model tested entered demographics in Step 1, Attitudes Towards Insurance Fraud in Step 2 and the personality variables in Step 3. The resultant model which consisted of age, Attitudes Towards Insurance Fraud, Deferred-Gratification and Dishonest-Opportunism increased the accuracy of overall participant classification to 78%: Correctly classifying 82% of claimants and 68.4% of non-claimants, and again, identifying 83% of frequent claimants. The results are displayed in Table 5.10.

Table 5.10

<table>
<thead>
<tr>
<th></th>
<th>B</th>
<th>S.E.</th>
<th>Wald</th>
<th>Sig.</th>
<th>Exp(B)</th>
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<th>95% C.I. Upper</th>
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<td>.000</td>
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<td>.624</td>
<td>0.421</td>
<td>0.814</td>
</tr>
<tr>
<td>Dishonest Opportunism</td>
<td>.572</td>
<td>.155</td>
<td>14.098</td>
<td>.001</td>
<td>1.771</td>
<td>1.218</td>
<td>1.956</td>
</tr>
<tr>
<td>Constant</td>
<td>-2.971</td>
<td>1.230</td>
<td>9.240</td>
<td>.001</td>
<td>1.006</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

5.3.14 Home insurance claims history

A total of 325 participants had home insurance, 123 of whom had placed one or more claims. In contrast to Study 1, there was no relationship between personality and home claims. No significant personality differences between claimants and non-claimants were observed and personality failed to improve group classification over and
above Age and Salary (the only significant demographic predictors) which correctly classified 61% of participants.

5.3.15 Study 2 Results Summary

Both EFA and CFA of the Attitudes Towards Insurance Fraud scale suggested that it conformed to a single factor and that it possessed adequate reliability. Items from the eleven personality scales reduced to ten factors when subject to EFA. Items from the Opportunism and Integrity scales cohered to form a factor labelled Dishonest-Opportunism.

Three sets of regression models were estimated with a view to predicting Attitudes Towards Insurance Fraud. The three models accounted for a substantial portion of variance in Attitudes Towards Insurance Fraud (36%–63%). In sum, the models suggest that persons who are Dishonest and Opportunistic are particularly likely to condone insurance fraud, whilst Pessimistic and Callous individuals who are more concerned with the immediate outcomes of their actions have a greater tolerance of insurance fraud. Further, younger individuals and those who have less formal education show a greater propensity to endorse Insurance Fraud.

Finally, logistic regression revealed that the combination of Age, Attitudes Towards Insurance Fraud, Dishonest-Opportunism and Risk-Taking correctly classified whether participants had previously claimed on car insurance for 69.5% of participants. However, neither the demographic, attitude nor personality variables were related to home insurance claims history.

5.4 Discussion

This study examined the relationships between 11 personality traits (Impetuousness, Self-Regulation, Deferred-Gratification, Consideration of Future Consequences, Callousness, Conduct-Problems, Integrity, Machiavellianism, Opportunism, Optimism, and Risk-Taking), Attitudes Towards Insurance Fraud and
insurance claim history. Consistent with the main argument of this thesis, personality traits were found to predict a substantial proportion of variance in customers’ Attitudes Towards Insurance Fraud. In addition, the study again reveals the utility of personality variables in discriminating between motor claimants and non-claimants. However, in contrast to Study 1, personality did not add value in identifying home insurance claimants. In combination with the first study, the results provided support for the argument that personality is predictive of financial behaviour in multiple domains. The main results are discussed below with regard to their theoretical and practical significance.

5.4.1 Attitudes Towards Insurance Fraud

The Attitudes Towards Insurance Fraud scale was so named to maintain continuity between studies one and two. However, the title is perhaps not as descriptive as it could be. The scale consists of a series of scenarios that require participants; first, to indicate whether, if they were in the situation depicted, they would act fraudulently or not, and second, to indicate the degree of certainty with which they would take that course of action. Half of the scenarios concerned the participants own behaviour and the other half concerned how they might advise a friend or family member. So, although participant attitudes towards fraud will be inherently embedded within responses, the scale is more precisely assessing expected behaviour; it is more of a situational judgement measure, than a direct measure of attitudes.

Psychometric evaluation of the Attitudes Towards Insurance Fraud scale suggested that it was unidimensional and possessed good reliability. In terms of validity, the scale was correlated in the hypothesised direction with all of the personality traits measured. In particular, a high correlation with the personality variable of Dishonest-Opportunism indicated convergent validity. Using equations from Fornell and Larcker (1981) both constructs were shown to be distinct, despite the high
correlation, supporting the discriminant validity of both scales. Further, the small correlation between the Attitudes Towards Insurance Fraud scale and a measure of social desirability suggested that participants did not use great levels of impression management when responding to the scenarios. Finally, motor claimants scored significantly higher on the Attitudes Towards Insurance Fraud scale than did non-claimants, suggesting a degree of criterion validity. In sum, the Attitudes Towards Insurance Fraud scale possesses good reliability and has evidenced factorial, divergent, convergent and criterion validity. In totality these results suggest that the scale represents a promising first step in the measurement of customers’ willingness to commit insurance fraud and that further use of the scale is warranted. The two ideal future studies to further validate the scale would be: (i) a group differences study between those known to have committed insurance fraud, but not been ‘caught’ or ‘punished’ and those who have never committed insurance fraud, and (ii) a longitudinal investigation which examines whether responses to this scale could predict involvement in future fraudulent activity.

Although there are undoubted strengths to the Attitudes Towards Insurance Fraud Scale, there are also some possible measurement-based limitations. First, some colloquial terminology was used in the question wording. Some colloquial terms were used in order to generate a sense of conversation and informality in the scenarios. All questions were read by numerous people prior to use for sense checking and none raised specific concerns. Nevertheless, it is possible that the colloquial terminology was not fully understood by all respondents. The response options were also more complex than the standard likert-type response scales used in all other measures, which may have influenced response trends. Finally, the response options did not include all possible responses to the scenarios presented. As a result, participants’ responses may not reflect what their actual real-world choices would be. However, in all instances, the two
responses options ultimately offered the choice to condone or condemn the insurance fraud discussed, thus participant responses will accurately reflect whether or not accept the fraud as reasonable or not.

Responses to the Attitudes Towards Insurance Fraud scale revealed that 24% of respondents condoned at least one form of insurance fraud, and that 30% would encourage a friend or family member to do so. These results are in line with previous surveys conducted by the ABI (2011) which asked whether or not people had previously submitted fraudulent claims. It is interesting that more people were willing to endorse the fraudulent response when (hypothetically) advising others than when they were (hypothetically) carrying out the behaviour by themselves. The self and other scenarios were matched in terms of opportunism and blatant criminality so there is no reason to expect that the response trends are the result of question bias. Thus, it appears that people are perhaps more willing to admit to approving of fraudulence when they are not the perpetrators. One possible interpretation of this result is that participants generally are unwilling to oppose a view espoused by a (hypothetical) friend or family member and thus agree with the suggested fraudulence.

Another possible interpretation can be drawn from the recent research of Ariely and colleagues (2012). Ariely and colleagues conducted a series of experiments that examined the extent of cheating and fraud in a range of scenarios from tax receipts to golf scores. They found a consistent trend, namely, that people cheat but only by a little. The authors suggest that the cheaters or fraudsters cheat by small enough margins so that they can justify their behaviour and not overly distort their positive self-image of being a “good person”. Perhaps, this phenomenon is operating here. Participants will admit to a little cheating in the first person so that they may continue to see themselves as honest and moral, but when the behaviour involves others, the behaviour does not
necessarily influence their self-perception, so, they are willing to endorse greater levels of fraudulence.

From both a measurement and theoretical perspective, future research should examine which type of scenario (self or other) most closely represents actions in real life. That is, is 24% of the sample likely to commit fraud or is the figure closer to 30%? Answering this question will allow further development of the Attitudes Towards Insurance Fraud scale and perhaps bear implications for the measurement of other illegal and socially undesirable behaviours.

5.4.2 Personality and Attitudes Towards Insurance Fraud

The fraud scale was correlated with all ten personality variables extracted from the EFA. The correlations were quite varied in magnitude, ranging from .15 (Machiavellianism) to .69 (Dishonest-Opportunism) with a mean correlation of .35. The three largest correlations were shared with Dishonest-Opportunism, Callousness and Conduct Problems. These three traits are all indicative of self-serving behaviour carried out with little acknowledgement or concern for its effect on others. Insurance fraud could be defined as such since inflating a claim for one’s own financial gain has a negative impact on fellow insurers and customers. Machiavellianism shared the smallest correlation, suggesting that manipulation of others is not especially related to insurance fraud. Given that insurance fraud is often considered a “victimless” crime as the people defrauded are not always obvious, this is perhaps not so surprising. It could be the case that Machiavellianism would be more closely related to fraudulent schemes, such as Ponzi schemes, where there is human contact between the fraudster and the victim.

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30 Named after Charles Ponzi, a notorious fraudster, a Ponzi scheme is a fraudulent investment operation that pays returns to its investors from their own money or the money paid by subsequent investors, rather than from profit earned through legitimate means. The Ponzi scheme usually entices new investors by offering higher returns than other investments, in the form of short-term returns that are either abnormally high or unusually consistent. Perpetuation of the high returns requires an ever-increasing flow of money.
Two separate sets of latent variable regression models using the personality traits to predict Attitudes Towards Insurance Fraud were estimated. The first set included Dishonest-Opportunism whilst the second set did not. The second set of models were estimated, despite discriminant validity evidence showing that the Dishonest-Opportunism and Attitudes Towards Insurance Fraud scales are distinct, due to concerns that might arise regarding the newness of the Dishonest-Opportunism scale and the very high correlation ($r = .69$) it shared with the Attitudes Towards Insurance Fraud scale. In terms of the theoretical and practical implications of this research, it is reassuring to note that the two sets of models present a rather similar picture. Three main personality trait groups were identified as important.

First, fraudsters score higher in traits related to self-serving, dishonest and unethical behaviour with little or no regard for the effects on others. In the first set of models, this is encapsulated by Dishonest-Opportunism; and in the second set of models by Callousness and Conduct Problems. These findings are in line with the results of Collins and Schmidt (1993), who found that managers who had committed financial crimes were more likely to be norm resistant, distrustful, irresponsible, unethical and opportunistic. Ultimately the positive relationship between Attitudes Towards Insurance Fraud, Dishonest-Opportunism, Callousness and Conduct Problems suggests that those who condone insurance fraud share some relatively anti-social traits and are more interested in personal gain than the well-being of others.

The second most predictive variable in the first set of models was Consideration of Future Consequences, whilst in the second set of models it was Deferred-Gratification. Both were hypothesised relationships that suggest fraudsters prefer instant from new investors to keep the scheme going. Once new investment ceases, the operation usually collapses.
rewards (Deferred-Gratification) and pursue them without thinking through the potential future consequences of their actions.

The third predictor variable in both sets of models was Optimism. However, contrary to the hypothesis that likely fraudsters would be optimistic in that they expect to ‘get away’ with crimes, the current evidence suggests that those who condone insurance fraud have a generally negative view of the world. High scores in Attitudes Towards Insurance Fraud were correlated with low Optimism, or a trait Pessimism position characterised by feelings of disenfranchisement, anger, loneliness and exclusion. Often, big business, capitalism and financial institutions are viewed as negative entities. Perhaps there is a relationship between pessimism, negativity in general and disenfranchisement which then lends itself to counterproductive and illegal economic behaviour. In Study 1, it was noted that whilst not measured well psychometrically, there was a recurring theme in interviews that a negative view of the insurance industry might drive claims behaviour (e.g. Insurers make enough profit from me to pay out every time; I would gain satisfaction from winning an insurance claim). Perhaps trait Pessimism captures this notion and lends itself to fraudulent claims behaviour. It is of interest to examine whether this notion holds in empirical examinations and whether other traits associated with negativity, traits related to Neuroticism for example, are also related to fraudulent economic behaviour.

The results relating to Attitudes Towards Insurance Fraud have a number of implications for theory, research and practice. First, the notion put forward by Sutherland (1949; 1961; 1983) and contemporary supporters (e.g. Ruggiero, 2000; Shapiro, 1990) that economic crime, unlike general crime, is wholly a result of situational factors and that psychological characteristics such as personality have “no relevance” is not supported by the current evidence. Instead, the current study adds to recent empirical research that has begun to identify personality as an important variable
in economic crime (e.g. Alalehto, 2003; Bauwens & Egan, 2011; Blickle, Schlegel, Fassbender & Klein, 2006; Collins & Schmidt, 1993; Ganon & Donegan, 2006; Miyazaki, 2009). The second study of this thesis points to a number of personality traits that provide a particularly descriptive picture of the individual differences possessed by those who condone insurance fraud. Future research or theory seeking to understand and explain dishonest, immoral and illegal economic behaviours must consider individual differences in personality.

Second, the results raise interesting questions about the potential role of personality in other dishonest financial behaviours. With stories such as the Libor rate fixing scandal\textsuperscript{31}, aggressive tax avoidance schemes and MP’s expenses scandals becoming seemingly more common, certainly receiving more media attention, it is likely that research interest in such behaviours will increase. As noted above, such research would be well advised to assess relevant personality variables where possible. Future studies of a similar nature to this one are likely to find that personality is predictive of dishonest economic practice in the organisational realm. The potential of such research to result in the generation of selection and assessment tools is an exciting challenge for future research. It could be the case that personality variables, like those highlighted in this study, could be screened for in order to reduce the risk of hiring toxic employees. These remain intriguing and exciting future avenues to be explored. Hopefully, this study has gone some way to providing a platform for such research.

5.4.3 Motor Claims

A MANCOVA revealed that previous claimants scored significantly higher in Attitudes Towards Insurance Fraud, Dishonest-Opportunism and Risk-Taking and lower in Deferred-Gratification than did those who had never claimed. Further, results of a

\textsuperscript{31} The London Interbank Offered Rate (Libor) fixing scandal refers to a series of transactions in which banks fraudulently inflated or deflated the Libor rates to increase trading profits or to improve impressions of creditworthiness.
logistic regression model revealed that Age, Attitudes Towards Insurance Fraud, Deferred-Gratification and Dishonest-Opportunism were able to correctly classify 82% of claimants and 68.4% of non-claimants, and again, identifying 83% of frequent claimants There are two particularly interesting features of these results.

First, with regard to the traits examined in Study 1 and here, contrasting results were obtained. Deferred-Gratification was shown in Study 1 to be an important trait in claims submission. The salience of Deferred-Gratification was again supported in the second study. However, Risk-Taking, which in Study 1 showed no relationship with claims submission, discriminated significantly between motor insurance claimants and non-claimants and improved classification of participants in the second study. Given the theoretical link hypothesised between Risk-Taking, driving behaviour and claims submission, and the increased sample size, it is tempting to take the second study as a confirmation of such hypotheses. However, given the variability in the findings across the two samples, considerable ambiguity concerning the role of Risk-Taking in insurance claims behaviour remains.

Second, the variables which bear the greatest relation to insurance claims in this study are actually those indicative of unethical behaviour. Across both Study 1 and 2, the largest difference between claimants and non-claimants was observed in their Attitudes Towards Insurance Fraud. In addition, the personality variables of Dishonest-Opportunism and Conduct Problems, which were predictive of fraudulent attitudes, were also shown to retrospectively predict claims behaviour. These results point to the possibility that a sizeable proportion of the claims submitted by the participants in the study were not wholly legitimate.

A longitudinal study, rather than one that seeks to retrospectively predict claims behaviour, is now needed to clarify and confirm the role of personality in claims behaviour.
5.4.4 Home insurance claims

Somewhat surprisingly, the personality variables assessed and the attitudes measured were unrelated to home claims. This is especially surprising given that the role of Deferred-Gratification in motor claims observed in Study 1 was also observed here. Even fewer participants in this sample (50) had made more than one home insurance claim than was the case in Study 1. There was generally much less variance in home claims behaviours. It is likely that along with some of the potential issues discussed in Study 1, the lack of variance in the outcome variable contributed to the observed lack of relationship. Nevertheless, it is seems to be the case that personality is more of a factor in motor claims than in home claims and that attitudes, whether towards claims in general or fraudulence, are unrelated to home insurance claims. However, future research should not neglect this area of research. Rather, future studies should seek to utilise purposive sampling strategies to ensure that they capture a large and representative sample of frequent home insurance claimants before any firm conclusions can be drawn. It would also be of interest to examine how having multiple ‘personalities’ living in one home influences claims behaviour, if at all. There is one further difference between automobile and home insurance claims that is particularly relevant to the issue of insurance fraud. There is a far greater possibility to submit largely unverifiable personal injury claims (e.g. whiplash) during automobile claims than during home insurance claims. This may also mean that individual differences in integrity based traits such as Dishonest-Opportunism are not able to be expressed as freely.

5.4.5 The central Impulsivity-related traits

As in Study 1, both EFA and CFA supported the psychometric distinctiveness of the four Impulsivity-related traits measured here. In relation to insurance fraud, the Impulsivity-related traits were all modestly correlated in the .2-.4 range. Both
Consideration of Future Consequences and Deferred-Gratification accounted for significant unique variance in consumer attitudes toward insurance fraud. Despite being correlated with fraudulent attitudes, neither Impetuousness nor Self-Regulation added unique predictive value to any of the models tested. Thus, traits resulting in foresight, planfulness and a reduced sensitivity to reward manifested in the willingness/ability to pass up immediate gratification appear to be most closely aligned with insurance fraud. Fraudulent claims tend not be the product of rash action, but short-sighted, reward seeking, decision-making.

Had this study adopted the prevailing view that these traits are subcomponents of a broader Impulsivity trait and only Impetuousness had been assessed, we would have come to the conclusion that insurance fraud is largely unrelated to impulsiveness. Equally, had only Consideration of Future Consequences or Deferred-Gratification been taken as representative of the Impulsivity ‘family’, we would have come to an altogether different conclusion. The results again affirm the benefits of differentiating between Impulsivity-related traits both in terms of predictive power but also in the accurate understanding and formulation of theory and knowledge.

In the previous study it was suggested that should “Deferred-Gratification prove to be of equal or similar importance in the subsequent studies, this thesis would serve as a real impetus to develop a new, more thorough, measure of the construct and a broader scoped Impulsivity-related trait measure”. The second study adds weight to these calls.

5.4.6 Dishonest-Opportunism

Items taken from the 11 personality scales discussed in the introduction were subject to Exploratory Factor Analysis. This strategy was employed for two main reasons. First, a number of the scales contained conceptual overlap (e.g. the Impulsivity-related scales, Callousness and Machiavellianism). Resultantly, it is possible that a smaller number of latent variables actually underlay the item set.
Secondly, as the items were only subsets (e.g. 6 of 10) of the full scale, it was necessary to examine whether the scales still conformed to their original structure. The most satisfactory solution was a ten factor solution. Nine of the eleven scales were shown to be robust and mostly conformed to their a priori structure. The only notable exception was that the Opportunism and Integrity items collapsed into a single scale. The resultant scale was named Dishonest-Opportunism as the items represented a willingness to cheat, lie and steal if the opportunity presented itself without any obvious chances of being ‘caught’.

The items intended to measure Opportunism and Integrity formed a single psychometrically robust scale, which raises interesting questions about the measurement of integrity. Integrity measurement is ‘messy’. As briefly covered in the introduction, there are a number of varied conceptualisations and measurement tools. So, intriguing questions remain concerning whether integrity is best represented through this new construct, whether Dishonest-Opportunism is indeed a new construct, and if so, where it fits within a broader scheme of integrity-based traits and personality as a whole.

5.4.7 Limitations

The limitations of this study are very similar to those in Study 1. For example, despite the sample being somewhat diverse and larger than most used in previous personality-economic crime studies, it could have been larger and more representative.

Although the data were correlational, through the use of latent variable modelling techniques, causal pathways were examined. Further, it is hard to argue that insurance claims fraud shapes personality, perhaps if one is caught and incarcerated, but this is highly unlikely. It makes much more sense to suggest that it is a person’s personality that influences their claims behaviour and view of fraud, than the other way around.
A substantial limitation is the failure to obtain objective and independent measures of participants’ actual insurance claims and fraud behaviour, instead relying on self-reports and attitudinal measures. That both the outcome variables and personality traits were measured using self-report tools might have resulted in common method variance. As in Study 1, a number of small, near zero correlations and well-fitting structural models suggests common method variance not to be too great an issue. Given the cross-sectional survey design employed and the time and monetary constraints of this thesis, such concerns are unavoidable. Great efforts were expended in the design of the measures and the data collection strategies employed to minimise common method problems. Socially desirable responding can also be an issue within self-report studies. Correlations with a short Social Desirability measure were no more than moderate, ranging from .122 to .384, suggesting that some socially desirable responding was present but that it was not a large problem in this data. However, it must be noted that Social Desirability scales are also open to response distortion and so caution must be placed on any conclusions. Equally, there is now growing evidence that Social Desirability scales do not really measure response distortion but rather measure personality, more specifically, socially-based self-control (Uziel, 2010). Inspection of the correlations observed in this study, support this claim as the largest correlates are Conduct Problems and Self-Regulation. As a result, there seems to be questionable value to including a self-report Social Desirability scale in future studies.

On the whole, the limitations serve more as cautionary notes not to generalise the findings with too much certainty before further validation work has been conducted, rather than as markers of flawed research with unreliable outcomes. All research is subject to limitations, this study is no different. However, in the main, there are few reasons to suspect that the limitations of this study are greater than those of the many cross-sectional survey studies that have been conducted previously and have served to make critical breakthroughs and improve our knowledge in a number of areas.
5.4.8 Summary

This study has shown that personality is predictive of consumers’ attitudes towards, and willingness to commit, insurance fraud. As in Study 1, personality was found to be more influential than demographic variables in predicting attitudes, and to add significant prediction of previous motor claims over and above demographic variables. However, home insurance claimants were found not to differ from non claimants in personality scores. Nevertheless, the results provide further affirmation for the rationale, that personality is predictive of a variety of financial behaviours. We can now add unethical and illegal financial acts to the list.

Further psychometric support was gained for the independence of the four Impulsivity-related traits assessed in this study. In addition, the various regression models provided further evidence that failing to discriminate effectively and select the most appropriate Impulsivity-related trait can have profound effects on the conclusions drawn from any study. The central contention that Impetuousness, Self-Regulation, Deferred-Gratification and Consideration of Future Consequences are influential across economic behaviours was supported, though not as strongly in this second study. Although all four central traits were shown to correlate with the Attitudes Towards Insurance Fraud scale, only Deferred-Gratification showed any relationship to claims submission. Still, it appears that the central traits are related to decisions regarding insurance fraud.

The results from Study 2 are generally positive and certainly reveal the importance of individual differences in personality in insurance fraud. The final study of this thesis, which is presented in the next chapter, will examine to what extent personality, and in particular the central Impulsivity-related traits, can predict spending behaviour, credit use and saving.
Chapter 6

Study 3: Personality and Credit Use

Throughout this thesis, it has been argued that personality is a predictor of financial attitudes and behaviours and that certain personality traits (Impulsivity-related) are central to most (if not all) forms of financial behaviour. The first two studies largely supported these propositions in relation to insurance claims and insurance fraud. Building upon the positive results obtained thus far, the final empirical study extended the enquiry by examining whether personality is associated with the use of unsecured credit (i.e., credit cards and loans). More specifically, the extent to which a person’s self-reported spending behaviour, the number of credit cards and loans they possess and their levels of unsecured debt can be predicted by the central Impulsivity-related traits (Impetuousness, Self-Regulation, Deferred-Gratification and Consideration of Future Consequences) and a number of carefully selected outcome specific traits (Compulsivity, Narcissism, Anxiety and Insecure Attachment). The extension into credit use and debt, whilst intrinsically interesting and valuable, is also of particular importance for this thesis, as it offers perhaps a more rigorous examination of the argument that the central Impulsivity-related traits are useful in understanding financial behaviour across economic domains.

6.1 Introduction

“Far too many people aspire to a champagne lifestyle on a beer income”

(Brian Walden, former Labour MP)

When the application for this Ph.D was submitted, the ‘credit crunch’ or economic downturn, had yet to take full effect and certainly wasn’t a topic at the centre of public
consciousness as it is today. Regrettably, the economic backdrop of recession and austerity has served only to highlight the importance of this research.

As outlined in Chapter 1, section 1.3.1, personal debt within the UK reached record highs around 2008/2009 and although it reduced slightly in the wake of the financial crisis, borrowing is back on the rise (Credit Action, 2013; Mintel, 2013). Personal debt in the UK is approximately £1.42 trillion, almost equivalent to annual Gross Domestic Product (GDP) (Credit Action, 2013). Currently, unsecured debt (consumer credit) stands at around £210 billion, with the average household owing £15,507, which is approximately 65% of the average household wage (Credit Action, 2013). Such debt levels are often unsustainable, especially when personal circumstances change (e.g., redundancy\textsuperscript{32}), as evidenced by the fact that the equivalent of 320 people everyday were declared insolvent or bankrupt in 2012 (Credit Action, 2013). The magnitude of the debt problem within the UK and beyond makes for sober reading and highlights the need to understand better the antecedents of the individual financial behaviours that result in the accumulation of debt.

Alongside the financial consequences of irresponsible financial behaviour, unmanageable debts can have detrimental effects on mental and physical well-being (Dawson, 2003; Jenkins et al., 2008) and are often cited as antecedent of problematic outcomes such as depression, substance use (Kempson, McKay, & Willitts, 2004) and even suicide (Valins, 2004). Understanding the antecedents of fiscal irresponsibility is not just important for economic success but also for individual and societal well-being.

Traditionally, economists have viewed factors external to the individual as the most important drivers of financial behaviour. In consequence, historical explanations of financial irresponsibility have centred on societal and financial climates. For example, Leigh-Pemberton

\textsuperscript{32} Approximately 3 million people have been made redundant since 2008; the equivalent of 1,550 each day.
(1989) argued that sustained economic growth and rising wealth gave individuals confidence in their financial position, which in turn increased levels of borrowing. Similarly, Elliot (2005) argued that the gradual relaxation of credit constraints created an environment conducive to increased borrowing and spending, whilst within the sociological literatures there has been a tendency to explain increasing borrowing as a result of increasingly materialistic cultures (Watson, 2003).

Financial and societal climates are undoubtedly very important as they create the parameters within which individuals operate. For example, due to the financial crisis discussed above, lenders have been forced to restrict lending, meaning that credit is now more difficult to come by. Nevertheless, regardless of market conditions and societal trends, individuals exhibit substantial heterogeneity in financial behaviour; such variability points to the likelihood that some individual differences play a role (Furnham & Argyle, 1998). In order to capture individual differences, demographic variables such as age, gender and socioeconomic status have been popular in economic enquiries (due to the ease of conceptualisation and measurement). However, these variables offer surprisingly little predictive power in explaining credit use (e.g., Kamleitner et al., 2012; Livingstone & Lunt, 1992; Wang, et al., 2011).

There is now growing evidence that individual differences in personality are closely related to individual differences in spending, saving and credit use (e.g., Billieux et al., 2008; Hayhoe, et al., 1999; Hughes, Irwing & Booth, 2011; Joireman, et al., 2005; Kamleitner, et al., 2012; Livingstone & Lunt, 1992; Mansfield, et al., 2003; Mowen, 2000; Norvilitis, et al., 2006; Nyhus & Webley, 2001; Pirog & Roberts, 2007; Tokuanga, 1993; Vohs & Faber, 2004; Wang, et al., 2011). It is argued here that spending too much, saving too little and amassing large credit bills, whilst influenced by external factors and demographic variables, is primarily the behavioural manifestation of a combination of personality traits. The current empirical study
aims to examine this argument by investigating the role of personality in credit acquisition (credit type and quantity), spending behaviour, credit use and levels of debt.

Credit use is best conceived of as a process broadly including: (i) factors preceding credit acquisition (i.e. deciding whether or not to finance a purchase with credit), (ii) credit acquisition (choosing the type and quantity of credit), (iii) credit use (spending behaviour and debts amassed) and, (iv) repayment (Kamleitner & Kirchler, 2007; Kamleitner et al., 2012). Although cross sectional in nature, this study aims to examine a model which more closely represents some of the core elements of the credit use process.

The hypothesised model posits the following process: Personality → Credit Acquisition (number of credit cards and loans) and Financial Behaviour → Credit Card and Loan Debt. It is suggested that personality is likely to play a vital role in obtaining credit (both the type and amount) and also spending behaviour, both of which drive debt levels. In essence, this is a mediation model in which debt levels are influenced by personality through effects on credit acquisition and spending behaviour. It is hoped that such an approach will offer greater insight into the role of personality in the credit use process compared to most extant studies which have focussed exclusively on the propensity and extent of credit use, and can be considered “static” in their approach (Kamleitner, et al., 2012, p.11).

In addition to acknowledging the procedural nature of credit use, the study will also address two other areas of relative neglect. Most research to date has focused on the non-trivial topic of student credit use (e.g. Norvilitis, et al., 2003; 2006), whereas this study will use a general population sample. Also, the examination of different types of credit (cards and loans) will begin to address the imbalance which has seen a substantial body of evidence amassed around credit cards at the expense of other credit types. It might be the case that personality operates differentially across credit types and is possibly more salient in certain types of lending and spending (Kamleitner, et al., 2012). It is possible that buying shoes using a credit card
involves different psychological processes than buying a home extension using a loan. Only a handful of studies have considered consumer loans, mostly focusing on student loans (e.g. Norvilitis, et al., 2003; 2006), so this study is novel in being the first to consider a range of personality traits and loan debts.

6.1.1 Personality, Spending and Credit

“Researchers have attempted to identify personality characteristics that are related to the accumulation of debt. The results of these studies have been conflicting and, to date, have not pointed to any one personality characteristic that is clearly indicated as a risk for debt”


The first two studies, whilst built on empirical evidence, were largely exploratory due to the absence of past research examining personality and insurance. In contrast, a number of researchers have considered the links between personality and credit use (Norvilitis et al., 2003; 2006; Tokuanga, 1993; Wang et al., 2011; Young & Kamas, 2006) and closely related behaviours such as impulsive and compulsive spending (e.g., Mowen, 2000; Vohs & Faber, 2004), saving (e.g., Farkas & Johnson, 1997), gambling (e.g., Alessi & Petry, 2003; Cyders, et al., 2007; Parke, et al., 2004) and self-reported fiscal irresponsibility (e.g., Hughes, et al., 2011; Joireman, et al., 2005).

Nevertheless, research in this area remains in its infancy (Kamleitner, et al., 2012) and is under-developed compared to that of similarly important fields such as educational and occupational performance. As succinctly conveyed by Norvilitis et al. (2006) above, investigations of the personality-financial behaviour link are as yet far from conclusive. Hopefully, the work of this current study will further enhance our understanding by: examining different forms of Impulsivity, considering different forms of credit, and acknowledging the procedural nature of credit use. The remainder of this introduction will
focus on identifying likely predictor traits: first by reviewing evidence linking Impulsivity-related traits to credit use and second by examining the wider literature to identify additional, outcome specific, candidate traits.

6.1.2 Central Impulsivity-Related Traits

All four of the proposed central Impulsivity-related traits have been examined in relation to spending behaviour and credit use. Indeed, the vast majority of papers that have examined personality and credit use have used some form of “Impulsivity” (e.g., Billieux et al., 2008; D’Orlando & Sanfilippo, 2008; Groenland & Nyhus, 1994; Kamleitner, et al., 2012; Kamleitner, Hornung, & Kirchler, 2011; Livingstone & Lunt, 1992; Mowen, 2000; Norvilitis et al., 2003; 2006; O’Guinn & Faber, 1989; Pirog & Roberts, 2007; Webley & Nyhus, 2001). This body of work was discussed in Chapter 3 and played a crucial role in identifying the four ‘central’ traits used throughout this thesis. Thus, for the sake of brevity, only a brief recap of the evidence supporting the selection of the four central traits will be presented here.

Impetuousness, defined in this study as a tendency to experience strong impulses to act in a rash, reckless manner, has been found to play a significant role in several aspects of financial behaviour. Empirical studies have reported negative relationships with money retention (Hayhoe, et al., 1999) and saving for future outcomes (Wärneryd, 1995). Positive correlations have been observed with impulsive and compulsive buying (e.g., Billieux, et al., 2008), fiscal irresponsibility (Hughes, et al., 2011), credit card misuse (e.g., Pirog & Roberts, 2007) use of revolving credit (Wang, et al., 2011) and credit card debt (Mansfield, et al., 2003). Moreover, Impetuousness has been implicated in the decision to take out a credit card in the first place, often motivated by a free gift or special offer (Bianco & Bosco, 2002).

Self-Regulation is defined here as the ability/willingness to enact restraint in order to suppress, modify, and adapt one’s emotions, impulses or desires to act in accordance with the
situation. Higher levels of Self-Regulation have been found to relate to greater saving and less impulsive spending (Baumeister, 2002; Dittmar, 2004; O’Guinn & Faber, 1989; Strayhorn, 2002). Vohs and Faber (2007) conducted three studies which showed that a reduction in self-regulatory resources can lead to increased levels of impulsive spending, suggesting that managing spending and saving habits require significant, voluntary Self-Regulation. In addition, individuals in debt have also been found to display lower levels of self-control over their finances (Livingstone & Lunt, 1992).

Deferred-Gratification is defined here as a sensitivity to reward that is manifest in the willingness/ability to pass up enjoyment or something of value now with the aim of achieving something of greater enjoyment or value in the future. It has been noted that individuals who are able to defer gratification have a tendency to be frugal and exhibit financial prudence (Ray & Najman, 1986), which ultimately results in greater personal financial well-being. Deferred-Gratification was shown in the current author’s previous work to account for significant variance in self-rated Fiscal Irresponsibility (Hughes et al., 2011a; 2011b). Further, Deferred-Gratification has been implicated in consumers’ underestimation of future borrowing: in that individuals lower in Deferred-Gratification tend to borrow on credit cards despite initial intentions not to (Bar-gill, 2004). Bar-gill’s findings suggest that despite best intentions, individuals who are unable to defer gratification often get ‘sucked in’ to the buy now, pay later mentality. This supposition is further supported by the finding that Deferred-Gratification considered alongside non-dispositional predictors such as “financial knowledge” and “number of credit cards” has been identified as a significant predictor of revolving credit use (Wang et al., 2011) and student credit card debt (Norvilitis, et al., 2006).

The final central Impulsivity-related trait, selected to represent the planning/foresight factor is, Consideration of Future Consequences (Considering the future consequences of current actions and planning responses accordingly in order to achieve ones desired goals).
Humans often find it difficult to foresee the future consequences of a present action, and as such place less emphasis on those outcomes, making distant outcomes seem less important (Loewenstein & Prelec, 1992; Wood, 1998). Resultantly, people tend to under-indulge in activities which involve instant cost and future rewards (e.g., saving) but over-indulge in activities with instant rewards and future cost (e.g., shopping on credit) (O’Donoghue & Rabin, 2000). Indeed, Consideration of Future Consequences has previously been associated with financial decision-making: Joireman, et al. (2005) found that lower levels of Consideration of Future Consequences were associated with higher cognitive impulsive buying tendencies and that when faced with a hypothetical choice of investment options, those lower in Consideration of Future Consequences were more inclined to direct investment toward a purchase rather than savings. Further, Joireman, Kees, and Sprott (2010) showed that Consideration of Future Consequences is negatively correlated with indebted students’ compulsive buying tendencies and credit card debt.

In sum, the central Impulsivity-related traits have been shown to relate to the uptake of credit (Bianco & Bosco, 2002), underestimation of future borrowing (Bar-gill, 2004), irresponsible spending, a lack of financial planning (Wärneryd, 1995) and ultimately greater debt (Joireman et al., 2010; Mansfield et al., 2003; Norvilitis, et al., 2006). Thus, it appears likely that impetuous individuals, who lack self-control, fail to defer gratification and fail to consider the distant consequences of their immediate actions will use credit in a fiscally irresponsible manner: possessing numerous lines of credit, using that credit irresponsibly and ultimately accruing debts. It is hypothesised that participants self-reported irresponsible financial behaviour, number of credit streams (cards and loans), and their levels of unsecured debt will be positively correlated with Impetuosity but negatively correlated with Self-Regulation, Deferred-Gratification and Consideration of Future Consequences.
6.1.3 Outcome Specific Traits

“Impulsivity” is considered such a core element of spending and credit use research that many other traits have largely been neglected (Kamleitner et al., 2012). Nevertheless, it was hypothesised that a number of additional, outcome specific traits would add value when predicting spending behaviour and credit use. Thus, focussing on extant literature that has examined personality and credit use as well as other closely related behaviours, the following section discusses the outcome specific traits selected. Three general trait areas stand out as candidates, namely, Compulsivity, traits related to negative emotions, and traits related to status and ‘keeping up with the Joneses’.

6.1.4 Compulsivity

Compulsive buying is a phrase that appears throughout literature concerning psychology and spending. Compulsive buying can be defined as chronic, repetitive, excessive purchasing that becomes a primary response to negative life events, inner deficiencies or negative feelings (O’Guinn & Faber, 1989; Scherhorn, Reisch, & Raab, 1990).

Compulsive buyers misuse credit with sustained compulsive buying typically leading to excessive debt (Faber & O’Guinn, 1992). Compulsive buyers hold more credit cards than non-compulsive buyers (M = 3.7 vs. 2.2) and have larger balances as well as significantly more cards within $100 of their limit (O’Guinn & Faber, 1989). The accumulation of such debt means that compulsive buyers often pay around 50% of their monthly income attending to unsecured debts, which is significantly more than the 20-30% paid by non-compulsive buyers (Christenson, et al., 1994; Faber & O’Guinn, 1992; O’Guinn & Faber, 1989). In essence, compulsive buying can be seen as an extreme or maladaptive variant of the spending behaviour and credit use, likely to lead to poor money management and large levels of unsecured debt in general.
In their review of literature, O’Guinn & Faber (1989) found positive relationships between compulsive consumption behaviours and Compulsivity, arousal, excitement, fantasy and Sensation Seeking. They suggest that a general compulsive personality trait (alongside negative emotion traits discussed below) is the key personality component of compulsive spending. Given that the trait of Compulsivity is suggested to be a key component of compulsive buying, it seems sensible to include it in the current investigation. It is expected that those high in Compulsivity will demonstrate higher levels of irresponsible financial behaviour, hold greater numbers of credit cards and loans, and have higher levels of unsecured debt.

6.1.5 Negative Emotions

Many researchers have noted that negative mood states can influence spending (e.g., Faber & O’Guinn, 1985; O’Guinn & Faber, 1989; Scherhorn, 1990). Spending and the acquisition of material goods have long been associated with a positive increase in affect (at least in the short-term). Accordingly, consumers often spend to acquire goods with a view to improving their emotional state (Furnham & Argyle, 1998; Hanley & Wilhelm 1992; Rook & Fisher, 1995). Buying in order to alleviate bad moods and promote positive ones is a commonly discussed concept, referred to as ‘retail therapy’.

Gardner and Rook (1988) found that seventy five percent of consumers report improved affect following an impulse purchase, and the majority of consumers use impulse purchasing as a tool to increase feelings of pleasure, excitement, relaxation and power. Other studies have shown that impulsive and compulsive buying tends to be related to an emotional high and is often motivated by an emotional low (e.g., Faber & O’Guinn, 1988; Hanley & Wilhelm, 1992, 1992; Rook & Fisher, 1995).

Spending to change negative emotional states into positive ones is indicative of considerable variability in emotional stability. Indeed, the bulk of research in the area
suggests that spending is used as a mood leveller or enhancer (Faber & O’Guinn, 1992). It logically follows that those with a greater propensity to experience negative mood states and emotional variability are likely to engage in greater levels of unplanned and perhaps unnecessary purchases. Too many unplanned purchases are not conducive to financial well-being and may lead to the acquisition of credit to sustain emotion enhancing spending.

In personality terms, Neuroticism, which is defined as an enduring tendency to experience emotional instability and experience negative emotional states, such as anxiety, anger, guilt and depression (Costa & McCrae, 1987; 1992), is seen as a global trait related to the expression and regulation of emotions. Neuroticism (emotional instability) has been shown to correlate positively with irresponsible financial attitudes (Troisi et al., 2006) and financial practices (Nyhus & Webley, 2001) such as acceptance of debt and overspending. Of direct relevance to the current study, Pirog and Roberts (2007) reported a positive correlation between Neuroticism and credit card misuse. However, Neuroticism did not predict credit card misuse over and above a measure of Impulsivity closely related to Impetuousness. Instead, Pirog and Roberts (2007) suggested that the effects of Neuroticism are mediated by ‘Impulsivity’. Given the issues relating to criterion prediction and level of abstraction discussed in Chapter 2, namely that broader traits being multi-dimensional and abstract typically offer poorer prediction than do narrow specific traits, this is perhaps not surprising.

Accordingly and in keeping with the general ethos of the personality measurement adopted throughout this thesis, I sought to identify the most appropriate narrow traits that tap into the elements of negative emotionality of importance to financial behaviour.

When considering which traits are the best candidates to represent negative affect here, O’Guinn and Faber’s (1989; 2005) reviews of compulsive spending proved particularly useful. The authors identify two main types of negative emotion, driven by different motivations that seem most prominent in problematic spending.
The first is a general tendency to feel fearful and experience high levels of anxiety (e.g. Mowen & Spears, 1999; O’Guinn & Faber, 1989; 2005; Williams, 2012). The DAPP-BQ-BQ (Livesley & Jackson, 2009) Anxiousness scale seems ideally suited to tap this element of negative emotionality as it measures an enduring tendency to be fearful, nervous, and prone to worry. It is expected that higher scores in Anxiousness will be correlated with irresponsible financial behaviours, and elevated credit use.

The second can be described as negative emotions and lowered self-esteem driven by a need for social closeness and approval from others (O’Guinn & Faber, 1989; 2005; Otero-Lopez & Villedafrancos, 2009; 2013; Raab et al., 2011). The DAPP-BQ-BQ (Livesley & Jackson, 2009) Insecure Attachment scale taps into these elements as it denotes a fearful pattern of relationships with attachment figures and significant others, and involves fear of rejection, abandonment, or loss. It is expected that those who score highly on this scale will report more irresponsible financial behaviours, possess more credit cards and loans, and have higher levels of unsecured debt.

6.1.6 Narcissism

Increases in affluence have led to a general change in consumer behaviour (Cambell, 2004). The focus of spending has shifted, from the purchase of provisions to satisfy genuine needs, towards the use of consumer goods as a means of acquiring and expressing a sense of self identity (Dittmar, 2007; Elliot, 2005; Kasser & Kanner, 2004; Watson, 2003) and gaining social status (McCracken, 1990). Increasingly, consumer goods are viewed as indicators of success, identity, social status and happiness (Dittmar, 2000). Hence, it is not surprising that people often feel pressured to obtain material goods of equal social value to that of their peers (Elliot, 2005), ‘Keeping up with the Joneses’. In reality, such a belief structure is characteristic of a materialistic view, the belief that material goods can enhance life and help
towards the achievement of life goals (Richins, 2004, p. 210): ‘dress for the job you want, not the job you have’.

Numerous studies have evidenced a relationship between a materialistic mind set and financial outcomes. For example, people low in materialism tend to exhibit more careful saving behaviour (Katona, 1975; Livingstone & Lunt, 1992; Watson, 2003) whilst consumers with high levels of materialism hold more favourable attitudes to credit acquisition and excessive credit use (Kamleitner, et al., 2012; Park & Burns, 2005; Pirog & Roberts, 2007; Watson, 2003).

It is suggested here that one main personality driver of materialistic values is a person’s level of Narcissism. Those high in Narcissism generally have a sense of grandiosity, inflated self-worth, and need attention in order to satisfy beliefs that they are in some way special. One mechanism through which Narcissists may seek to stand out relative to others and elicit complimentary attention is through the acquisition of material goods (e.g. new technology, expensive clothing), often spending beyond their means (Rose, 2007; Cisek, Hart, & Sedikides, 2008). The few studies that have examined Narcissism and acquisition of consumer goods have noted positive associations with materialism, and compulsive buying (Roberts & Robins, 2000; Rose, 2007) and suggested that narcissists use consumption to increase positive attention in order to buffer against negative emotions (Cisek, Hart, & Sedikides, 2008).

It is expected that Narcissism will be positively correlated with the three outcome variables examined in this study: self-reported irresponsible financial behaviour, credit acquisition and debt.

6.1.7 Summary and Hypotheses

The current study is designed to provide new information regarding the role of personality in the credit use process. Four major sets of variables will be measured, namely,
the personality traits discussed above, self-reported financial behaviour, credit acquisition (number of credit cards and loans), and credit card and loan debt. It is hypothesised that Impetuousness, Compulsivity, Anxiety, Insecure Attachment and Narcissism will be positively related to irresponsible financial behaviours, credit acquisition and debts, whilst Self-Regulation, Deferred-Gratification and Consideration of Future Consequences will be negatively correlated with irresponsible financial behaviours, credit acquisition and debts.

As well as establishing the relationships between each of the sets of the variables and examining the predictive capabilities of personality in relation to each set of variables, a more detailed mediation model will also be examined. The hypothesised model proposes the following process: Personality → Credit Acquisition (number of credit cards and loans) and Financial Behaviour → Credit Card and Loan Debt. It is expected that the effects of personality on debt will be mediated through financial behaviour and credit acquisition.

The study will also make three further major contributions. First, the relationship between personality and debt will be assessed in a large non-student sample. Second, by examining different types of credit, both cards and loans, the study will begin to address the imbalance which has seen a substantial body of evidence amassed around credit cards at the expense of other credit types. This will allow us to see whether personality operates differentially across credit types. Finally, a new multi-dimensional self-report measure of financial behaviour is developed and examined. A multi-dimensional, psychometrically sound financial behaviour scale offers the potential to improve measurement of financial behaviour in future studies.

6.2 Method

6.2.1 Data Collection

Data were collected for approximately twelve weeks. Participants were recruited using convenience and snowball sampling methods. Participants were presented with either a paper questionnaire or were directed via one of three social networking sites (LinkedIn,
Facebook and Twitter) to the online questionnaire. Both formats were identical. The questionnaire was accompanied with a brief paragraph of information detailing the purpose of the study (to measure links between personality and financial behaviour) and closed with a detailed debriefing page. The full questionnaire can be found in Appendix 3.

In the first two studies, the majority of participants were recruited via the online method. In consequence, the samples tended to be educated to a higher level and be working in more senior roles than the population at large. Thus, in a bid to achieve a more representative sample, and in particular to survey individuals from lower socio-economic levels, the author spent six days over a period of two weeks collecting responses in a bookmakers located centrally in the city of Manchester. Responses were collected during the hours of 10am until 3pm and respondents were told that in return for completion they would receive a ‘free’ £1.00 bet. Very few customers of the bookmakers who spent more than a few minutes in the shop declined the offer. In total, 100 participants were recruited via this method. A bookmakers shop during traditional working hours was chosen as it was expected that in comparison to the largely white-collar, managerial samples recruited via the online method, a greater number of blue-collar, part-time or unemployed people would be encountered. In addition to the likely reduced levels of socio-economic status associated with being part-time or unemployed, it was also suspected that customers who spend non-trivial amounts of time within bookmakers would possess psychological characteristics and financial behaviours of particular interest to the current study. Indeed, as discussed throughout the thesis, gamblers tend to have greater levels of the Impulsivity-related traits examined here (e.g. Parke, et al., 2004) and often gambling behaviours correlate with other aspects of financial behaviour (e.g. Alessi & Petry, 2003).
6.2.2 Participants

The final general population sample recruited both online and in person numbered 611. Ninety-six participants (15.7%) chose not to disclose their sex and 1 (0.2%) participant responded using the ‘other’ option. Of the remaining 514 participants, 214 were male (35%) and 300 were female (49%). The participants were aged between 18 and 88 years of age, with a sample mean of 35.34 years (SD = 13.02). In terms of ethnicity, 98 participants did not respond. Of those who did respond, 384 (74.9%) were White, 47 (9.2%) were Asian or Asian British, 34 (6.6%) were Chinese, 16 were Black or Black British (3.1%), 12 (2.3%) were Mixed Ethnicity and 20 (3.9%) used the ‘Other’ option.

In terms of relationship status, 215 (35.2%) were married, 175 (28.6%) were single, 77 (12.6%) were living with a partner, 60 (7.6%) were divorced, separated or widowed and 96 (15.7%) chose not to respond. The vast majority of respondents had no dependents (308, 50.4%), whilst 85 (13.9%) had 1 dependent, 62 (10.1%) had 2 dependents, 31 had (5.1%) had 3 dependents, 25 (9.2%) had four or more dependents and 100 (16.4%) participants did not respond.

University level education was the most common within this sample; with 256 (42%) having either an undergraduate or postgraduate degree, 39 (6.4%) participants had non-university higher education, whilst 52 (8.5%) and 55 (9.1%) had schooling until the ages of 16 and 18 respectively. Five (1%) participants said they had no formal schooling and 96 (15.7%) did not respond. With regard to employment status, 290 (47.5%) were in full-time employment, 48 (7.9%) were in part-time employment, 64 (10.5%) were self-employed, 80 (13.1%) were students, 13 (2.1%) were retired, 40 (6.5%) were unemployed and 70 (11.5%) did not respond. Over one fifth of respondents (130) did not wish to disclose their current salary. Of those who did, salaries ranged from zero to over £100,000. Fifteen percent of the
sample earned less than £15,000 and 65% earned below the £42,475 which equates to the top rate UK tax threshold. The median income for the sample was approximately £27,000.

6.2.3 Measures

6.2.4 Financial Behaviour and Credit Use

A scale specifically designed for the current study was used to assess self-reported financial behaviour and credit use. The current measure relied heavily upon previous research conducted by the author (Hughes, 2009). Hughes (2009) conducted a systematic review of self-report financial behaviour scales. 16 scales were identified and tended to fall into one of 6 categories, namely, money attitudes (Fank, 1994; Forman, 1987; Furnham, 1984; Rubinstein, 1981; Tang, 1992; 1993; Yamauchi & Templer, 1982), credit card use (Roberts & Jones, 2001), credit attitudes (Xiao, et al.,1995), financial planning (Hershey & Mowen, 2000), general spending behaviour (Portelli, 2008; Shawcross, 2008; Hughes et al., 2011) and compulsive buying (Faber & O’Guinn, 1992). Hughes (2009) generated a list of unique items from all measures. Some of these items were not relevant here, specifically those pertaining to money attitudes, as these items tend to refer to emotional relations with money rather than tangible financial behaviour. Accordingly, money attitudes items were not considered during scale construction. The remaining items were assessed in terms of item structure and content by the author and two expert psychometricians. Those items deemed psychometrically undesirable (e.g. ambiguously written, assessing multiple issues) were removed from the list. Further, the items were considered in conjunction with past empirical research (e.g. Hughes, 2009; Hughes, et al., 2011) in terms of factor loadings and reliability.

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33 In the previous studies, measures of attitudes (towards claims and fraud) were used. However, here, a measure of actual behaviours was used. The reason for this discrepancy is twofold. First, it was not feasible to generate a behavioural based item set for insurance claims and fraud. Insurance claims and fraud occur so infrequently that behavioural patterns are less easy to assess, whereas we use money and credit frequently and so are more easily able to respond to behavioural items. The second reason is that past research using money attitudes has actually shown that they are not very good predictors of debt and often fail to contribute prediction over and above personality variables. In contrast, behavioural scales tend to show greater predictive validity.
Following the refinement process, a final list of 28 items were chosen to represent the major features of financial behaviour (e.g. spending behaviour, financial planning and saving behaviour, credit card use, spending as ‘retail therapy’, impulsive and compulsive buying) as assessed in previously constructed scales and identified in previous research (e.g. Hughes, 2009). The items were responded to using a 7 point Likert-type scale ranging from Very Inaccurate to Very Accurate. The psychometric properties of the scale are discussed in detail below. In brief, evidence suggests that the scale should have five primary factors (Irresponsible Spending, Financial Planning, Emotional Spending, Impulsive Credit Use, Poor Money Management) and a single, second-order, general factor. Each of the primary scales and the general factor had adequate reliability (CR > .90; α > .81).

6.2.5 Current Credit and Debt

In addition to the behavioural questions discussed above, four measures of current credit use were obtained: the number of active credit cards (scored as 1, 2, 3, 4, or 5+), total credit card balance across all cards (free response), the number of active loans (excluding mortgages and student loans, scored as 1, 2, 3, 4, or 5+), and total loan balance (excluding mortgages and student loans, free response).

6.2.6 Personality Measures

Eight shortened versions of extant measures were used to assess personality. The items retained were chosen with respect to: maintaining the breadth of content from the original scale, maintaining good factor indicators (i.e. items with high factor loadings), and removing duplicate or highly similar and thus redundant items. The decision as to which item to retain was taken by the researcher and several subject matter experts who have had extensive dealings with both the construction and analysis of personality scales. The final items sets for all scales can be found in Appendix 3.
When considered in their entirety, each of the scales have been used in numerous published studies and have been shown by their authors to possess adequate internal consistency ($\alpha = 0.72 – 0.84$). All scales were responded to using a common response format with individuals choosing from seven options ranging from Very Inaccurate to Very Accurate – in order to rate how accurately each statement described their typical behaviour. Participants were prompted to describe themselves as they generally are, not as they wish to be, and to describe themselves honestly in relation to other people they know of the same sex and roughly the same age.

Three of the four central Impulsivity-related traits (Impetuousness, Self-Regulation, and Consideration of Future Consequences) were assessed using the same measures as in the previous studies. Please see Chapter Four, section 4.2.4 for a more detailed discussion.

However, the fourth central Impulsivity trait, Deferred-Gratification, was assessed using a different scale. This decision was taken because three of Ray and Najman’s (1986) Deferment of Gratification Scale (DGS) items, which were used in the previous studies, contained content related specifically to financial behaviour (e.g. “Are you good at saving money rather than spending it straight away?”). The inclusion of such items may have biased the estimates of the correlations between predictor and outcome variables. In the intervening period between Study 2 and the current study, a new measure of Delayed-Gratification had been developed. Hoerger, Quirk and Weed (2011) developed the Delaying Gratification Inventory (DGI). The DGI consists of 35 items and assesses gratification delay in five domains (food, physical pleasures, social interactions, money and achievement). Hoerger et al. (2011) also generated a single factor 10-item short-form measure which demonstrated adequate levels of internal consistency ($\alpha = .79$) and good test-retest reliability ($r = .87$). A shortened version of the 10-item measure was used here. The two items assessing money
related delayed-gratification were not used, again in order to reduce potential overlap and biased estimates of the relationship between predictor and outcome variables.

*Narcissism,* which refers to a persons’ sense of grandiosity, power and entitlement and their desire for attention and the ‘limelight’, was assessed using The Dimensional Assessment of Personality Pathology - Basic Questionnaire (DAPP-BQ-BQ, Livseley & Jackson, 2009) Narcissism scale. An example item is “I am only really satisfied when people acknowledge how good I am”. This scale has been shown to possess adequate levels of internal consistency (α > .87) and test-retest reliability (r = .86).

*Compulsivity* concerns the extent to which individuals tend to experience compulsive urges towards order and tidiness, and as a result are highly reliable, conscientious and meticulous. The DAPP-BQ Compulsivity scale (Livseley & Jackson, 2009), which has been shown to possess good levels of internal consistency (α > .88) and test-retest reliability (r > .83), was used here.

*Anxiousness,* which is the tendency to feel fearful, worried and tense, was measured using the DAPP-BQ-BQ Anxiousness scale. Six items were used including “My problems always seem a little overwhelming” and “I am always worrying about something”. The scale has been shown to possess good levels of internal consistency (α > .93) and test-retest reliability (r > .92).

*Insecure Attachment* is characterised by fearful relationships with attachment figures, involving fear of rejection and abandonment. High scorers tend to depend on others for their wellbeing and often seek out others during times of stress and distress. The DAPP-BQ-BQ (Livesley, & Jackson 2009) Insecure Attachment scale was used here. Eight of the original sixteen items were selected, for example, “I worry about being abandoned by the person/people I love”; “I feel I have to impress people in order for them to love me”. The
scale has been shown to possess adequate internal consistency ($\alpha > .90$) and test-retest reliability ($r > .83$).

### 6.2.7 Demographic Measures

Nine demographic measures were used in this study, namely, Age, Sex, Number of Dependents, Ethnicity, Marital Status, Educational Attainment, Employment Status, Occupational Group, and Annual Salary not including bonuses. All measures were the same as those used in Studies 1 and 2. For further details please refer to section 4.2.5 and Appendix 3.

### 6.2.8 Missing Data

Some of the missing responses in the data were adjudged to be missing completely at random (MCAR; e.g. due to oversights when filling in the questionnaire). The randomly missing data were imputed using the expectation-maximisation method of estimation within SPSS 16. However, some of the missing data were systematic in nature. In all, approximately 15% of participants chose not to disclose their financial information relating to credit card and loan balances. As these data were not missing at random, imputation is problematic. Thus, in these instances, participants with missing data were removed from analysis. Although listwise deletion has it problems (as discussed in Chapter 4), it was the only feasible option.

### 6.2.9 Analysis Strategy

Consistent with the approach adopted in the two previous studies, scale structure was examined using a combination of Exploratory (EFA) and Confirmatory (CFA) Factor Analysis. Once reliable structures were identified, a series of stepwise latent variable regression models were estimated, in order to examine the extent to which personality predicted self-reported financial behaviour and four measures of credit use (number of credit
cards, credit card debt, number of loans and loan balance). Analyses were conducted using Mplus 7.0.

6.3 Results

6.3.1 Exploratory Factor Analysis

The Weighted Least Squares with adjusted Means and Variances (WLSMV) method of estimation and the Oblique, Geomin rotation were used for all EFAs. The results of a scree test (Cattell, 1966) and parallel analysis (Horn, 1965) were used to establish a plausible range of factors. Factors within this range were examined with regard to four criteria: (i) that each factor was required to be identified by at least 3 salient items loading greater than 0.3; (ii) that individual items had to load onto one factor at 0.3 or greater; (iii) solutions were preferred which minimised the number of cross loadings; and (iv) factors were expected to be theoretically coherent and interpretable.

6.3.2. Fiscal Responsibility and Credit Use items

A Kaiser-Meyer-Olkin (KMO) value of .90 and a significant Bartlett's Sphericity test ($\chi^2 (378) = 7049.355, p= 0.001$) indicated that the sampling adequacy and inter-item correlations were sufficient to justify a factor analysis of all 28 fiscal responsibility and credit use items. An initial unrestricted EFA returned 7 factors with eigenvalues greater than unity, whilst results from a parallel analysis and scree test suggested that the factor structure lay in the region of 4 to 7 factors. Of the initial 7 factors, factor six had just two salient loadings greater than 0.3. Upon inspection, it was clear that the factor was driven by item specifics (both items contained the phrase “I often run out of money”). The item with the lowest communality from this pairing (I often run out of money before my next pay day) was removed in order to prevent the artefact from reappearing in later analyses.
The four, five and six factor solutions were examined further. The four factor solution produced 16 cross factor loadings at greater than 0.3 and resulted in the loss of twelve items due to low loadings. Thus, the four factor solution was deemed unsatisfactory.

The five and six factor solutions returned similar structures. Within the six factor solution, there were factors representing irresponsible spending (e.g. *I sometimes buy things I can’t really afford*); unhealthy spending that results in worries (e.g. *I feel others would be shocked if they knew of my spending habits*); financial planning and savings behaviour (e.g. *I put a lot of thought into managing my money effectively*); impulsive credit card use (e.g. *I am less concerned with the price of a product when I use a credit card*); poor money management (e.g. *I often run out of money and have to pay for essential items (e.g. food, bills) on my credit card*) and spending as ‘retail therapy’ (e.g. *I buy things to reward and ‘treat’ myself*).

Within the five factor solution, the items from the irresponsible spending and unhealthy spending factors combined to form a single factor. Both solutions were interpretable and plausible and equivalent in terms of large (> 0.2) cross factor loadings (four). As no clear preference for a structure was obtained using EFA, it was decided to test both solutions within a CFA framework.

Both the five (*$X^2 = 901.011$, $df = 199$, CFI = .961, TLI = .955, RMSEA = .076*) and six (*$X^2 = 765.970$, $df = 194$, CFI = .969, TLI = .963, RMSEA = .069*) factor solutions fit the data. However, the irresponsible spending and unhealthy spending factors derived from the six factor solution were highly correlated (.865) and proved difficult to distinguish at a theoretical level.\(^{34}\) It appears that the two factors represent a difficulty artefact whereby the

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\(^{34}\) In a later analysis, I examined the correlations between the two factors and the combined factor and the personality and credit use variables. Again, there was little to distinguish the two, with the largest discrepancy between corresponding correlations being .04.
unhealthy spending factor is an extreme variant of the irresponsible spending factor rather than a unique and substantive individual variable. Thus, the five factor solution was chosen as the most plausible and was used in all subsequent analyses. The factors were labelled as follows: Factor 1, *Irresponsible Spending*; Factor 2, *Financial Planning*; Factor 3, *Impulsive Credit Use*; Factor 4, *Poor Money Management*; Factor 5, *Emotional Spending*. Table 6.1 contains the confirmatory pattern matrix and item content for the five factor solution.

All of the factors were correlated (.276 – .713) and all relate to the general concept of fiscal responsibility. Thus, a model in which all five primary factors loaded directly upon a general factor was examined. The general factor model fit the data well ($X^2 = 967.59$, $df = 204$, CFI = .958, TLI = .953, RMSEA = .073) and although the fit decreased in comparison to the primary factor model it was still indicative of good fit. The general factor had large loadings upon all five primary factors (.612 – .919), adequate levels of average variance extracted (.731) and good composite reliability (.936), as assessed using equations from Fornell and Larcker (1981). Thus, the results suggest that there is a substantive general factor of fiscal responsibility.
Table 6.1

*Fiscal and Credit Items: Five Factor Confirmatory Solution*

<table>
<thead>
<tr>
<th>Item</th>
<th>Factor 1</th>
<th>Factor 2</th>
<th>Factor 3</th>
<th>Factor 4</th>
<th>Factor 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>I worry about my spending habits but still shop and spend</td>
<td>0.836</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I often spend now and worry about the consequences later</td>
<td>0.834</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I sometimes buy things I can’t really afford</td>
<td>0.826</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I feel others would be shocked if they knew of my spending habits</td>
<td>0.756</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>More often than not, I spend all that I earn</td>
<td>0.734</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I like luxurious things and am prepared to buy them even if I don’t have much money</td>
<td>0.632</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I often feel guilty after buying things</td>
<td>0.589</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I often buy items/clothes that I never use/wear</td>
<td>0.533</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>When it comes to my finances I plan for the future</td>
<td></td>
<td>0.964</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I make plans to ensure I will have enough money in the future</td>
<td></td>
<td>0.934</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I put a lot of thought into managing my money effectively</td>
<td></td>
<td>0.805</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I regularly set aside some of my income as savings</td>
<td></td>
<td>0.649</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I spend more impulsively when I use a credit card</td>
<td></td>
<td></td>
<td>0.891</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am less concerned with the price of a product when I use a credit card</td>
<td></td>
<td></td>
<td>0.858</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I prefer to use credit to buy things rather than saving up</td>
<td></td>
<td></td>
<td></td>
<td>0.799</td>
<td></td>
</tr>
<tr>
<td>I often run out of money and have to pay for essential items (e.g. food, bills) on my credit card</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.855</td>
</tr>
<tr>
<td>I use my credit card as a last resort</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-0.761</td>
</tr>
<tr>
<td>When I use my credit card I pay off the full balance as soon as possible</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-0.748</td>
</tr>
<tr>
<td>I make only the minimum payments on my credit cards each month</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.698</td>
</tr>
<tr>
<td>There are times when I have a strong urge to buy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.815</td>
</tr>
<tr>
<td>I enjoy ‘retail therapy’; shopping helps me forget the stress in my life</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.765</td>
</tr>
<tr>
<td>I buy things to reward and ‘treat’ myself</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.740</td>
</tr>
<tr>
<td>Fornell and Larcker (1981) estimated reliability</td>
<td>0.914</td>
<td>0.932</td>
<td>0.951</td>
<td>0.918</td>
<td>0.907</td>
</tr>
<tr>
<td>General Factor Loading</td>
<td>0.919</td>
<td>0.694</td>
<td>-0.612</td>
<td>0.726</td>
<td>0.735</td>
</tr>
</tbody>
</table>
6.3.3 Factor Analysis of the Personality Items

A Kaiser-Meyer-Olkin (KMO) value of .84 and a significant Bartlett's Sphericity test ($\chi^2 (2346) = 14095, \ p= 0.001$) revealed that the data were factor analysable. An initial unrestricted EFA revealed that 13 factors had eigenvalues greater than unity. The first 7 factors were shown to yield eigenvalues greater than the corresponding factors suggested by parallel analysis, whilst the scree test indicated discontinuity in the region of 9 to 10 factors. Thus, factor solutions ranging from 7 to 10 were examined.

Both the nine and ten factor solutions had at least one under-identified factor. The eight factor solution contained 7 theoretically coherent factors and one consisting of four seemingly unrelated items with factor loadings ranging from .289 to .341. Thus, a seven factor solution was estimated. Following the removal of two low loading items, the 7 factor solution returned 7 factors which conformed to their a priori structure (Table 6.2). The DGI items used to measure Deferred-Gratification did not cohere in the factor analysis. Nothing resembling this scale was recovered in any of the solutions and none of the items loaded significantly on to any of the remaining seven factors. Given the relative importance of Deferred-Gratification in past research and the first two studies conducted in this thesis, this result was disappointing. The final seven factors consisted only of items that were chosen a priori to measure the constructs. Thus, factors were labelled according to their scale names.
Table 6.2

**Pattern matrix from Exploratory Factor Analysis of personality items**

<table>
<thead>
<tr>
<th>Item</th>
<th>Factor Loading</th>
</tr>
</thead>
<tbody>
<tr>
<td>Being accepted by others is very important to me.</td>
<td>.795</td>
</tr>
<tr>
<td>I really need to know that people approve of me.</td>
<td>.781</td>
</tr>
<tr>
<td>I have the most energy to do things after I have been admired by others.</td>
<td>.777</td>
</tr>
<tr>
<td>I feel happiest when all eyes are on me.</td>
<td>.754</td>
</tr>
<tr>
<td>I am only really satisfied when people acknowledge how good I am.</td>
<td>.745</td>
</tr>
<tr>
<td>It is important to me to be noticed by other people.</td>
<td>.520 .260</td>
</tr>
<tr>
<td>I spend a lot of time making sure that everything is exactly the way it should be.</td>
<td>.888</td>
</tr>
<tr>
<td>When I see things out of place, I have an almost uncontrollable urge to put them back.</td>
<td>.804</td>
</tr>
<tr>
<td>I spend hours trying to make everything as exact as possible.</td>
<td>.773</td>
</tr>
<tr>
<td>I am happiest when my time is carefully organised.</td>
<td>.745</td>
</tr>
<tr>
<td>I cannot tolerate mess.</td>
<td>.742</td>
</tr>
<tr>
<td>I measure everything precisely, never relying on estimates.</td>
<td>.711</td>
</tr>
<tr>
<td>I love order and regularity.</td>
<td>.637</td>
</tr>
<tr>
<td>I make rash decisions.</td>
<td>-.863</td>
</tr>
<tr>
<td>I jump into things without thinking.</td>
<td>-.824</td>
</tr>
<tr>
<td>I act on the spur of the moment.</td>
<td>-.736</td>
</tr>
<tr>
<td>I act impulsively.</td>
<td>-.621</td>
</tr>
<tr>
<td>I do things I later regret.</td>
<td>-.484 -.208 -.255</td>
</tr>
<tr>
<td>I am easily excited.</td>
<td>-.473</td>
</tr>
<tr>
<td>I barge in on conversations.</td>
<td>-.427</td>
</tr>
<tr>
<td>I find it hard to keep from ‘blowing my top’ when I get very angry.</td>
<td>-.387 -.378</td>
</tr>
</tbody>
</table>
Table 6.2 Continued
Pattern matrix from exploratory factory analysis of personality items

<table>
<thead>
<tr>
<th>Item</th>
<th>Factor Loading</th>
</tr>
</thead>
<tbody>
<tr>
<td>I become anxious when I have to be alone for any length of time.</td>
<td>-.888</td>
</tr>
<tr>
<td>I try to have people around me all of the time.</td>
<td>-.825</td>
</tr>
<tr>
<td>I am only really comfortable when I have someone to keep me company.</td>
<td>-.793</td>
</tr>
<tr>
<td>I worry about being abandoned by the person/people I love.</td>
<td>-.462</td>
</tr>
<tr>
<td>All my life I have been a worried</td>
<td>.744</td>
</tr>
<tr>
<td>I am always worrying about something</td>
<td>.715</td>
</tr>
<tr>
<td>My problems always seem a little overwhelming</td>
<td>.644</td>
</tr>
<tr>
<td>I almost always feel guilty about something.</td>
<td>.491</td>
</tr>
<tr>
<td>I often feel guilty even though I don’t know what I have done wrong</td>
<td>.439</td>
</tr>
<tr>
<td>Even though I’ve made a decision, I often feel that it’s not really settled</td>
<td>-.418</td>
</tr>
<tr>
<td>I think that sacrificing now is usually unnecessary since future outcomes can be dealt with at a later time.</td>
<td>.710</td>
</tr>
<tr>
<td>I only act to satisfy immediate concerns, figuring that I will take care of future problems when they arise.</td>
<td>.661</td>
</tr>
<tr>
<td>Often I engage in a particular behaviour in order to achieve outcomes that may not result for many years.</td>
<td>.204 -.653</td>
</tr>
<tr>
<td>I consider how things might be in the future, and try to influence those things with my day to day behaviour.</td>
<td>-.642</td>
</tr>
<tr>
<td>I am willing to sacrifice my immediate happiness or well-being in order to achieve future outcomes</td>
<td>-.539</td>
</tr>
<tr>
<td>I generally ignore warnings about possible future problems because I think the problems will be resolved before they reach crisis level.</td>
<td>.508</td>
</tr>
<tr>
<td>I think it is more important to perform a behaviour with important distant consequences than a behaviour with less-important immediate consequences.</td>
<td>-.481</td>
</tr>
<tr>
<td>Item</td>
<td>Factor Loading</td>
</tr>
<tr>
<td>----------------------------------------------------------------------</td>
<td>----------------</td>
</tr>
<tr>
<td>I keep my emotions under control</td>
<td>.813</td>
</tr>
<tr>
<td>I easily resist temptation</td>
<td>-.230</td>
</tr>
<tr>
<td>I experience very few emotional highs and lows.</td>
<td>.613</td>
</tr>
<tr>
<td>I experience very few emotional highs and lows.</td>
<td>.465</td>
</tr>
<tr>
<td>I am a highly disciplined person</td>
<td>.243</td>
</tr>
<tr>
<td>I can always say “enough is enough”</td>
<td>-.265 .450</td>
</tr>
<tr>
<td>I let myself be taken over by urges to eat too much</td>
<td>.396</td>
</tr>
<tr>
<td>I let myself be taken over by urges to eat too much</td>
<td>-.374</td>
</tr>
<tr>
<td><strong>Eigenvalue</strong></td>
<td><strong>9.04 5.46 3.81 2.88 2.76 2.36 1.90</strong></td>
</tr>
<tr>
<td><strong>Alpha</strong></td>
<td><strong>.851 .823 .798 .810 .794 .714 .726</strong></td>
</tr>
</tbody>
</table>

Factor 1 = Narcissism, Factor 2 = Compulsivity, Factor 3 = Impulsivity, Factor 4 = Insecure Attachment, Factor 5 = Anxiety, Factor 6 = Consideration of Future Consequences, Factor 7 = Self-Regulation.
6.3.4 Confirmatory Factor Analysis of Personality Scales

Next, Confirmatory Factor Analyses (CFA) were conducted to test the robustness of the personality scales identified using EFA. Where necessary, the factors were amended in order to create more coherent and valid factors that would subsequently be used in regression analyses. Item level models were estimated using WLSMV. Again, the values used to indicate fit were \( \leq 0.08 \) for the Standardised Root Mean Square Residual (SRMR; Spence, 1997) and the Root Mean Square Error of Approximation (RMSEA; Browne & Cudeck, 1993), less than 1 for the Weighted Root Mean Residual (WRMR) and \( \geq 0.90 \) for the Comparative Fit Index (CFI) and the Tucker-Lewis Index (TLI; Bentler & Bonnett, 1980), with values above 0.95 preferred (Hu & Bentler, 1999).

All 7 personality scales were subjected to individual item level CFAs (Table 6.3). In the main, the scales fit the data well. However, in the case of Impetuousness and Compulsivity some small modifications were necessary in order to generate reliable measurement within this sample. In totality, the scale revisions lead to the removal of two items (Impetuousness 4 and Compulsivity 5) due to their association with several large modification indices (< 20) and low loadings (< 0.5) and, the modelling of three correlated errors.

6.3.5 Measurement Model

Next, in order to further improve the measurement properties of the scales, item parcels were created via the single-factor parcelling methodology (See Chapter 4 for detailed discussion) whereby items are sequentially assigned to parcels based on their factor loadings from the item level models (Little, Cunningham, Shahar & Widaman, 2002; Landis, Beal and Tesluk, 2000). A minimum of three parcels per factor were created, satisfying the minimum requirement for model identification (Bollen, 1989, p. 88–89). Four of the five fiscal
responsibility factors had too few (<6) items to create three parcels, so for all fiscal responsibility factors, items were retained as indicators.

In order to assess the appropriateness of the parcels and the collective fit of all variables, a measurement model was estimated which included all seven of the personality variables and the five fiscal responsibility factors. The model fit the data well: $X^2 = 1503.375$, $df = 792$, CFI = .951, TLI = .943, RMSEA = .046, SRMR = .041.

Table 6.3

Fit statistics for single factor personality models

<table>
<thead>
<tr>
<th>Model</th>
<th>$\chi^2$</th>
<th>DF</th>
<th>SIG.</th>
<th>CFI</th>
<th>TLI</th>
<th>RMSEA</th>
<th>WRMR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impetuousness</td>
<td>201.020</td>
<td>20</td>
<td>.001</td>
<td>.964</td>
<td>.950</td>
<td>.127</td>
<td>1.151</td>
</tr>
<tr>
<td>Revised</td>
<td>62.589</td>
<td>12</td>
<td>.001</td>
<td>.987</td>
<td>.977</td>
<td>.087</td>
<td>0.694</td>
</tr>
<tr>
<td>Self-Regulation</td>
<td>33.060</td>
<td>9</td>
<td>.001</td>
<td>.979</td>
<td>.965</td>
<td>.072</td>
<td>0.617</td>
</tr>
<tr>
<td>Consideration of Future Consequences</td>
<td>34.407</td>
<td>7</td>
<td>.001</td>
<td>.986</td>
<td>.970</td>
<td>.086</td>
<td>0.502</td>
</tr>
<tr>
<td>Compulsivity</td>
<td>305.667</td>
<td>14</td>
<td>.001</td>
<td>.955</td>
<td>.933</td>
<td>.199</td>
<td>1.507</td>
</tr>
<tr>
<td>Revised</td>
<td>38.482</td>
<td>7</td>
<td>.001</td>
<td>.993</td>
<td>.985</td>
<td>.072</td>
<td>0.514</td>
</tr>
<tr>
<td>Narcissism</td>
<td>50.545</td>
<td>8</td>
<td>.001</td>
<td>.994</td>
<td>.989</td>
<td>.055</td>
<td>.564</td>
</tr>
<tr>
<td>Anxiety</td>
<td>8.442</td>
<td>7</td>
<td>NS</td>
<td>.999</td>
<td>.999</td>
<td>.020</td>
<td>.282</td>
</tr>
<tr>
<td>Insecure Attachment</td>
<td>11.896</td>
<td>7</td>
<td>NS</td>
<td>.999</td>
<td>.997</td>
<td>.037</td>
<td>.282</td>
</tr>
</tbody>
</table>

6.3.6 Correlations

Table 6.4 presents the correlations between all variables derived from the measurement model. The Impulsivity-related traits were correlated with all of the financial behaviour factors, suggesting all elements contain aspects of ‘Impulsivity’. Insecure Attachment, Narcissism and Anxiety all shared their largest correlation with Emotional Spending whilst Compulsivity was only correlated with Financial Planning. With the exception of Compulsivity, all of the traits were correlated with the general factor.
Table 6.4

Correlations between all variable derived from the standardised measurement model

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>2 2</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 3</td>
<td>.713</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 4</td>
<td>-.585</td>
<td>.276</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 5</td>
<td>.672</td>
<td>.477</td>
<td>-.411</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 6</td>
<td>.665</td>
<td>.415</td>
<td>-.484</td>
<td>.638</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 7</td>
<td>.468</td>
<td>.464</td>
<td>.352</td>
<td>-.211</td>
<td>.350</td>
<td>.194</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 8</td>
<td>-.463</td>
<td>-.448</td>
<td>-.310</td>
<td>.398</td>
<td>-.250</td>
<td>-.235</td>
<td>-.572</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9 9</td>
<td>-.448</td>
<td>-.359</td>
<td>-.208</td>
<td>.526</td>
<td>-.263</td>
<td>-.307</td>
<td>-.323</td>
<td>.457</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 10</td>
<td>-.084</td>
<td>-.073</td>
<td>.108</td>
<td>.225</td>
<td>-.116</td>
<td>.061</td>
<td>-.133</td>
<td>.235</td>
<td>.231</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11 11</td>
<td>-.232</td>
<td>-.213</td>
<td>-.235</td>
<td>.132</td>
<td>-.062</td>
<td>-.152</td>
<td>-.144</td>
<td>.362</td>
<td>.375</td>
<td>.091</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12 12</td>
<td>.424</td>
<td>.437</td>
<td>.453</td>
<td>-.224</td>
<td>.185</td>
<td>.230</td>
<td>.483</td>
<td>-.359</td>
<td>.154</td>
<td>.112</td>
<td>-.184</td>
<td></td>
</tr>
<tr>
<td>13 13</td>
<td>.364</td>
<td>.372</td>
<td>.429</td>
<td>-.123</td>
<td>.204</td>
<td>.143</td>
<td>.393</td>
<td>-.219</td>
<td>.075</td>
<td>.108</td>
<td>.025</td>
<td>.655</td>
</tr>
</tbody>
</table>

Note: General Factor = General Factor of Fiscal Irresponsibility, CFC = Consideration of Future Consequences

Correlations greater than .15 are significant at the 0.05 level, Correlations greater than .20 are significant at the 0.001
6.3.7 Structural Equation Modelling of Personality and Self-reported financial behaviour

Next, a series of SEMs were estimated to examine the structural relations between personality and self-reported financial behaviour. In order to maximise predictive validity whilst maintaining parsimonious models, an iterative series of stepwise regressions in SEM were constructed, one for each of the five fiscal and credit factors. The personality variable which was most highly correlated was regressed first. Next, this personality variable was paired sequentially with each of the remaining personality factors. The pairing which accounted for the greatest proportion of variance was then sequentially regressed alongside the remaining personality variables. This iterative process was continued until the addition of personality variables failed to explain unique variance. Once the final model for each of the five factors was determined, a single combined model was estimated. Parameter estimates for the final model, which fit the data well ($X^2 = 1803.374$, $df = 903$, $CFI = .951$, $TLI = .944$, $RMSEA = .046$) are displayed in Table 6.5.

All five financial behaviour factors showed differential relationships with the personality factors. Consideration of Future Consequences proved to be a generalisable predictor, explaining unique variance in all aspects of self-reported financial behaviour. For each of the other personality variables, differential relationships with the five factors were found. Consideration of Future Consequences was the largest predictor of Irresponsible Spending, Financial Planning and Poor Money Management, whilst Insecure Attachment and Impetuousness were the largest predictors of Emotional Spending and Impulsive Credit Use respectively.

A final model in which the general factor was regressed onto the personality variables was estimated ($X^2 = 18076.141$, $df = 903$, $CFI = .937$, $TLI = .929$, $RMSEA = .051$).
Collectively, Impetuositys ($\beta = .159$), Self-Regulation ($\beta = -.136$), Consideration of Future Consequences ($\beta = -.337$) and Narcissism ($\beta = .247$) accounted for 51.2% of the variance.

Table 6.5

*Parameter estimates and fit statistics for the combined personality latent variable regression models*

<table>
<thead>
<tr>
<th>Predictors</th>
<th>F1</th>
<th>F2</th>
<th>F3</th>
<th>F4</th>
<th>F5</th>
</tr>
</thead>
<tbody>
<tr>
<td>$r^2$</td>
<td>46.2</td>
<td>37.8</td>
<td>40.7</td>
<td>36.8</td>
<td>30.8</td>
</tr>
<tr>
<td>$\beta$</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.246**</td>
</tr>
<tr>
<td>Impetuousness</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>.246**</td>
</tr>
<tr>
<td>Self-Regulation</td>
<td>-.272**</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-.207</td>
</tr>
<tr>
<td>Consideration of Future Consequences</td>
<td>-.330**</td>
<td>.427**</td>
<td>-.195**</td>
<td>-.124**</td>
<td>-.384**</td>
</tr>
<tr>
<td>Compulsivity</td>
<td>-</td>
<td>.131*</td>
<td>.138*</td>
<td>-</td>
<td>.130*</td>
</tr>
<tr>
<td>Anxiety</td>
<td>-</td>
<td>-.124*</td>
<td>.147*</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Insecure Attachment</td>
<td>.175*</td>
<td>-.221**</td>
<td>.279**</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Narcissism</td>
<td>.177*</td>
<td>-</td>
<td>.249**</td>
<td>.169*</td>
<td>-</td>
</tr>
</tbody>
</table>

Note: F1 = Irresponsible Spending; F2 = Financial Planning; F3 = Emotional Spending; F4 = Impulsive Credit Use; F5 = Poor Money Management

* p<.05; ** p<.001

6.3.8 Credit Use

Four measures of current credit use were used: the number of active credit cards, total credit card balance across all cards, the number of active loans (excluding mortgages and student loans) and total loan balance (excluding mortgages and student loans).

Of the 588 participants who responded (23 did not respond), 385 currently owned a credit card, whilst 203 did not. One-hundred and forty-three had a single active credit card,
104 had two cards, 59 had three cards, 38 had four cards and 41 had at least five cards (107 participants did not respond), thus, the mean no. of cards was 1.59 and the median was 2.

When asked to indicate current levels of credit card debt across all credit cards, 191 (29%) participants chose not to respond, leaving a sample of 420 (217 credit card holders). Credit card debt ranged from £5 to £50,000 with a mean credit card debt of £1,816.96 (SD = 4,268.78).

In relation to loans, 206 participants currently held an active loan, 327 did not and 95 chose not to respond. One-hundred and seventy-five loan holders had a single loan, 23 had two loans, 3 had three loans and 5 had four or more loans. The mean number of loans was 1.08 and the median was 1. Loan debt ranged from £50 to £250,000 with a mean loan debt of £10,627.48 (SD = 26,165.25). All 206 participants who indicated that they had a loan gave information regarding their balance.

6.3.9 Structural Equation Modelling of Credit Use

In order to control for income effects (a credit card balance of £10,000 has a very different meaning dependent upon whether a salary is £15,000 or £150,000), both the total credit card and loan balances were estimated as a ratio of balance to income. Henceforth, credit card and loan debt-to-income ratio will be referred to as credit card debt and loan debt respectively. Table 6.6 shows the correlations between the four credit use outcomes, the self-report measures of financial behaviour and the personality traits.

The personality variables show differential relationships with each of the credit use variables. For example, Impetuousness and Insecure Attachment are correlated with Credit Acquisition (number of credit cards and loans) but not with debt levels, whilst Self-Regulation is associated with credit card variables but not loan variables. Compulsivity was uncorrelated with all four credit variables.
The correlations between the self-reported financial behaviour factors and the credit use variables reveal a number of significant and logical relationships. For example, Impulsive Credit Use is the largest correlate of both number of credit cards and credit card debt. Interestingly, the Financial planning factor shows the fewest significant correlations with the credit variables. The correlations between the credit variables and the general factor are of interest. The general factor is correlated with three of the credit variables but not credit card balance. Thus, in order to maximise prediction, it seems that examining the individual factors is worthwhile.

**Table 6.6**

*Correlations between the four credit variables, self-reported financial behaviour and the personality traits*

<table>
<thead>
<tr>
<th></th>
<th>No. of Cards</th>
<th>Card Debt</th>
<th>No. of Loans</th>
<th>Loan Debt</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. Cards</td>
<td>-</td>
<td>-.179*</td>
<td>.503**</td>
<td>-.056</td>
</tr>
<tr>
<td>Card Debt</td>
<td>-</td>
<td>-</td>
<td>-.076</td>
<td>-.034</td>
</tr>
<tr>
<td>No. of Loans</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-.231*</td>
</tr>
<tr>
<td>Loan Debt</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>General Factor</td>
<td>.112*</td>
<td>-.072</td>
<td>.242*</td>
<td>.177*</td>
</tr>
<tr>
<td>Irresponsible Spending</td>
<td>.018</td>
<td>.169*</td>
<td>.166*</td>
<td>.158*</td>
</tr>
<tr>
<td>Financial Planning</td>
<td>-.100*</td>
<td>.089</td>
<td>.054</td>
<td>.053</td>
</tr>
<tr>
<td>Impulsive Credit Use</td>
<td>.241*</td>
<td>.281**</td>
<td>.060</td>
<td>-.116*</td>
</tr>
<tr>
<td>Poor Money Management</td>
<td>.100*</td>
<td>.226**</td>
<td>.182*</td>
<td>.111*</td>
</tr>
<tr>
<td>Emotional Spending</td>
<td>.191*</td>
<td>.127*</td>
<td>-.059</td>
<td>.130*</td>
</tr>
<tr>
<td>Impetuousness</td>
<td>.267**</td>
<td>.093</td>
<td>.193*</td>
<td>.071</td>
</tr>
<tr>
<td>Self-Regulation</td>
<td>-.160*</td>
<td>-.185*</td>
<td>-.071</td>
<td>-.053</td>
</tr>
<tr>
<td>Consideration of Future Consequences</td>
<td>-.385**</td>
<td>-.199*</td>
<td>-.145*</td>
<td>-.035</td>
</tr>
<tr>
<td>Compulsivity</td>
<td>-.008</td>
<td>.058</td>
<td>-.070</td>
<td>-.017</td>
</tr>
<tr>
<td>Anxiety</td>
<td>.213**</td>
<td>.180*</td>
<td>-.024</td>
<td>.179*</td>
</tr>
<tr>
<td>Insecure Attachment</td>
<td>.204**</td>
<td>.068</td>
<td>.183*</td>
<td>.036</td>
</tr>
<tr>
<td>Narcissism</td>
<td>.253**</td>
<td>.118*</td>
<td>-.012</td>
<td>.214*</td>
</tr>
</tbody>
</table>

Note: General factor = General Factor of Fiscal Responsibility
Next, stepwise-fashion regression models using SEM were estimated in order to further explore the relationships between personality, self-reported financial behaviour and the four credit use variables: number of active credit cards, total current credit card balance across all cards, number of active loans, total loan balance.

The first models estimated used the personality variables as predictors of the four credit measures. A single model for each of the four credit outcomes was estimated before a single combined model was estimated. The combined model fit the data ($X^2 = 592.942, df = 236, CFI = .952, TLI = .940, RMSEA = .051$). Collectively, Insecure Attachment ($\beta = .307$), Narcissism ($\beta = .240$), Consideration of Future Consequences ($\beta = -.183$) and Impetuousness ($\beta = .160$) accounted for 23% of the variance in the number of credit cards held, whilst a more modest 14.8% of the variance in credit card balances was explained by Consideration of Future Consequences ($\beta = -.199$) and Self-Regulation ($\beta = -.147$). With regard to the number of loans currently held, 22.3% of variance was explained by Insecure Attachment ($\beta = .381$), Anxiety ($\beta = .195$) and Impetuousness ($\beta = .148$). Finally, participants’ loan balances were predicted by Anxiety ($\beta = .199$) and Narcissism ($\beta = .182$) which accounted for 11.1% of the variance.

The second series of models estimated examined the relationship between the self-reported financial behaviour scales and the credit use variables. Collectively, Emotional Spending ($\beta = .172$), Financial Planning ($\beta = -.146$), Impulsive Credit Use ($\beta = .129$) and Poor Money Management ($\beta = .148$) accounted for 6.3% of variance in the number of credit cards held. Impulsive Credit Use ($\beta = .303$), Irresponsible Spending ($\beta = -.279$), Poor Money Management ($\beta = .160$) and Emotional Spending ($\beta = .142$) accounted for 26.8% of the variance in credit card balance. With regard to the number of loans currently held, only Poor Money Management explained significant variance ($\beta = .195, 3\%$), whilst Irresponsible Spending ($\beta = .316$) and Emotional Spending ($\beta = -.264$) accounted for 21% of the variance.
in participants’ current loan balance. The model fit the data adequately, $X^2 = 806.009$, $df = 275$, CFI = .916, TLI = .901, RMSEA = .056. When using only the general factor to predict the four credit use variables, prediction decreased. The general factor did not account for significant variance in either the number of credit cards or number of loans held and accounted for 6% and 8% of the variance in credit card and loan balance respectively.

6.3.10 Mediation Model

Finally, the procedural mediation model that more accurately depicts the personality trait to debt process (Personality $\rightarrow$ Financial Behaviour and Available Credit $\rightarrow$ Debt) was estimated. The personality traits were the “X” or predictor variables; credit card and loan balance were set as the “Y” or outcome variables; whilst self-reported financial behaviour, the number of credits cards and the number of loans were set as the “M” or mediator variables.

Initial support for a mediation model is presented through the correlations between the variables. Little, Card, Bovaird, Preacher and Crandall (2007) suggest that the idealised correlational structure consistent with mediation is one in which the correlation between the X and M variables is the strongest observed and the correlation between M and Y is approximately double that of X and Y. This correlational structure is closely approximated within the current data (see Tables 6.4 and 6.6).

In order to fully test the hypothesised model, the procedure described by Iacobucci, Seldana & Deng (2012) for testing mediation within SEM was used. The procedure involves four main steps. First, a single model in which both direct (X$\rightarrow$Y) and indirect (X$\rightarrow$M) paths are specified simultaneously to estimate both effects whilst controlling for the other. Iacobucci et al. (2012) suggest that mediation is indicated when both of the X$\rightarrow$M and M$\rightarrow$Y coefficients are significant but that if either or both are non-significant then there is no mediation. As the mediation model was based on the stepwise-fashion regression models
described above, it was not surprising to find that all specified personality to financial
behaviour and credit type (X→M) paths and all financial behaviour and credit type to credit
balance (M→Y) paths were significant. Thus, step one of the mediation test was satisfied.

Second, I calculated the significance of the indirect effect using the bootstrapping
procedure recommended by Preacher and Hayes (2004, 2008). Bootstrapping was preferred
to the more common Sobel test as it has been shown to have higher power and reduced
susceptibility to Type I error (MacKinnon et al., 2002). Five thousand re-samples of the data
were used to estimate the indirect effects. Significant mediation is indicated by an indirect
effect that has a bias corrected 95% confidence interval which does not include zero. Three of
the four indirect effects which were not supported were Self-Regulation, Insecure Attachment
and Narcissism through Irresponsible Spending. Thus suggesting that in the presence of the
other mediators, the effects of personality are not strongly mediated through Irresponsible
Spending. The fourth non-supported indirect effect again involved Self-Regulation, this time
through Poor Credit Management. Thus, the only two indirect Self-Regulation pathways were
found to not influence debt levels.

Iaccobuci et al. (2012) recommend two further steps, suggesting that additional
constructs should be included within the model to examine its stability within a broader
nomological network, and also that an alternative meditational model should be examined
and compared to the hypothesised model. First, Age and Sex were added as controls to the
model. Their inclusion did not substantially alter any of the parameter estimates and did not
change their significance. Finally, a model in which debt was set as the predictor or “X”
variables, financial behaviour was set as the mediator or “M” variables and personality was
set as the outcome or “Y” variables was examined. This model was chosen as it is an often
raised concern that whilst individual differences might influence behaviour initially, changes
in circumstance might also have an effect on personality. So, this model examines whether
the amount of debt one has influences financial behaviour and in turn, personality. Not only, did this model show reduced predictive validity across all steps of the model and a number of non-significant paths, it also no longer fit data ($X^2 = 2402.545$, $df = 977$, CFI = .875, TLI = .862, RMSEA = .049). Thus, evidence would suggest that the model is relatively stable when embedded within a broader nomological network and is preferable to a plausible alternative model. The final mediation model, personality $\rightarrow$ financial behaviour and credit type $\rightarrow$ debt, with standardised parameter estimates is depicted in Figure 6.1.
Figure 6.1. Procedural mediation model of personality, credit acquisition, financial behaviour and unsecured debt

Note: F1 = Irresponsible Spending, F2 = Emotional Spending, F3 = Financial Planning, F4 = Impulsive Credit Use, F5 = Poor Credit Management. Dashed lines indicate non-significant indirect effects.
6.4 Discussion

Consistent with hypotheses, traits related to impulsiveness, negative emotions, compulsion and Narcissism were shown to be predictive of: the type and quantity of credit acquired, self-reported financial behaviour, and levels of unsecured debt. Further, there was evidence to support a procedural mediation model of credit use in which personality predicted levels of unsecured debt via its influence on credit acquisition and spending behaviour. The main findings of this study are discussed below with regard to their theoretical and practical relevance.

6.4.1 Self-reported Financial Behaviour

The development of the current multi-dimensional measure of self-reported financial behaviour allowed for a more comprehensive assessment of participants’ spending, saving, and credit use than would have been afforded by extant scales; many of which focus on just a single aspect of spending or financial behaviour (e.g. credit card use, Roberts & Jones, 2001; credit attitudes, Xiao, et al., 1995; financial planning, Hershey & Mowen, 2000; compulsive buying, Faber & O’Guinn, 1992).

Factor analytic evidence from the current study suggests there are at least five psychometrically and theoretically distinguishable domains of financial behaviour, identified here as: Irresponsible Spending, Financial Planning, Emotional Spending, Impulsive Credit Use and Poor Credit Management. All five factors, and a second-order general factor of ‘fiscal irresponsibility’, demonstrated good reliability and model fit in a Confirmatory Factor Analysis. In addition, the scale showed criterion validity with all five factors correlating with at least one of the four credit based variables and four factors explaining unique variance in credit card and loan debts. The only factor that did not explain unique variance in unsecured debt was Financial Planning, which concerns saving and managing money for the future. Although at this stage speculative, and in need of empirical examination, it is likely that this scale will instead be predictive of
savings and investment behaviours. All currently available reliability and validity evidence suggests that the self-reported financial behaviour scale is worthy of further use. Nevertheless, some additional psychometric development is necessary. Most importantly, further items need to be developed for those scales with fewer items so that the factors can be balanced.

In terms of the relationship between financial behaviour and personality, each of the factors showed differential relationships, and a number of interesting associations were observed. In general, personality was able to account for non-trivial levels of variance in each of the factors ($\approx 30\%-50\%$, see Table 6.5), thus supporting the central hypothesis of the thesis that personality is predictive of financial behaviour in multiple domains. Consideration of Future Consequences was observed to account for unique variance in all five factors suggesting that one of the most important personality drivers of financial behaviour is the tendency to, consider, value and, work towards distant outcomes.

Unique variance in the Irresponsible Spending factor was accounted for by Consideration of Future Consequences, Self-Regulation, Insecure Attachment and Narcissism. Thus, it appears that a desire to achieve others’ approval and admiration, coupled with a lack of self-control, drives the tendency to spend more than one can reasonably afford. The largest predictors of Emotional Spending were Insecure Attachment and Narcissism, again suggesting that a tendency to seek attention and approval from others is important in “retail therapy”. It could be suggested that the real ‘reward’ of emotional consumption is the perceived (or actual) social acceptance and acclaim that it will bring. Unsurprisingly, the largest predictor of Financial Planning was Consideration of Future Consequences; this is a logical relationship that shows the two measures possess convergent validity. Financial Planning was also negatively related to Anxiety and Insecure Attachment, suggesting that emotional stability is
important in saving and planning behaviour. Two of the scales specifically concerned the use of credit, namely, Impulsive Credit Use (e.g. reduced concern for price when paying with credit) and Poor Credit Management (e.g. using a credit card to pay for everyday essentials such as food). Both of these scales were predominantly predicted by the central Impulsivity-related traits. Impulsive Credit Use was predicted by Impetuousness, Consideration of Future Consequences and Self-Regulation, whilst the latter two traits also predicted Poor Credit Management. Thus, it appears that impulse-related tendencies are most pronounced in financial behaviours relating to the use of credit cards. Once again, the results evidenced the importance of discriminating between different forms of Impulsivity and the utility of measuring multiple aspects of Impulsivity when aiming to explain financial behaviour.

6.4.2 Credit Cards

The average number of credit cards (2) held by participants in the current sample and the average balance (£1,816) was consistent with estimates reported in other studies (e.g. Norvilitis et al., 2003; 2006). However, the average levels of card debt were lower than the approximate £3,000 nationwide average (ONS, 2013; Credit Action, 2013). It is possible that as a result, the results suffer from a restriction of range and generally might underestimate the relationships between debt levels and the other variables studied.

In relation to personality, the number of credit cards held was predicted by Insecure Attachment, Narcissism, Consideration of Future Consequences and, Impetuousness, whilst credit card balance was predicted by Consideration of Future Consequences and Self-Regulation. The results suggest that acquiring credit cards is associated with rash tendencies and a need for others’ approval and admiration, yet the ultimate balance is more closely a reflection of the ability/tendency to self-regulate and

35 This data could also have been analysed using ordinal regression analysis.
engage in forethought. It is conceivable then that consumers might act rashly (Impetuousness) to acquire credit in order to fund consumption that through anticipated social approval (Insecure Attachment) and admiration (Narcissism) will raise self-esteem. Having acquired credit, however, those with the ability/tendency to self-regulate and engage in forethought are unlikely to run up large debts, whilst the converse is also true. Given that it usually takes many purchases or very expensive purchases to generate large debts, it makes sense that the general tendency to act with restraint (Self-Regulation) and foresight (Consideration of Future Consequences) predicts debt levels. It is possible that those high in Self-Regulation and Consideration of Future Consequences engage in mood enhancing spending but still enact some restraint, and so spend modestly.

When considered alongside past research, there are a number of consistent findings. For example, numerous studies have shown that credit card acquisition tends to be a spontaneous affair, often to receive ‘free gifts’ or discounts on purchases (e.g. Bianco & Bosco, 2002), whilst the personality traits most closely related to credit card debt in past research tend to refer to patience and self-control (e.g. Deferred-Gratification, Self-Regulation; e.g. Hughes, et al., 2011; Norvilitis, et al., 2006).

Four of the self-rated financial behaviour factors, namely Impulsive Credit Use, Irresponsible Spending, Poor Money Management and Emotional Spending were predictive of credit card acquisition and debt. Thus, it seems that a range of financial behavioural patterns contribute to debt levels. As an overview, the current results suggest that logical combination of: buying for emotional reasons, spending more than one can realistically afford, doing so more hastily when shopping with a card, and failing to repay debts, quickly results in greater debt.

In comparison to personality, self-reported financial behaviour offered better prediction of debt but not of credit card acquisition. Given the mediation model
proposed, this is as expected. Credit card debt is ultimately the product of spending. Personality is important in providing the tendency, motivation and drive to spend. Two ways in which this personality drive is likely to manifest are through actual spending behaviour and also the acquisition of credit which facilitates spending. The relationships between credit card acquisition, credit card debt, spending behaviour and personality observed in this study support this notion.

6.4.3 Loans

In comparison to credit cards, research concerning loans is relatively impoverished. This study was the first to examine loan debts in relation to a range of personality traits. Within the current sample, loans were less frequently held than credit cards. This trend mirrors national data (Credit Action, 2013). In total, 206 participants had a loan, 175 of those had just a single loan and the loan average balance was £10,627.

Greater numbers of loans was found to be predicted by high levels of Impetuousness, Insecure Attachment and Anxiety, suggesting again, that taking out multiple credit streams is related to rashness and also generally negative emotional tendencies. These relationships are not dissimilar to those between credit cards and personality, suggesting that the psychological mechanisms involved may be similar.

Higher loan balances were predicted by high levels of Narcissism and Anxiety, supporting related hypotheses. Anxiety and Narcissism were found to predict loan debt suggesting that consumer use of loans is, at least in part, a function of “keeping up with the joneses” perhaps in a bid to reduce worries. However, participants’ Loan Balance was not related to any of the three central Impulsivity-related traits examined in this study. Thus, it would appear that amassing loan debts is not a particularly “impulsive” act related to a lack of self-control, failure to plan and rash action. Given the often lengthy periods of loan contracts it is particularly surprising that Consideration of
Future Consequences, which is indicative of tendencies to act with foresight and in a planful manner, was not related. It might be the case that ‘loans’ as a category is too broad; although mortgages and student loans were excluded from the survey (as they are not unsecured consumer credit), all other types of loans could have been tapped. It is possible that some participants were responding about short-term ‘pay-day loans’ whilst others were responding regarding more traditional loans. Even within the traditional loan market, a loan can be used for a huge variety of purchases. Thus, with hindsight, it is frustrating that data regarding the nature of loans taken was not gathered. It is likely that personality operates differently depending upon the motivation for the loan (e.g. an iPhone vs. new windows). It is also possible, in a similar vein to the results of home insurance in studies 1 and 2, that the effects of personality on loans are attenuated due to the fact that many loans are taken out for home improvements or cars, items that might be considered ‘household’ or ‘family’ owned. Thus, an individual’s personality traits may be of lesser importance. Future studies must do more to adequately account for variation in the type of loans taken.

Given the limited nature of research regarding loans and personality, the current findings cannot be considered in line with past work. What is clear, however, is that personality operates differentially across credit types with current evidence suggesting that personality is of greater relevance to credit cards than loans. There is certainly a need to conduct further research regarding the psychological antecedents of loan use, taking into account the improvements in data collection discussed above.

Twenty percent of the variance in participants’ loan balances was accounted for by two of the financial behaviour factors, namely, Irresponsible Spending and Emotional Spending. It is interesting that tendencies to overspend, for emotional gains, is related to loan balances, as it suggests that the behavioural markers of loan use are not
too dissimilar to those of credit card use. It would have been understandable for the reasons regarding spending motives discussed above if the two types of credit had different behavioural markers. For example, given that accessing loans can be a lengthy affair, that they are often used to fund relatively large purchases (e.g. cars) and are often repaid over a period of many years, it would not have been a surprise to see balances correlate with the financial planning scale. Exactly why this relationship did not emerge is an interesting question for future research. Again, it is possible that insensitivity in measurement is a factor. Separating loan balances into ‘types’ representing, for example, responsible (e.g. a new boiler) and irresponsible (e.g. a holiday) loan use may prove rather informative in further mapping antecedents.

6.4.4 Mediation Model

It has been argued by others (e.g. Kamleitner & Kirchler, 2007; Kamleitner et al., 2012) and in the current thesis that credit use is best conceived of as a process rather than a static entity. Thus, in addition to establishing the predictive validity of personality with regard to both financial behaviour and unsecured debt, this study set out to develop and test a theoretical model of the credit use process. The central proposition of the model was supported, namely, that personality influences credit acquisition and financial behaviour which both in turn influence debt. The model explicitly examined a number of pathways (e.g. personality to credit acquisition to debts) that have previously been suggested but not tested (Kamleitner & Kirchler, 2007; Kamleitner et al., 2012). The robust nature of 18 of the 22 mediated effects, suggests that personality traits, through effects on both credit acquisition and credit use, are of real importance to debt levels. The model, despite being complex (numerous factors, factor indicators and mediating variables) fitted the data well and offers strong support

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36 However, positively from the point of view of the discriminant validity of the financial behaviour scale, neither the Poor Credit Management nor Impulsive Credit Card Use factors explained unique variance. Thus suggests that these scales, as one would expect, are of importance to credit cards, but not loans.
for the hypothesised process model of credit use. Further, the fact that the majority of
the indirect personality effects remained significant, despite the four self-reported
financial behaviour mediators being correlated (.28–.71; such correlations could have
served to attenuate model relationships), suggests that the personality → financial
behaviour → debt mediation pathway is robust, that the financial behaviour scales are
unique, and that personality influences debt through these unique channels.

Past research has produced mixed results with regard to the personality – debt
relationship. Some studies suggest personality traits to be important (Norvilitis, et al.,
2006; Wang, et al., 2011) and others less so (Norvilitis et al., 2003). The current results
offer an explanation for the mixed results, namely, that personality is an important
variable in debt but that it is most influential in driving credit acquisition and financial
behaviour. It is likely that the omission of important variables and examining direct
associations between personality and debt has been one cause of the mixed results.

6.4.5 Impulsivity-related traits

Consistent with the first two studies, the Impulsivity-related traits assessed were
shown to be correlated but distinct within both EFA and CFA. Further, the utility of
discriminating between Impulsivity-related traits has again been illustrated. Each of the
Impulsivity-related traits showed different relationships across the self-reported
financial behaviour scales and the current results suggest that Impetuousness is
particularly important for understanding the uptake of credit, whereas foresight and
planning appear important for predicting debt levels. A less nuanced approach to
Impulsivity would have failed to account for these relationships. It must also be noted
that no correlations were observed between any of the Impulsivity-related traits and loan
balances, thus suggesting that the traits may not be ‘central’ to all elements of financial
behaviour. However, the results of this study and the thesis on the whole, still offer
support for the argument that they are ‘central’ to most financial behaviours. It is also
possible that insensitivity in the measurement of loan debt also served to dampen associations.

In contrast to the first two studies, Deferred-Gratification was assessed using the short Delaying Gratification Inventory (DGI-10; Hoerger, et al., 2011) not the Delay of Gratification Scale (DGS; Ray & Najman, 1986). Recall, there were two main reasons for the decision to change scales. First, some of the DGS items related specifically to financial behaviour (e.g. “Are you good at saving money rather than spending it straight away?”). The inclusion of such items may have biased the estimates of the correlations between predictor and outcome variables. Second, the DGI was reported to have superior psychometric properties, especially improved internal (α = .79) and test-retest reliability (r = .87).

Unfortunately, the DGI items used failed to cohere in the factor analysis. As a result, Deferred-Gratification could not be reliably measured in this sample and thus could not be incorporated in any of the models. This was especially disappointing given the importance of Deferred-Gratification in past research (Hughes, et al., 2011; Norvilitis, et al., 2006; Wang et al., 2011) and in the first two studies of this thesis where Deferred-Gratification was found to be one of the most consistent predictors across attitudes and claims. Consequently, all of the results obtained in this study have to be treated with some caution as the failure to include a substantively meaningful variable may have led to some bias and misspecification. In particular, it is possible that the effects of the other Impulsivity-related traits might have altered, especially in the final step-wise models.

The failure of Deferred-Gratification to emerge from the factor analysis is likely the result of one or more of the following factors. First, the item sub-set selected was inappropriate and undermined the psychometric properties of the scale. However, this same approach has been used across all three studies with a total of 21 different scales.
Unless the DGI-10 operates very differently from other scales, the item selection is unlikely to be the cause of the problem. Second, it is possible that the sample was inappropriate. However, given the stability of all of the other personality scales assessed, this is also unlikely. Third, the DGI in comparison to the DGS lacks discriminant validity when considered alongside other Impulsivity-related traits. This seems almost certainly true. Fourth, the DGI scale is not unidimensional.

The fourth possibility is, in the mind of the current author, the most likely problem and is almost certainly at least part of the problem. In discussing the construction of the DGI, Hoerger et al. (2011) suggest that delaying gratification is largely domain specific. For example, some can delay gratification with regards to money but not food. Accordingly, the authors developed five scales, assessing gratification delay in the domains of: food, physical pleasures, social interaction, money and achievement. Nevertheless, Hoerger et al. (2011) also produce a single general DGS scale which contains two items from each of the five domain specific scales. However, the authors did not conduct any analysis to examine the plausibility of a general or underlying factor of Deferred-Gratification. It would appear from the current analysis that empirical evidence of a general underlying factor is necessary before future use of the DGI-10 can be condoned. If the scale is not unidimensional but instead consists of five two-item specific factors, then it cannot be used as a composite single factor and is unlikely to cohere in future factor analyses, especially when analysed alongside other correlated variables. Additional analysis of the DGI-10 is warranted.

6.4.6 Limitations

Although there are a number of strengths to this study, such as the use of the new, psychometrically sound, multi-dimensional financial behaviour scale, the measurement of multiple Impulsivity-related traits, a relatively large sample, the application of Structural Equation Modelling to simultaneously test the effects of credit
acquisition and financial behaviour mediators, and the use of bootstrapping to test for mediating effects, there are a number of limitations.

As in the previous two studies, the main limitation pertains to the reliance on self-reported outcomes rather than having access to objective and independent credit use and debt based data. Due to the exclusive reliance on self-report data, common method variance may have been a problem. However, a number of small, near zero correlations between study variables and well-fitting structural models suggests common method variance either operated selectively or was not too great an issue (Podsakoff, et al., 2003).

Despite obtaining a large sample and the application of the novel sampling strategy discussed in the method, namely, recruiting ‘high risk’ participants from a bookmaker, the sample could be larger and improved in terms of representativeness. Two further considerations are warranted due to the recruitment of participants from a bookmaker. First, these participants were incentivised whereas other respondents were not. This discrepancy in incentives might have led the two groups of participants to respond differently. Also, there is an ethical consideration related to encouraging gamblers to bet in order to participate in research. However, the study was approved by ethical committee, and at a practical level, the author collected all data personally and did not approach anyone who seemed ‘vulnerable’. Equally, the bet incentive was small, just £1, and as such is unlikely to have held too much weight with potential participants. Also, as noted above, the average levels of credit card debt were lower than those reported in nationally representative studies. Thus, it is likely that heavily indebted individuals were underrepresented in the current analysis. This could have served to attenuate variable relationships due to a restricted range in debt levels.

The data are correlational and the study cross-sectional. Thus, caution regarding the direction of causation is necessary. However, when competing mediation
models were examined (X→M→Y vs. Y→M→X), both model fit and parameter estimate evidence favoured the hypothesised model.

Additionally, although a good number of candidate personality traits, selected on the basis of thorough theoretical reasoning and empirical evidence, were assessed, that other substantively important traits have been missed cannot be ruled out. The unfortunate omission of Deferred-Gratification as discussed above is particularly disappointing. With hindsight, it was unwise to switch Deferred-Gratification measures mid-thesis, despite the sound rationale for doing so.

Finally, it is possible that there was some ambiguity for participants when responding to the credit card balance question, which could have created important measurement error. Specifically, the question did not make clear whether participants were to report the outstanding balance once the monthly bill has been received or once the monthly bill has been paid.

6.4.7 Summary

The final study of this thesis has revealed the importance of personality in understanding and explaining financial behaviour, credit acquisition and debt levels. Further, the study has extended our understanding of the role personality plays in generating consumer debts by highlighting the importance of mediated paths through financial behaviour and credit acquisition. The meditational model proposed and tested should serve as a basis for future investigations of individual differences and credit use. It is possible that many psychological variables operate along a similar procedural path.

Another important contribution of this study is the development of the multi-dimensional financial behaviour scale, which compared to extant scales, has broader coverage and superior psychometric properties.
Finally, in the context of the whole thesis, the study provided further support for the main tenet: that, personality traits, in particular Impulsivity-related traits, predict financial behaviour across multiple domains.
Chapter 7

General Discussion

At the outset of this thesis, three broad questions were posed to frame the general aims of the research. In beginning to evaluate the successes, limitations and contributions of the current thesis, it seems pertinent to revisit these initial questions:

1. Is personality related to credit and insurance behaviour?
2. If so, which personality traits?
3. Can personality be used to predict the variance exhibited in financial behaviour?

In response to question one, the evidence gathered from the literature reviews and empirical studies contained within this thesis strongly suggests that: personality is related to financial behaviour. Specifically, personality has been shown to be correlated with measures of attitudes to insurance claims, attitudes to insurance fraud, the number of previously submitted motor claims, five factors of self-reported financial behaviour, the number of credit cards and loans owned, and credit card and loan debts. A relationship between personality and previously submitted home insurance claims was observed in Study 1, but was not replicated in Study 2.

With regard to question two, this thesis has gone a considerable way to identifying traits of importance to attitudes and behaviours related to insurance and consumer credit. It is evident from this thesis that whilst some personality traits are important across a spectrum of financial behaviours (e.g. central Impulsivity-related traits), the effects of other traits are largely constrained to specific economic outcomes (e.g. Sensation Seeking, Risk-Taking). This finding has important implications for trait selection in future research, namely, that researchers should choose traits that are theoretically relevant rather than relying on broad factors or a single omnibus personality measures, which would likely lead to considerable levels of measurement
redundancy, missing variables and measurement insensitivity. The literature reviews and empirical studies within this thesis have identified a number of important traits and in doing so, have provided a good knowledge base and platform from which to build more fully our understanding of which personality traits are crucial to economic behaviours.

In response to the third question, the results of the current thesis show that through a judicious, theory and evidence-based selection process, researchers and practitioners can identify key personality traits that when modelled appropriately (e.g. within a broader process model) can yield impressive levels of prediction of self-reported financial attitudes and behaviours. In terms of the many linear regression models estimated, variance explained ranged from approximately 12% (loan debt) to 60% (Attitudes Towards Insurance Fraud). It is also important to note that, due to the approach of carefully selecting candidate traits, the substantial levels of prediction were achieved using relatively few personality variables. That such prediction can be achieved whilst maintaining parsimonious models is important for researchers and practitioners alike.

The remainder of this chapter will discuss the most interesting and novel contributions made by this research. In addition, some general limitations, recommendations for future research and possible practical implications are discussed. Finally, a summary list of the main contributions is presented.

7.1 Empirical Studies

As discussed in Chapter 1, insurance and consumer credit were chosen as the main outcomes variables as they are the two financial products most widely used by consumers and represent a significant cost to the average customer. Additionally, financial institutions invest a great deal of time and resource in to identifying ‘good’ and ‘bad’ customers, with varying degrees of success. Thus, from a societal perspective,
understanding the psychological antecedents and mechanisms involved in consumers’ attitudes towards and usage of these products is of great value.

**7.1.1 Study 1: Insurance Claims**

Study 1 examined the extent to which the four central Impulsivity-related traits (Impetuousness, Self-Regulation, Deferred Gratification, and Consideration of Future Consequences) and four outcome specific traits (Sensation Seeking, Risk-Taking, Oppositionality, and Compulsivity) could be used to predict participants’ Attitudes Towards Insurance Claims and whether they had previously claimed on motor and home insurance.

Following an extensive literature search, it became apparent that research on economic psychology had largely neglected insurance. In particular, the role of personality in consumers’ propensity to submit claims had not been empirically assessed in a single study. Thus, in addition to the potential societal importance of the research in Study 1, it was also academically exploratory and offered the first real insight into the role of personality in insurance claims behaviour. A number of novel and interesting findings were produced by the study.

First, the findings of Study 1 revealed that Deferred-Gratification, Consideration of Future Consequences and Self-Regulation collectively explained 35.8% of the variance in consumers’ Attitudes Towards Insurance Claims scores. Thus, indicating that a ‘claim at every opportunity’ attitude is, at least in part, driven by a customers’ dispositional tendency to consider the distant actions of their outcomes, to value distant more salient rewards over closer less salient rewards and their ability to self-regulate. It is likely that personality, through this influence on attitudes, shapes customers’ claims behaviour. Interestingly, demographic variables did not account for any variance beyond that explained by personality. Insurance risk calculations undertaken in order to calculate premiums are based solely on demographic information. As a result, it appears
that insurers are missing important individual difference predictors of riskiness. This becomes especially important when one considers that the Attitudes Towards Insurance Claims scale was revealed by the logistic regression results to be particularly predictive of submitted motor claims.

Second, a logistic regression model predicting past motor claims, which consisted of Age, Attitudes Towards Insurance Claims, Deferred-Gratification and Oppositionality, was able to classify correctly 84% of the sample as claimants or non-claimants, included within which was the correct classification of 75% of the frequent claimants in the sample (3 or more claims). This model represents a largely successful attempt to retrospectively predict submitted motor claims, especially given the exploratory nature of the study. The stand-out feature of this model in relation to personality is that even when controlling for demographic and attitudinal predictors, personality is still a salient predictor of motor claims behaviour.

In relation to home insurance claims, Age, Deferred-Gratification and Impetuousness were able to correctly classify a total 66% of the sample but only 45% of claimants, a less impressive result than was achieved with regards to motor claims. Further, these relationships failed to replicate in Study 2. As discussed in Study 1 (section 4.4.3) and Study 2 (section 5.4.4), there are a number of possible explanations for the poorer prediction and lack of replication. First, in terms of measurement the samples contained too few home insurance claimants and as such stable parameter estimates could not be obtained. Second, in a more behavioural sense, it might be that home insurance decisions are generally made as a household, meaning that any single person’s personality is less influential. There is certainly a need for further, more nuanced investigations of personality and home insurance before substantial conclusions can be drawn. However, what seems almost certain is that self-reported
personality and attitudes are of less importance to home insurance claims than motor claims.

Study 1 provided positive evidence and support for a number of key arguments put forward within this thesis. Most notably that personality is predictive of financial behaviour and financial behaviours more diverse than those predominantly studied in past literature (e.g. gambling, spending, saving). Secondly, that good levels of prediction can be attained using a small number of traits, provided those traits are selected on the basis of both (or in the absence of one, either) a solid theoretical rationale and relevant empirical evidence. Thus, the results supported the candidate trait selection approach used and suggest that the use of a more exhaustive approach using a ‘global’ model to measure many traits would have led to considerable measurement redundancy. Thirdly, the observation that each of the proposed central Impulsivity-related traits were correlated with Attitudes Towards Insurance Claims whilst Sensation Seeking (another proposed Impulsivity-related trait that was argued to not be ‘central’) was not, and that Deferred-Gratification was influential in retrospectively predicting claims submissions, together provided support for the notion of ‘central Impulsivity related’ traits.

7.1.2 Study 2: Insurance Fraud

Building on the successes and general validation of the approach taken in this thesis, Study 2 examined the role of the central Impulsivity-related traits and carefully selected outcome specific traits (Callousness, Conduct Problems, Integrity, Machiavellianism, Opportunism, and Optimism) in Attitudes Towards Insurance Fraud, and again, previously submitted motor claims. Once again, the relationship between personality and insurance fraud had been largely neglected by extant research. Consequently, Study 2 was also largely exploratory.
In the absence of any pertinent measures, a new scale was designed to assess Attitudes Towards Insurance Fraud. Information gathered from academic articles, insurers, insurance customers and news websites was used to determine the most common examples of insurance fraud and the underlying motivations and rationalisation made by the fraudsters. Following the creation of a database of regularly occurring frauds, eight semi-structured interviews, four with currently employed insurers and four with members of the general population, were conducted to check the suitability of the chosen frauds. The final scale consisted of eight scenarios that required participants, first to indicate whether, if they were in the situation depicted, they would act fraudulently or not, and second to indicate the degree of certainty with which they would take that course of action. Half of the scenarios concerned the participant’s own behaviour and the other half concerned how they might advise a friend or family member.

Across a number of models estimated, personality was shown to be predictive of Attitudes Towards Insurance Fraud, accounting for between 36.5-57.6% of the variance. As discussed in Study 2 section 4.4.2, due to possible concerns over the newly generated Dishonest-Opportunism scale, two sets of models were estimated; one set included Dishonest-Opportunism and one did not. Promisingly, results across both sets of models were largely consistent. Again, these consumer attitudes appear to be generated to a large degree by dispositional traits. There were three main trait groups that served to offer a good description of someone who condones insurance fraud: (i) traits related to self-serving, dishonest and unethical behaviour (e.g. Dishonest-Opportunism, Callousness), (ii) traits related to foresight (Consideration of Future Consequences) and the tendency to pass up immediate gains in favour of perceived long-term gains (deferred-Gratification), and (iii) trait Pessimism. As the first study to provide any detailed personality description of Attitudes Towards Insurance Fraud,
Study 2 has provided a theoretically coherent and relatively rich empirically-based description of the traits and tendencies of those who condone insurance fraud. This alone is a novel and important contribution to the literatures of personality, economic psychology, unethical behaviour, and more specifically, economic crime. The personality traits identified as important here can serve as a base for future research in these fields. It is interesting that so few studies had previously investigated the psychological antecedents of insurance fraud. It is hoped that this study, in conjunction with the small but growing body of related research (Alalehto, 2003; Bauwens & Egan, 2011; Blickle, Schlegel, Fassbender & Klein, 2006; Collins & Schmidt, 1993; Ganon & Donegan, 2006; Miyazaki, 2009), will serve to nullify claims that individual differences are inconsequential to economic crime (e.g. Ruggiero, 2000; Shapiro, 1990; Sutherland, 1949; 1961; 1983) and resultantly stimulate related research.

In contrast to Study 1, demographic measures were shown to be complementary to the personality variables in predicting attitudes. Specifically, Age and Educational Attainment were both negatively related to Attitudes Towards Insurance Fraud and together accounted for 22.4% of the variance. In all combined personality and demographic models, Educational Attainment was found to be the second largest predictor, whilst Age was either the third of fourth largest predictor. Evidently, younger individuals are more sympathetic towards insurance fraud. Collectively, these results suggest a role for naivety and a lack of knowledge. It is possible that these demographic measures are serving as proxies for other individual differences not assessed within the current study. Intelligence may well be of importance. For example, knowledge and Crystallised Intelligence increase with Age. In particular, the well-established correlation between Intelligence and Educational Attainment suggests a role for Intelligence in shaping Attitudes Towards Insurance Fraud. Currently, this is purely speculative and must be examined explicitly in empirical research. Whether Intelligence
does contribute to the formation of Attitudes Towards Insurance Fraud and whether
demographic predictors still remain salient once Intelligence is accounted for is an
interesting question for future research.

The second major portion of Study 2 served as a partial replication of Study 1. Specifically, the same claims history measure, demographic variables, and Impulsivity-related traits were assessed and so the stability of their relationships could be assessed. However, the outcome specific traits differed, so adding a new and novel component to the analysis. Logistic regression models predicting past motor and home insurance claims were estimated. Consistent with Study 1, Age and Deferred-Gratification were again shown to be predictors of past motor claims. The stability of these results across samples is promising. In addition, the outcome specific traits of Dishonest-Opportunism and Conduct-Problems and also Attitudes Towards Insurance Fraud were also shown to be predictive. The most impressive levels of classification resulted from a combined model consisting of Age, Attitudes Towards Insurance Fraud, Deferred-Gratification and Dishonest-Opportunism. Once again, despite controlling for demographic and attitudinal predictors, the personality trait of Deferred-Gratification remained a salient predictor of motor claims behaviour.

There were however, some less promising and inconsistent results. For example, levels of Risk-Taking did not differ significantly between motor claimants and non-claimants in Study 1 but did in Study 2. Further, no relationships were observed between any personality traits and home insurance claims. In addition, Salary did predict home insurance claims in Study 2 but not in Study 1. Evidently, there was a non-trivial amount of sampling variability. Future research examining home insurance claims needs to be more effective in collecting representative samples of home insurance claimants.
Study 2 again supported the main thesis arguments that through a judicious trait selection process one can use relatively few personality traits to understand and predict financial behaviours and economic outcomes. Further support for the pervasiveness of Impulsivity-related traits was also gained as Consideration of Future Consequences and Deferred-Gratification were influential in Attitudes Towards Insurance Fraud and motor claims history. Study 2 provided this support whilst examining the novel, interesting, and neglected area of insurance fraud.

**7.1.3 Study 3: Credit Use**

The final empirical chapter examined the relationships between the central Impulsivity-related traits, four carefully selected outcome specific traits (Anxiety, Compulsivity, Insecure-Attachment and, Narcissism), five self-reported financial behaviour factors (Irresponsible Spending, Financial Planning, Emotional Spending, Impulsive Credit Use, and Poor Credit Management), the number of credit cards and loans owned, and credit card and loan debt. In contrast to insurance, credit-based research has commonly acknowledged a role for individual differences and personality. Prior to this thesis, a number of studies had directly examined relationships between personality, spending behaviour and credit use (e.g. Norvilitis et al., 2003; 2006; Tokuanga, 1993; Wang et al., 2011; Young & Kamas, 2006). Thus, Study 3 was able to build upon a much more solid foundation of empirical evidence. In consequence, relevant candidate traits could be identified much more readily and with greater confidence, especially given the Impulsivity-related trait framework identified in Chapter 3. In addition, existing research could be used to inform how personality might best be modelled within the credit use process, namely, within a mediation model that specified the following process: Personality → Credit Acquisition (number of credit cards and loans) and Financial Behaviour → Debt (Kamleitner & Kirchler, 2007; Kamleitner et al., 2012).
Many interesting empirical findings emanated from Study 3, all of which were hypothesised and most served to support extant research. For example, the personality traits assessed were shown to be predictive of: five different forms of self-reported financial behaviour (explaining 30-50% of the variance), the uptake of both credit cards (22% variance explained) and loans (23% variance explained), and levels of consumer debt (11-15% of variance explained). One particularly novel aspect of this study related to the examination of loans. As discussed in Study 3, the vast majority of past research has focused on credit cards at the expense of personal loans. Whilst acquiring loans was related to ‘Impulsivity’ in the form of Impetuousness, actual loan debts were predicted by Anxiety and Narcissism but not any of the Impulsivity-related traits. This finding suggested that loan debts are driven more by tendencies to desire the adulation of others and to reduce worries, but that amassing loan debts is not a particularly “impulsive” phenomenon. This element of Study 3 showed that personality operates differentially across credit types with initial evidence suggesting that personality is of greater relevance to credit cards than loans. Further research concerning loan debts and the mechanisms that drive them is much needed. The current study has provided a good starting point for future investigations of this kind.

Perhaps the most interesting results of Study 3 are those related to the procedural mediation model. The hypothesised model withstood rigorous empirical examination and as such was strongly supported within the current data. The final model was able to account for 26% of the variance in loan debts and 31% of the variance in credit card debts. Ultimately, it can be concluded that personality plays a vital role in debt accrual but that the effects are mediated via levels of credit uptake and spending behaviours. In future, should researchers wish to examine relationships between personality traits and debt, the current evidence suggests that in order to produce accurate results, they must
account for the procedural nature of the relationship by including important mediators such as the number of credit streams available and general financial behaviour.

7.2 Impulsivity-related Traits

One consistent finding in past literature linking individual differences to financial behaviour was that the notion of “Impulsivity” had been argued and empirically demonstrated to relate to a wide range of financial behaviours and economic outcomes (Chapter 3, section 3.1). Accordingly, Impulsivity had to be considered for inclusion within the current thesis. However, what was also apparent from extant literature was that in almost all studies Impulsivity had been defined and measured in different ways. Across some studies, the definitions and measures differed only slightly, but across others, the differences were so large that they were unlikely to be referring to and assessing the same construct. The degree of heterogeneity of measurement with respect to Impulsivity in the economic psychology literature meant that it was almost impossible to interpret and assimilate the reported relationships. Consequently, using the literature to inform choice of traits and measures to investigate was difficult.

Further review of the state of Impulsivity measurement in general revealed that there were instances of using the term “Impulsivity” to name distinct constructs (jingle), whilst simultaneously different labels were attached to seemingly equivalent constructs (jangle). Thus, in order to delineate the many conceptualisations of Impulsivity, so that an informed decision regarding which traits to assess here could be taken, I conducted a systematic review of Impulsivity measures and models from psychometric, behavioural and neurological perspectives (Chapter 3).

The evidence from the Impulsivity review suggested that there were six discernable Impulsivity-related traits (see Table 3.2), which were labelled: Impetuousness, Self-Regulation, Attention, Foresight/Planning, Deferred-Gratification, and Sensation Seeking. Using this six-factor framework it was possible to categorise
extant measures of Impulsivity into coherent groups based on which Impulsivity-related
trait they seemed to most closely resemble (see Table 3.3). The systematic application
of this framework to the interpretation of past literature concerning personality and
financial behaviour allowed for an informed trait selection process. In short, evidence
from this process suggested that the Impulsivity-related traits of Impetuousness, Self-
Regulation, Foresight/Planning, and Deferred-Gratification were important in
explaining a wide range of financial behaviours and often were complementary in
predictive equations. Conversely, measures of Sensation Seeking and Attention
appeared less important, especially when considered alongside other Impulsivity-related
traits. Thus, Impetuousness, Self-Regulation, Foresight/Planning, and Deferred-
Gratification were measured in each of the empirical studies and regarded loosely as
traits that were ‘central’ to economic behaviour.

In all three studies the factorial validity of the central traits was shown. All four
traits were returned by EFA, shown by CFA to conform to single factor solutions, and
evidenced collective fit as part of a measurement model\(^{37}\). In addition, the factors were
generally modestly correlated ranging from .3 - .5 (10-25% shared variance). Thus, the
factor analytic evidence and the correlation estimates support the work of Chapter Three
in suggesting that the traits are correlated but distinct.

The inclusion of the four distinct Impulsivity-related traits proved very useful in
describing and explaining the outcome variables assessed. For example, in Study 1
(Chapter 4), all 4 central Impulsivity-related traits were differentially correlated with
Attitudes Towards Insurance Claims (ranging from .16 - .37) and three of the traits
(Deferred-Gratification, Consideration of Future Consequences, and Self-Regulation)

\(^{37}\) In Study 1 five of the Impulsivity-related traits were assessed, as Sensation Seeking was included due
to evidence of its relationship with driving behaviour. In Study 3 only Impetuousness, Self-Regulation,
and Foresight/Planning were returned by EFA, casting some doubt over the Deferred-Gratification
construct. However, as discussed in Study 3, the failure of Deferred-gratification to emerge was likely due
to a change in measurement tool.
accounted for unique variance in regression models. In Study 2 (Chapter 5), Attitudes Towards Insurance Fraud was correlated with each of the central Impulsivity-related traits (ranging from .22 - .34). When considered alongside the other variables in this study, only Deferred-Gratification and Consideration of Future Consequences explained unique variance. Had either study adopted the prevailing approach that Impulsivity traits and measures are largely equivalent and well-measured by a single broad Impulsivity trait, a great deal of predictive validity would have been lost. For example, had only Impetuousness been assessed (as it is closest to ‘classical’ conceptions of Impulsivity), we would have come to the incorrect conclusion that Attitudes Towards Insurance Claims and Fraud are largely unrelated to impulsiveness. Equally, had only Deferred-Gratification been taken as representative of the Impulsivity ‘family’, we would have come to an altogether different conclusion.

A similar pattern was observed in relation to historically submitted motor claims. Deferred-Gratification proved to be a significant predictor across both Study 1 and 2, whilst this was not true of any of the other Impulsivity-related traits. The ‘type’ of Impulsivity measured can have a profound effect on the conclusions drawn.

The utility of discriminating amongst Impulsivity-related traits was even more pronounced in Study 3 (Chapter 6). For example, each of the Impulsivity-related traits showed different correlational profiles across the self-reported financial behaviour scales (ranging from .19 - .53). When considered alongside the other study variables, Consideration of Future Consequences proved a generalised predictor across all five financial behaviour factors, whilst Impetuousness was only predictive of Impulsive Credit Use. Further, the results from Study 3 suggest that Impetuousness is particularly important for the understanding of credit uptake, whereas foresight and planning appear important for predicting actual debt levels.
In sum, the results of this thesis reveal that a more careful consideration of ‘Impulsivity’ is fruitful in aiding the understanding and prediction of economic behaviour and will no doubt be so in any other behavioural domain. Thus, in future, researchers would be well advised to use the framework outlined in this thesis (Chapter Three) to inform their selection of traits and measures. Even if others cannot decide on which of the different measures are most appropriate, seating them within the general framework identified here will result in the production of a much more detailed picture of the personality processes involved in financial behaviour. A consistent and systematic approach to the assessment of ‘Impulsivity’ will also reduce jingle-jangle in a manner that will allow for easier study comparison and literature assimilation that can ultimately allow for meta-analytically derived estimates of the magnitude of relationships.

7.3 The Development of New Measures

In the course of this thesis, four new and novel measures have been generated. The Attitudes Towards Insurance Claims and Attitudes Towards Insurance Fraud scales were created due to the absence of any pre-existing measures in the literature. Both measures evidenced promising reliability and validity (factorial, divergent, convergent and criterion). However, the fraud scale was superior to the claims scale on all fronts. The vignette approach and response format used for the fraud scale is generally novel and the positive reliability and validity evidence is encouraging. It might be that such an approach is superior to typical Likert-scale question formats when assessing unethical or illegal behaviours. However, it is also possible that there exist a number of possible measurement-based limitations that need further examination: (i) the effect of using colloquial terminology in order to generate a sense of conversation and informality, (ii) the complexity of the response options, and (iii) the fact that the response options did not include all possible responses to the scenarios presented.
The self-reported Financial Behaviour Scale was an iterative development based on previous work by the author and colleagues (Hughes, 2009; Hughes, et al., 2011a; 2011b). Five distinct factors were identified and labelled: Irresponsible Spending, Financial Planning, Emotional Spending, Impulsive Credit Use and Poor Credit Management. Again, reliability and validity based evidence suggest that the scale is useful. In comparison to extant scales which tend to measure just a single element of financial behaviour, the developed Financial Behaviour Scale offers superior coverage and improved psychometric properties. It is argued here that this scale represents a genuine improvement in the measurement of self-reported financial behaviour.

Lastly, the Dishonest-Oppportunism scale was not a pre-planned scale. Rather, it emerged from items designed to assess Integrity and Opportunism (the Opportunism items were designed specifically for this thesis). This scale assesses the tendency to cheat, lie and steal whenever the opportunity is presented, especially if there is little chance of being ‘caught’. The Dishonest-Oppportunism scale was reliable and showed factorial, divergent, convergent and criterion validity. Further, the Dishonest-Oppportunism scale proved adept in predicting Attitudes Towards Insurance fraud and also motor claims history. Exactly how this trait diverges, converges, and generally sits in relation to other integrity and honesty based traits is an interesting area for future research.

Each of the new measures has demonstrated good levels of internal consistency and promising levels of factorial, divergent, convergent, and criterion validity. Nevertheless, all measures require further examination and development. Additional items are needed in order to achieve balanced factors within the Financial Behaviour scale. Additional items are also needed to expand the content of the Attitudes Towards Insurance Claims scale as a number of seemingly important elements of this construct
(e.g. a hostile view of insurers that might drive claims attitudes) were poorly assessed by the items used in this thesis.

7.4 Limitations

The specific limitations of each study are already described in the discussion sections of the corresponding chapters. Nevertheless, there are a number of overarching limitations, which run across the studies and therefore require further attention. The limitations can be divided into two overarching categories, namely, those related to the sample and those related to measurement.

7.4.1 Sample

All samples were recruited using a combination of convenience and snowball sampling techniques. All three samples were medium in size (n = 377, 475, 611) and socio-demographically diverse. However, they were not fully representative and in some instances were perhaps too small (or inappropriately composed) to allow for reliable assessments of variable relationships.

Whilst the samples in Studies 1 and 2 were recruited both on-line and off-line, the participants predominantly accessed the survey via links on the business networking site, LinkedIn. As a result, the average earnings, level of occupational status and educational attainment were all higher than the national average. In particular, people with low income (< £15,000) were underrepresented. Given that economic behaviours were the subject of this study, that Samples 1 and 2 were skewed in terms of income and social standing is an important consideration. It is possible that these skewed and range restricted samples actually served to attenuate the true relationship between the demographic variables and the economic outcomes. This is especially likely in the case of the predictive relationship observed between Educational Attainment and Attitudes Towards Insurance Fraud.
Equally, both samples 1 and 2 did not contain many home insurance claimants and very few multiple claimants. It has been suggested that, alongside the theoretical issues discussed in sections 4.4.3 and 5.4.4, that the lack of variation in home insurance claims history is one possible cause of the differing results across the two samples and the generally weaker associations with personality.

In response to the sampling issues in Studies 1 and 2, a more novel and diverse sampling approach was utilised in Study 3. Responses were again obtained using pencil and paper methods via a traditional convenience sampling approach and on-line communities also retained an important role in recruitment. However, in addition, participants were also recruited on weekdays during traditional working hours from a bookmakers located in central Manchester. The rationale was that such a recruitment strategy would increase the numbers of non-professional participants from lower socio-economic levels. This novel ‘high-risk’ purposive sampling approach was somewhat successful and did improve the diversity and representativeness of the sample. Future economic psychological research seeking to formulate generalisable models that span socio-economic groups should, where possible, employ such a multi-faceted sampling approach to ensure appropriate levels of diversity.

An additional consideration pertains to use of the sample data. In all studies, the whole sample was used for both exploratory and confirmatory analyses. This strategy can result in a greater capitalisation upon chance within each sample. The relatively stable structures of the impulsivity-related traits assessed across all three studies, suggests that this was too large an issue. Nevertheless, the possibility cannot be ruled out. An alternate approach would have been to split the sample using half of the respondents for exploratory analyses and the other half for confirmation. Although the sample size in study one would not have permitted for this strategy, the samples in study two and three would. However, given the largely exploratory nature of the studies
presented in the thesis, and the importance of identifying stable and reliable structures for the personality measures, there is some merit in basing these analyses on as large and diverse a sample as possible.

One final consideration regarding sample composition pertains to the possibility that the same individuals may have participated in more than one of the studies. As a result of the use of online data collection methods and providing full anonymity for participants, there was no way to cross-check whether participants had responded to multiple surveys. However, two factors protect against this possibility. First, the participants for Study 1 and 2 were recruited using messages in distinct locations (e.g. different LinkedIn groups) thus whilst not nullifying the possibility of cross-participation, this does reduce the risk. Those who participated in Studies 1 and 2 could have participated in Study 3; no specific safeguards were put in place (e.g. advertising in unique locations). Whilst this is not ideal, given the difference in subject matter (credit vs. insurance) and only small overlap in constructs measured (demographics and Impulsivity-related traits) I believe any cross-participation would be less problematic. Finally, given that no incentives or feedback were offered to participants, it seems unlikely that participants would complete multiple surveys. Nevertheless, cross-participation cannot be ruled out.

7.4.2 Measurement

Across the studies, there were a number of measurement based limitations of note. First, the cross-sectional nature of the studies precludes absolute conclusions regarding the direction of causality behind the relationships observed. In all cases, it is far more likely that in the main, personality drives economic attitudes and behaviour. However, the possibility of bi-directional effects cannot be ruled out. Especially with regard to debt, there is evidence to suggest that prolonged periods of indebtedness can have large effects on one’s psychological characteristics and behaviours (Brown, et al.,
It is however worthy of note that in Study 3, competing mediation models were examined in which a reverse effect model (Y→M→X) was estimated. The model fit and parameter estimate evidence favoured the hypothesised model (Personality → Financial Behaviour and Credit Uptake → Debt). Nevertheless, experimental and longitudinal studies are needed to confirm the causal status of the cross-sectional relationships observed.

A second important caution pertains to the exclusive reliance on self-report measures. However, as personality is an inherently psychological construct, self-reports are able to offer an insight that no other method currently can. Nevertheless, peer-review ratings would have also been useful. Recent research suggests that multi-informant ratings of personality might offer superior prediction above self-report alone (Connelly & Ones, 2010). Another concern with self-report data is socially desirable responding. A brief self-report measure of Social Desirability was included in Studies 1 and 2. The scale showed no relationship to the levels of reported car claims and shared a smaller correlation with the attitudes scales than did many of the personality scales. Thus, to the extent that social desirability scales are valid, this evidence suggests that socially desirable responding whilst present was not a huge issue. The two largest correlates of Social Desirability across both studies were Self-Regulation and Conduct Problems. This pattern of correlations supports recent work that suggests social desirability scales actually measure personality related to interpersonal self-control (Uziel, 2010).

As discussed in each chapter, assessing both predictor and outcome variables via the same method can result in common method variance. However, in all three studies common method variance did not appear to be a large issue. What is more difficult to quantify and account for, however, is the susceptibility of self-report measures to response bias and socially desirable responding. In terms of claims history and debt
levels, subjectivity was removed by asking participants to state factual and numeric values but these were still open to bias. Two measures in particular were perhaps most susceptible to response distortions. First, the Attitudes Towards Insurance Fraud scale used in Study 2 may have elicited socially desirable responses, especially if, as the current results suggest, those likely to commit insurance fraud are deceptive by disposition. Second, the large number of non-responses (≈100) to the questions of debt levels in Study 3 was a disappointment. Such systematically missing data can lead to skewed results and, in most cases, suppresses effects. It seems likely that two particular motivations might drive this particular non-response: (i) generally being cautious around disclosure of personal information (a tendency which is personality driven) and (ii) not wishing to disclose debt levels due to their worrying magnitude. In future, wherever possible, objective data are needed.

It must be noted that the author exhausted all efforts working individually and in conjunction with E-metrixx (a commercial psychometrics company) to gain access to objective outcome data (e.g. debt, claims history). Over a period of a year, numerous e-mail exchanges, phone calls, and meetings were held with members of industry, including some very senior officials from banks and insurers. Insurers tended to be much more receptive than did banks. Ultimately however, the exploratory nature of the research was a stumbling block. The financial institutions wanted the type of evidence now gained throughout this thesis before they would allow research access to their data and customers. Hopefully, going forward the thesis can serve to take the negotiations a step further.

One final measurement based limitation that is worthy of acknowledgment is the possibility of missing variables. There are likely a number of variables not included within the parameters of this study that might improve the models generated. Intelligence in particular stands out in this sense. In addition, due to the candidate trait
approach adopted (i.e. selecting traits of likely importance on the basis of theory and evidence), it is possible, perhaps even likely that some important personality traits were missed to the detriment of understanding and prediction (e.g. as discussed in Study 3, measurement issues meant that Deferred-Gratification was excluded from that analysis). Given the exploratory nature of Studies 1 and 2, that some important variables were going to be missed was almost inevitable given the resources available for this thesis. Future research can use the empirical evidence generated in this work as a platform to continue to identify important traits. One alternative approach could have been to include a short measure of the Big 5 alongside the candidate traits in order to act as something of a ‘safety net’, explaining missing variance and indicating where missing traits may be situated. However, the questionnaires were already substantial in length and raising item content much further would have, based on past experience, reduced participation. Also, there were a number of concerns raised within Chapter Two regarding the utility of higher-order factors for explaining and predicting behaviour. These concerns are only magnified by the use of shortened inventories which typically do not contain items that cover each of the constituent facet scales (Vassend & Skrondal, 2011).

7.5 Further Research

At relevant junctures throughout this thesis, suggestions for future research have been offered. Rather than simply reiterating these suggestions, a number of particularly exciting avenues of research will be discussed more fully.

7.5.1 Financial Behaviour

The first suggestion for future research, namely, a longitudinal study, would serve to address the limitations related to the cross-sectional design and the exclusive use of self-report data. A similar study building on each of the empirical studies could be designed, although it is possible that Studies 1 and 2 could be co-run. These studies
should first assess the relevant personality traits identified in this thesis and any others that may be of relevance using self-reports (as will be discussed further in the section, any practical use of personality in pricing calculations will likely come from self-reports) and also the relevant attitude scales or the financial behaviour scale. Where insurance policies or even credit cards are jointly owned, assessing the personality and attitudes of all stakeholders would be advisable. Next, preferably in conjunction with insurers and banks, participants’ claims activity (e.g. total number of claims, number of initiated but withdrawn claims, number of claims that are suspected to be fraudulent) and credit use (e.g. total debts, monthly payment strategies, missed payments) could be tracked across a period of three to five years. Working in conjunction with financial institutions would allow the research to access ‘hard’ outcome data and move away from self-reports. This relationship would also allow for some of the measurement insensitivity to be removed. For example, it was noted in Study 3 that different personality traits may be salient dependent upon the motivation underlying loan funded purchases. As banks almost invariably collect this information, loan use could be assessed in a much more nuanced manner. Such a set of studies would serve to provide a very robust estimate of the prospective prediction of important economic outcomes that can be achieved through understanding consumers’ personality.

An alternative approach to the de novo longitudinal study proposed above would be to have my impulsivity-related and financial behaviour measures incorporated into an existing longitudinal panel. This possibility, whilst giving lesser control over the data gathered, would be practically more feasible and affordable than a purpose designed longitudinal study. Utilising an existing panel database would also negate the need to work in tandem with a financial institution, which has to date proved a stumbling block.

Another interesting avenue for future research revolves around insurance claims and attitudes to insurance fraud. It is of interest to examine whether or not these
attitudes are malleable and if so, how easily they can be changed. In particular, it would be of interest to utilise a mixed (within and between groups) experimental study design to examine this. Such a study could assess baseline insurance attitudes (within a battery of questionnaires and tests), then expose participants to an experimental condition with information regarding insurance (e.g. the number of people they help after large scale disasters, the costs of insurance fraud to average policy prices) and participants in a control condition exposed to some alternative but non-relevant information, before estimating their insurance based attitudes. Should the attitudes be subject to change during the experimental manipulation, participants’ attitudes should be reassessed after a longer period (approximately 1 month) in order to examine whether or not the changes persist. The positive insurance based information should be presented in a practical, tangible, ecologically valid fashion; for example, as an advert whilst waiting for a YouTube video to load, or during a mini-tv programme, or computer game.

An additional study of interest is to examine the extent to which the Attitudes Towards Insurance scale can predict experimentally assessed fraudulence and whether the scale is a better predictor than a more traditional Likert-type attitude scale. First, it would be of interest to examine whether the Attitudes Towards Insurance scale could predict cheating at an individual level using a task similar to the matrix task used by Ariely, et al. (2012). Recall, that Ariely’s (2012) lab studies revolve around a matrix task in which participants are asked to solve maths problems. Participants received a financial reward for each correct answer. In each of Ariely’s studies, there are generally two conditions: (i) an honest condition, in which participants answer in the given time and hand in their sheets and, (ii) a cheat condition, whereby participants self-report how many maths problems they answered correctly, before shredding their answers sheets. Compared to participants in the honest condition, those in the cheat condition, scored consistently higher, but only slightly so. It would be of interest to see whether
participants’ levels of cheating could be predicted by their attitudes Towards Insurance Fraud scores.

Second, it would be of interest to devise a computer game, in which the participant either drives or must build/repair a home. During their play, participants will be forced to crash their car or experience a home-based accident. The participants would then be presented with a series of choices regarding how much they wish to claim for and whether they wish to add optional extras (e.g. whiplash). If the Attitudes Towards Insurance Fraud scale is able to predict such fraudulence and do so more impressively than a traditional Likert-type scale, this will be intrinsically interesting for the scale and further evidence of its validity. Looking further afield, it will also have important implications for self-assessments of other unethical and illegal behaviours.

7.5.2 Impulsivity-related Traits

A number of future research projects are needed to further validate the Impulsivity-related trait framework proposed. The first project needs to be the development of a psychometric tool designed to specifically assess the six factors. The promising results obtained in this current study have been achieved using elements of existing scales. This approach is sub-optimal. A measure designed with the six factors in mind would be able to improve discriminant validity and measurement properties in general. The first step in this research would be to generate a new pool of items, written to explicitly assess each of the six hypothesised factors. Having generated the initial list, scale developments would be needed. First the factorial validity would need to be assessed and confirmed (using two distinct samples). Next, validity tests examining the discriminant, convergent, and predictive validity of the measure would be carried out. Having confirmed the structure and validity of the items, a series of further studies which examined the stability and structure of the factors in the presence of other related traits would be conducted. Finally, having fully established the utility of the framework
and the resultant measure, a longitudinal study aimed at examining the developmental trajectories of these traits throughout the lifespan should be conducted.

Another important avenue for research once a satisfactory psychometric measure has been developed is to adopt a multi-trait-multi-method approach. It would be a significant contribution to the literature to systematically examine the neurological underpinnings of each type of Impulsivity-related behaviour. To be able to seat the factors within a neurobiological framework would be of great value, allowing the discussion of Impulsivity-related traits to move away from simple description and toward a discussion of process that acknowledges the underlying mechanisms. If all six Impulsivity-related traits can be dissociated at the neurological level, that would serve only to solidify the utility of the framework identified. As discussed in Chapter 3, work concerning the neurobiological components of ‘Impulsivity’ has already begun (c.f. Evenden, 1999) but it is in general limited by the same problems of jingle-jangle as all other Impulsivity-related trait work. The unifying framework offered here could improve matters greatly.

7.6 Practical Implications

There are two main practical implications. The first pertains to the question asked in Section 1.3.3 “The Business Case: Should Financial Institutions Care?”. Both insurers and banks conduct quite extensive customer selection processes, during which they assess variables such as their age, occupation, credit score, and address. Using this information, they generate a risk profile which is used to structure the customer’s contractual terms (e.g. interest rates, insurance premium). Financial institutions do not assess any psychological variables, yet as we have seen throughout this thesis, personality variables are adept predictors of motor claims and debt levels. Often, personality traits offer greater prediction than do demographic variables and in almost all instances explain additional unique variance. Put simply, if insurers and banks
incorporate personality assessments into their pricing equations, they are likely to be improved in accuracy. The improved accuracy has the potential to improve customer-contract fit and accordingly customer satisfaction whilst also improving bottom-line profit. It is noted here that before this possibility can be fully realised, the longitudinal study outlined above must first be conducted. In addition, it would also be necessary to generate short and ‘fake-proof’ personality assessments. The author and his principal supervisor have begun preliminary work in this area. There are two main avenues currently being explored. The first is generating items that are truly obtuse to the respondent. The second, and perhaps more promising approach, is to adopt computer adaptive and ipsative item sets. Ipsative item sets consist of presenting respondents with at least two personality items that are of equal importance or perceived social desirability and having respondents choose which is ‘most like’ them. Controlling for social desirability in this way can substantially reduce reliability and validity inhibiting response biases.

The second main practical implication for this research relates most closely to Study 3 and education. Starting from September 2013, financial education is to be included in the British National Curriculum (a campaign I have actively been involved in at local government level). I have argued consistently that personality assessment and self-awareness should be included within this element of the curriculum. For students to function safely in a world where credit is commonplace, they need not only to understand concepts such as interest, but realise that all companies (or at least the vast majority) have one main agenda: to get you to spend money. They all also need to be more self-aware and realise the role that they themselves play in the process. Understanding their own personalities and how their behaviour might lead to unnecessary spending should be incorporated within these educational programmes.
7.7 Summary of Contributions

1. The systematic review of Impulsivity-related traits and the resultant six factor framework has the potential to provide improved and nuanced Impulsivity measurement, which in turn can serve to further our understanding of the mechanisms involved in “impulsive” thought, feeling and action.

2. Study 1 provided the first ever exploration of the relationship between personality and Attitudes Towards Insurance Claims, developing a new measure along the way. The results revealed that these attitudes are closely linked with personality, suggesting they are likely, at least in part, to be manifestations of dispositional traits. Further, the study provided the first real evidence that personality traits can be used to supplement demographic variables in retrospectively predicting motor and home insurance claims.

3. The main contributions of Study 2 are similar in nature to those of Study 1, in that the study was the first to carry out a systematic investigation of personality and Attitudes Towards Insurance Fraud. However, initial psychometric analysis and reliability and validity evidence suggest that the Attitudes Towards Insurance Fraud scale is superior to the Attitudes Towards Insurance Claims. As such, greater confidence can be placed in calls for future research to use the scale. The novel vignette and decision rating system is also interesting.

4. The development of the multi-faceted Financial Behaviour Scale represents a significant step in iterative work that has been carried out by the author and colleagues (Hughes, et al., 2011a; 2011b). The evidence from Study 3 suggests that there are at least five distinct elements of financial behaviour (Irresponsible Spending, Financial Planning, Emotional Spending, Impulsive Credit Use, and Poor Credit Management) and that each offers unique information in explaining economic outcomes. The psychometric quality and measurement specificity
allowed by this scale is of great value and can serve to provide more descriptive models of human financial behaviour.

5. The Mediation model hypothesised, specified and supported within Study 3 is also of particular value. Not only did this model maximise prediction of financial behaviour, credit acquisition and debt, it offered a much more meaningful account of the processes involved in generating debts. Future research must, wherever possible, utilise similar approaches and try to incorporate additional variables (e.g. intelligence, cognitive biases) within this process model.

6. The final note of this thesis is reserved for perhaps the most obvious contribution, but, perhaps the most important one. Collectively, the empirical studies within this thesis have shown that when relevant personality traits are modelled in an appropriate fashion, they offer impressive levels of prediction, often outshining demographic variables or at least complementing them. Economic psychological research must build upon these findings and improve representations of personality within economic models so that we are able to generate richer descriptions of financial behaviour.
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Appendix

Appendix 1: Study 1 Survey

Note to readers: Items presented in scale clusters and labels added for clarity

Firstly I want to say **THANK YOU** for taking the time to fill out my questionnaire! I am currently undertaking my PhD in Business and Psychology at the University of Manchester. Through this project, I aim to gain a deeper understanding of the individual characteristics influencing different types of behaviour. The results of this questionnaire will form the foundations of my further study.

**Confidentiality is 100% guaranteed** so there is no need to write down your name or other identifying details. Only people directly involved in this project (myself and supervisor Dr. Paul Irwing) will have access to the questionnaires.

I am hugely grateful that you are participating in this study. The questionnaire itself will take around 20 minutes to complete. More detailed instructions on how to respond to the questions are provided before each section.

There is no need to think hard about your answers: usually the first response that comes to mind is the most accurate one. Please answer as honestly as you can, say what you feel, not what you think you should say there is a lie detection measure embedded within this survey, there are no right or wrong answers.

Lastly, if you are interested in knowing more about this research or would like to be informed of the final results, do not hesitate to email me on David.Hughes@postgrad.mbs.ac.uk I will be more than happy to try my best to answer any queries.

Thank you very much for your time and help.
**Section A:** (Tick ✓ where applicable)

**Gender:**  Male ☐ Female ☐ Other ☐

**Age:** ______

**No. of dependents:** ______

**Ethnicity:**
- White ☐ Asian or Asian British ☐ Chinese ☐
- Mixed ☐ Black or Black British ☐ Other (please specify): __________________

**Region:**
- North West ☐ South East ☐ Ireland ☐
- North East ☐ Scotland ☐ Europe ☐
- Midlands ☐ Wales ☐ Non-European ☐
- South West ☐ Northern Ireland ☐

**Marital Status:**
- Single (never married) ☐ Divorced/Annulled ☐ Remarried ☐
- Living with partner ☐ Separated ☐ ☐
- Married ☐ Widowed ☐ Other (please specify): __________________

**Level of education** (Select highest level completed):
- No Schooling ☐ Secondary to age 18 ☐ University ☐
- Secondary to age 15/16 ☐ Non-University higher education ☐

**Employment Status:**
- Unemployed ☐ Self employed ☐
- Employed (Full-time) ☐ Student ☐
- Employed (Part-time) ☐ Retired ☐ Other (please specify): __________________

**Occupational Group:**
- Professional/Senior managerial ☐ Semi-skilled/Unskilled ☐ Skilled worker ☐
- Other white collar/service ☐ Junior managerial ☐ Other (specify): __________________

**Annual salary** (not including bonuses):
- Less than £10,000 ☐ £31,000 - £40,000 ☐ £71,000 - £100,000 ☐
- £10,000 - £15,000 ☐ £41,000 - £50,000 ☐ £101,000 + ☐
- £15,000 - £20,000 ☐ £51,000 - £60,000 ☐
- £21,000 - £30,000 ☐ £61,000 - £70,000 ☐
Section B

The following statements are phrases describing people’s opinions and views on insurance and insurance claims. Please use the rating scale below to describe how accurately each statement describes your opinions and views. Please circle the number for each question below that best represents you.

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<thead>
<tr>
<th>Very Accurate</th>
<th>Moderately Accurate</th>
<th>Neither Accurate nor Inaccurate</th>
<th>Moderately Inaccurate</th>
<th>Very Inaccurate</th>
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Attitudes Towards Insurance Claims

1. I would avoid claiming on my insurance policy if at all possible.  
2. When it comes to insurance "Get your money's worth" by claiming at every opportunity.  
3. Claiming is too much effort.  
4. Given the opportunity everybody would claim.  
5. I would gain satisfaction from winning a successful insurance claim.  
6. If it was my fault that damage to my insured property (car/laptop/home) occurred, I would not claim.  
7. If I could afford not to I would not claim.  
8. Insurance make enough profit to afford to pay out.  
9. Insurance is there to access whenever I need it.  
10. I would make an insurance claim at every opportunity.  
11. It would be a waste of my time making an insurance claim for less than £500.

Section C:

The following statements are phrases describing people’s behaviours. Please use the rating scale below to describe how accurately each statement describes your behaviour. Describe yourself as you generally are now, not as you wish to be. Describe yourself as you honestly see yourself, in relation to other people you know of the same sex and roughly the same age. Please check the answer for each question below that best represents you.

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<tr>
<th>Very Accurate</th>
<th>Moderately Accurate</th>
<th>Neither Accurate nor Inaccurate</th>
<th>Moderately Inaccurate</th>
<th>Very Inaccurate</th>
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Deferred-Gratification

1. I am good at planning things way in advance.  
2. I am good at saving money rather than spending it straight away.  
3. I enjoy things all the more because I have to wait for it and plan for it.  
4. I find it is worthwhile to wait and think things over before deciding.  
5. I like to spend money as soon as I get it  
6. I always accept others’ opinions, even when they don’t match my own.  
7. There has been an occasion when I took advantage of someone else.  
8. I am good at planning things way in advance.
### Risk-Taking

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<tbody>
<tr>
<td>I often take risks.</td>
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<td>I would never make a high risk investment.</td>
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<td>When rules are inconvenient I break them.</td>
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<td>I would risk driving early after a night of heavy drinking.</td>
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<td>I would enjoy bungee jumping.</td>
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<td>If gambling I prefer to make a risky bet that would return greater winnings over a safer bet that would return smaller winnings.</td>
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<td>I often drive a car without wearing a seat belt.</td>
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<td>I would choose a less safe career that I truly enjoy over a more secure one.</td>
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### Impetuosness

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<tr>
<td>I act impulsively.</td>
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<td>I find it hard to keep from ‘blowing my top’ when I get very angry.</td>
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<td>I am easily excited.</td>
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<td>I do things I later regret.</td>
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<td>I barge in on conversations.</td>
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<td>I act on the spur of the moment.</td>
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<td>I make rash decisions.</td>
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<td>I jump into things without thinking.</td>
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### CFC

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<tr>
<td>I consider how things might be in the future, and try to influence those things with my day to day behaviour.</td>
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<td>Often I engage in a particular behaviour in order to achieve outcomes that may not result for many years.</td>
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<td>I only act to satisfy immediate concerns, figuring that I will take care of future problems when they arise.</td>
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<tr>
<td>I only act to satisfy immediate concerns, figuring the future will take care of itself.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am willing to sacrifice my immediate happiness or well-being in order to achieve future outcomes.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>I think that sacrificing now is usually unnecessary since future outcomes can be dealt with at a later time.</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>I take my bad moods out on others now and then</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Oppositionality

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Description</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I plan to do so many things in a day that I often don’t get anything done.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>I am usually the last one to be ready when I go out with others.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>I am not very well-organized.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>If there is something I have to do but really don’t want to do, I put it</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td>off in the hope that I won’t have to do it.</td>
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<td></td>
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</tr>
<tr>
<td>5</td>
<td>I often don’t do things that I am supposed to do.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>I often fail to get things done on time.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>I often “forget” to do things that require a lot of effort.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>When doing a task I don’t want to, I get sidetracked easily.</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

### Compulsivity

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Description</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I love order and regularity.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>When I see things out of place, I have an almost uncontrollable urge to</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td>put them back.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>I am happiest when my time is carefully organized.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>I spend a lot of time making sure that everything is exactly the way it</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>should be.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>I spend hours trying to make everything as exact as possible.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>I measure everything precisely, never relying on estimates.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>I cannot tolerate mess.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Self-Regulation

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Description</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I can always say “enough is enough”.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>I am a highly disciplined person.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>I keep my emotions under control.</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>I easily resist temptation.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>I experience very few emotional highs and lows.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>I let myself be taken over by urges to eat too much.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Final section

Do you currently hold insurance in any of the following areas *(please tick)*:

<table>
<thead>
<tr>
<th>Insurance Type</th>
<th>Travel</th>
<th>Automobile</th>
<th>Home contents</th>
<th>Pet</th>
<th>Electrical goods</th>
<th>Home buildings</th>
<th>Business</th>
<th>Other (please specify):</th>
</tr>
</thead>
<tbody>
<tr>
<td>I do not have any insurance policies</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Home contents</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Home buildings</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

Have you ever made an insurance claim?  

- Yes ☐  
- No ☐

What type of insurance have you claimed on and how many claims have you made? *(Please tick as many as are relevant and after the multiplication sign “x” please indicate the number of claims of this type you have made)*

<table>
<thead>
<tr>
<th>Insurance Type</th>
<th>Travel</th>
<th>Automobile</th>
<th>Home buildings</th>
<th>Home D.I.Y Damage</th>
<th>Home Fire</th>
<th>Natural disaster (i.e. flood))</th>
<th>Loss or Accidental Damage of Electrical Goods (e.g. mobile phone)</th>
<th>Credit</th>
<th>Home Contents (Burglary)</th>
<th>Home Contents (Accidental damage)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Automobile damage (Accident)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Automobile damage (Accident) where liability was yours</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Automobile damage (vandalism)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Automobile theft</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Travel</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

Other (please specify): ________________

<table>
<thead>
<tr>
<th>Other (please specify): ___________________</th>
<th>Credit</th>
<th>Home Contents (Burglary)</th>
<th>Home Contents (Accidental damage)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Credit</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Home Contents (Burglary)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Home Contents (Accidental damage)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>
Appendix 2: Study 2 Questionnaire

Note to readers: Items presented in scale clusters and labels added for clarity

Firstly I want to say THANK YOU for taking the time to fill out my questionnaire! I am currently undertaking my PhD in Business and Psychology at the University of Manchester. Through this project, I aim to gain a deeper understanding of the individual characteristics influencing different types of behaviour. The results of this questionnaire will form the foundations of my further study.

Confidentiality is 100% guaranteed so there is no need to write down your name or other identifying details. Only people directly involved in this project (myself and supervisor Dr. Paul Irwing) will have access to the questionnaires.

I am hugely grateful that you are participating in this study. The questionnaire itself will take around 20 minutes to complete. More detailed instructions on how to respond to the questions are provided before each section.

There is no need to think hard about your answers: usually the first response that comes to mind is the most accurate one. Please answer as honestly as you can, say what you feel, not what you think you should say there is a lie detection measure embedded within this survey, there are no right or wrong answers.

Lastly, if you are interested in knowing more about this research or would like to be informed of the final results, do not hesitate to email me on David.Hughes@postgrad.mbs.ac.uk I will be more than happy to try my best to answer any queries.

Thank you very much for your time and help.
Section A: (Tick ☑ where applicable)

Gender:  Male ☐ Female ☐ Other ☐

Age: ______

No. of dependents: ______

Ethnicity:

- White ☐
- Asian or Asian British ☐
- Chinese ☐
- Mixed ☐
- Black or Black British ☐
- Other (please specify): __________

Region:

- North West ☐
- South East ☐
- Ireland ☐
- North East ☐
- Scotland ☐
- Europe ☐
- Midlands ☐
- Wales ☐
- Non-European ☐
- South West ☐
- Northern Ireland ☐

Marital Status:

- Single (never married) ☐
- Divorced/Annulled ☐
- Remarried ☐
- Living with partner ☐
- Separated ☐
- Widowed ☐
- Married ☐
- Other (please specify): __________
- Widowed ☐
- Other (please specify): __________

Level of education (Select highest level completed):

- No Schooling ☐
- Secondary to age 18 ☐
- University ☐
- Secondary to age 15/16 ☐
- Non-University higher education ☐

Employment Status:

- Unemployed ☐
- Self employed ☐
- Employed (Full-time) ☐
- Student ☐
- Employed (Part-time) ☐
- Retired ☐
- Other (please specify): __________

Occupational Group:

- Professional/Senior managerial ☐
- Semi-skilled/Unskilled ☐
- Skilled worker ☐
- Other white collar/service ☐
- Junior managerial ☐
- Other (specify): __________

Annual salary (not including bonuses):

- Less than £10,000 ☐
- £31,000 - £40,000 ☐
- £71,000 - £100,000 ☐
- £10,000 - £15,000 ☐
- £41,000 - £50,000 ☐
- £101,000 + ☐
- £15,000 - £20,000 ☐
- £51,000 - £60,000 ☐
- £21,000 - £30,000 ☐
- £61,000 - £70,000 ☐
**Section B**

Consider the following dilemmas: these are hypothetical situations in which there is a decision to make or a problem to sort out. There are no right and wrong answers. The best way to answer is to imagine that you are actually in each of the situations: think about how it makes you feel and what it means to you, before completing the assessment for that item.

Having read the dilemma, which of the two alternative actions do you think you would take? (Remember that no other options can be considered). You can indicate your choice by circling one of the options to the left (for A) or right (B) of the grid. For example, if you were deciding which colour to paint your living room the example shows a response which indicates you would probably use red paint.

A. Red

<table>
<thead>
<tr>
<th>Definitely</th>
<th>Probably</th>
<th>Not Certain</th>
<th>MAYBE</th>
<th>B</th>
<th>Probably</th>
<th>Definitely</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>A</td>
<td>B</td>
<td></td>
<td>B</td>
<td>B</td>
<td>B</td>
</tr>
</tbody>
</table>

1. A good friend of yours and their partner have been involved in a minor car accident (no injuries were sustained) they could do with an extra bit of cash. They have come to ask what your advice is regarding their plan to claim compensation for whiplash, giving the rationale that “everyone does it these days”

A) Do not do it, it is wrong. B) Yes go for it.

<table>
<thead>
<tr>
<th>Definitely</th>
<th>Probably</th>
<th>Not Certain</th>
<th>MAYBE</th>
<th>B</th>
<th>Probably</th>
<th>Definitely</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>A</td>
<td>B</td>
<td></td>
<td>B</td>
<td>B</td>
<td>B</td>
</tr>
</tbody>
</table>

2. One of your work colleagues has just dropped their brand new laptop and it is no longer working.

A) Ring your insurance provider and tell them it was stolen. B) I guess you should have bought the protective casing.

<table>
<thead>
<tr>
<th>Definitely</th>
<th>Probably</th>
<th>Not Certain</th>
<th>MAYBE</th>
<th>B</th>
<th>Probably</th>
<th>Definitely</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>A</td>
<td>B</td>
<td></td>
<td>B</td>
<td>B</td>
<td>B</td>
</tr>
</tbody>
</table>

3. It’s coming up to the world cup and a friend has organised a party for all of your friends to watch the final at his house. His TV is relatively small and he thinks he could do with a bigger one; he has the idea to drop his TV on the floor and claim it on his “old for new” contents insurance.

A) How will they know if you’re lying? Looks like a win-win situation to me. B) I wouldn’t do it if I were you.

<table>
<thead>
<tr>
<th>Definitely</th>
<th>Probably</th>
<th>Not Certain</th>
<th>MAYBE</th>
<th>B</th>
<th>Probably</th>
<th>Definitely</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>A</td>
<td>B</td>
<td></td>
<td>B</td>
<td>B</td>
<td>B</td>
</tr>
</tbody>
</table>

4. Your cousin has had his home burgled and he is most upset that his guitar has been stolen, he always looks for the positive in every situation and has the view that “insurance companies make loads of profit; they can afford my claim so I’ll tell them my guitar was a vintage 1948 Gibson Les Paul worth £3,000.”

A) It certainly was vintage but not worth that amount; you can’t do that. B) I am sure they can afford it; you might as well get what you can.

<table>
<thead>
<tr>
<th>Definitely</th>
<th>Probably</th>
<th>Not Certain</th>
<th>MAYBE</th>
<th>B</th>
<th>Probably</th>
<th>Definitely</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>A</td>
<td>B</td>
<td></td>
<td>B</td>
<td>B</td>
<td>B</td>
</tr>
</tbody>
</table>
5. You are driving your car and have an accident. It is not serious and you sustain no injuries, the cost to fix the damage is likely to be around £650. You have insurance but only for fire and theft. A family member offers to claim they were driving, they are fully comp and have an excess of only £150

A) That would be great it will only cost me £150, let’s do it.  
B) Thank you for the offer, but no thanks, it was my mistake I will pay for it.

<table>
<thead>
<tr>
<th>Definitely</th>
<th>Probably</th>
<th>Maybe</th>
<th>Not Certain</th>
<th>Probably</th>
<th>Definitely</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>B</td>
<td>B</td>
</tr>
</tbody>
</table>

6. During a conversation over a coffee at work one of your co-workers starts talking about insurance and has the view that “When it comes to insurance, claim at every opportunity and claim as much as you can, get your money’s worth”

A) I agree.  
B) I disagree

<table>
<thead>
<tr>
<th>Definitely</th>
<th>Probably</th>
<th>Maybe</th>
<th>Not Certain</th>
<th>Probably</th>
<th>Definitely</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>B</td>
<td>B</td>
</tr>
</tbody>
</table>

7. You are constantly moaning about how old your car is, and how you would love to get a new one but just can’t afford it at the moment. A friend tells you they would be willing to take your car and burn it on a field so you can get a new one.

A) No chance! I couldn’t and wouldn’t ask that of you, besides it’s illegal  
B) That is a little risky but if you’re willing to do it then yes.

<table>
<thead>
<tr>
<th>Definitely</th>
<th>Probably</th>
<th>Maybe</th>
<th>Not Certain</th>
<th>Probably</th>
<th>Definitely</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>B</td>
<td>B</td>
</tr>
</tbody>
</table>

8. You would do anything for your partner and you know they have seen and would love a new bathroom suite that costs £3,500. There is no way you can shell out for it at the moment unless as a friend suggests you just “drop a hammer on the sink” then claim for a whole new suite.

A) I am not even going to consider it; I will just have to save up.  
B) I would do anything to make them happy; I will consider it an option.

<table>
<thead>
<tr>
<th>Definitely</th>
<th>Probably</th>
<th>Maybe</th>
<th>Not Certain</th>
<th>Probably</th>
<th>Definitely</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>B</td>
<td>B</td>
</tr>
</tbody>
</table>
Section C:
The following statements are phrases describing people’s behaviours. Please use the rating scale below to describe how accurately each statement describes your behaviour. Describe yourself as you generally are now, not as you wish to be. Describe yourself as you honestly see yourself, in relation to other people you know of the same sex and roughly the same age. Please check the answer for each question below that best represents you.

<table>
<thead>
<tr>
<th>Very Accurate</th>
<th>Moderately Accurate</th>
<th>Neither Accurate nor Inaccurate</th>
<th>Moderately Inaccurate</th>
<th>Very Inaccurate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

**Deferred-Gratification**

- I am good at planning things way in advance. 1 2 3 4 5
- I am good at saving money rather than spending it straight away. 1 2 3 4 5
- I enjoy things all the more because I have to wait for it and plan for it. 1 2 3 4 5
- I find it is worthwhile to wait and think things over before deciding. 1 2 3 4 5
- I like to spend money as soon as I get it. 1 2 3 4 5
- I always accept others' opinions, even when they don't match my own. 1 2 3 4 5
- There has been an occasion when I took advantage of someone else. 1 2 3 4 5
- I am good at planning things way in advance. 1 2 3 4 5

**Risk-Taking**

- I often take risks. 1 2 3 4 5
- I would never make a high risk investment. 1 2 3 4 5
- When rules are inconvenient I break them. 1 2 3 4 5
- I would risk driving early after a night of heavy drinking. 1 2 3 4 5
- I would enjoy bungee jumping. 1 2 3 4 5
- If gambling I prefer to make a risky bet that would return greater winnings over a safer bet that would return smaller winnings. 1 2 3 4 5
- I often drive a car without wearing a seat belt. 1 2 3 4 5
- I would choose a less safe career that I truly enjoy over a more secure one. 1 2 3 4 5

**Impetuous**

- I act impulsively. 1 2 3 4 5
- I find it hard to keep from ‘blowing my top’ when I get very angry. 1 2 3 4 5
- I am easily excited. 1 2 3 4 5
- I do things I later regret. 1 2 3 4 5
- I barge in on conversations. 1 2 3 4 5
- I act on the spur of the moment. 1 2 3 4 5
- I make rash decisions. 1 2 3 4 5
- I jump into things without thinking. 1 2 3 4 5
I consider how things might be in the future, and try to influence those things with my day to day behaviour. | 1 2 3 4 5
Often I engage in a particular behaviour in order to achieve outcomes that may not result for many years. | 1 2 3 4 5
My convenience is a big factor in the decisions I make or the actions I take. | 1 2 3 4 5
I am willing to sacrifice my immediate happiness or well-being in order to achieve future outcomes. | 1 2 3 4 5
I think it is more important to perform a behaviour with important distant consequences than a behaviour with less-important immediate consequences. | 1 2 3 4 5
I generally ignore warnings about possible future problems because I think the problems will be resolved before they reach crisis level. | 1 2 3 4 5
I think that sacrificing now is usually unnecessary since future outcomes can be dealt with at a later time. | 1 2 3 4 5
I only act to satisfy immediate concerns, figuring that I will take care of future problems when they arise. | 1 2 3 4 5

<table>
<thead>
<tr>
<th>Very Accurate</th>
<th>Moderately Accurate</th>
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<th>Moderately Inaccurate</th>
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</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
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</tbody>
</table>

**Integrity**

I am trusted to keep secrets. | 1 2 3 4 5
I lie to get myself out of trouble. | 1 2 3 4 5
Everyone would steal if they knew they wouldn’t get caught. | 1 2 3 4 5
I can be trusted to keep my promises. | 1 2 3 4 5
I refuse to take credit for work I haven’t done. | 1 2 3 4 5
I would never take things that aren't mine. | 1 2 3 4 5
I admire a really clever scam. | 1 2 3 4 5
I would not regret my behaviour if I were to take advantage of someone impulsively. | 1 2 3 4 5
I believe everyone should cheat to get ahead. | 1 2 3 4 5

**Optimism**

I can find the positive in what seems negative to others. | 1 2 3 4 5
I expect the worst. | 1 2 3 4 5
I remain hopeful despite challenges. | 1 2 3 4 5
I am not confident that my way of doing things will work out for the best. | 1 2 3 4 5
I think about what is good in my life when I feel down. | 1 2 3 4 5

**Machiavellianism**

I lack the talent for manipulating others. | 1 2 3 4 5
I have a natural talent for influencing people. | 1 2 3 4 5
I hate being the centre of attention. | 1 2 3 4 5
I find it easy to manipulate others. | 1 2 3 4 5
I can talk others into doing things. | 1 2 3 4 5
### Opportunism

<table>
<thead>
<tr>
<th>Description</th>
<th>Very Accurate</th>
<th>Moderately Accurate</th>
<th>Neither Accurate nor Inaccurate</th>
<th>Moderately Inaccurate</th>
<th>Very Inaccurate</th>
</tr>
</thead>
<tbody>
<tr>
<td>If the opportunity arose for me to cheat and improve a test score I would take it.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Sometimes, I have to alter the facts slightly in order to get what I need.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>If you are selling a used car, you are obliged to inform the prospective buyer of all its defects.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Someone who is applying for health insurance has the right to keep quiet about some illnesses, so as not to increase the premium.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

### Callousness

<table>
<thead>
<tr>
<th>Description</th>
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<th>Moderately Accurate</th>
<th>Neither Accurate nor Inaccurate</th>
<th>Moderately Inaccurate</th>
<th>Very Inaccurate</th>
</tr>
</thead>
<tbody>
<tr>
<td>I do not feel guilty when I hurt someone’s feelings.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>If I found someone’s wallet, I would not feel guilty about keeping the money.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I tend to put my own needs first in almost everything I do.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>If I really need something, I don’t mind using someone to get it.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I think you have to be ruthless to get on in life.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>It doesn’t bother me if my actions cause problems for someone else.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I try to make friends with people who can be useful.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I like people to be afraid of me.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

### Conduct Problems

<table>
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<tr>
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<th>Moderately Accurate</th>
<th>Neither Accurate nor Inaccurate</th>
<th>Moderately Inaccurate</th>
<th>Very Inaccurate</th>
</tr>
</thead>
<tbody>
<tr>
<td>When rules are inconvenient, I break them.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>In team sports, I think it’s alright to hurt your opponents.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>When I disagree with someone, I sometimes threaten them with violence.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I would do something against the law if I knew I would not get caught.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I have been involved in several fights since my teenage years.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>As a child, I started fires that damaged property.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>As a child and young teenager, I often stole things.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I have taken things that were not mine.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>When I was young, I deliberately damaged property that didn’t belong to me.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

### Self-Regulation

<table>
<thead>
<tr>
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<th>Neither Accurate nor Inaccurate</th>
<th>Moderately Inaccurate</th>
<th>Very Inaccurate</th>
</tr>
</thead>
<tbody>
<tr>
<td>I can always say “enough is enough”.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I am a highly disciplined person.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I keep my emotions under control.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I easily resist temptation.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I experience very few emotional highs and lows.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I let myself be taken over by urges to eat too much.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
**Final section**

**Do you currently hold insurance in any of the following areas (please tick):**

| I do not have any insurance policies | ☐ Automobile | ☐ |
| Home contents                       | ☐ Home buildings | ☐ |

**Have you ever made an insurance claim?**

- Yes ☐
- No ☐

**How many claims have you made in the past 5 years?**

*(Please tick as many as are relevant and after the multiplication sign “x” please indicate the number of claims of this type you have made)*

| Automobile damage (Accident) | ☐ x | Home Buildings | ☐ x |
| Automobile damage (Accident) where liability was yours | ☐ x | Home D.I.Y Damage | ☐ x |
| Automobile damage (vandalism) | ☐ x | Home Fire | ☐ x |
| Automobile theft | ☐ x | Natural disaster (i.e. flood)) | ☐ x |
| Home Contents (Burglary) | ☐ x | Home Contents (Accidental damage) | ☐ x |
Appendix 3: Study 3 Questionnaire

Note to readers: Items presented in scale clusters and labels added for clarity

Firstly, I want to say **THANK YOU** for taking the time to participate in our research that aims to gain a deeper understanding of the individual characteristics influencing different types of financial behaviour.

**Confidentiality is 100% guaranteed.** Only people directly involved in this project (myself and supervisor Dr. Paul Irwing) will have access to the questionnaires.

The questionnaire itself will take around 10-15 minutes to complete. More detailed instructions on how to respond to the questions are provided before each section.

There is no need to think hard about your answers: usually the first response that comes to mind is the most accurate one. Please answer as honestly as you can, say what you feel, not what you think you should say, there are no right or wrong answers.

If you are interested in knowing more about this research, please do not hesitate to email me at: David.Hughes@postgrad.mbs.ac.uk

Thank you very much for your time and help.
Section A: The following phrases describe people’s financial behaviour. Please use the rating scale below to describe how accurately each statement describes your behaviour. Please answer quickly and honestly, there are no right or wrong answers, your responses will remain anonymous. Please use the rating scale below and circle the number for each statement that best represents you.

<table>
<thead>
<tr>
<th>Financial Behaviour</th>
<th>Very Inaccurate</th>
<th>Neither Accurate nor Inaccurate</th>
<th>Very Accurate</th>
</tr>
</thead>
<tbody>
<tr>
<td>I pay for almost everything on my credit card.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I use my credit card as a last resort.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I often run out of money and have to pay for essential items (e.g. food, bills) on my credit card.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>My credit cards are usually at their maximum credit limit.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I spend more impulsively when I use a credit card.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am less concerned with the price of a product when I use a credit card.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I prefer to use credit to buy things rather than saving up.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>When I use my credit card I pay off the full balance as soon as possible.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I pay as much as I can afford off my credit card balance each month.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I make only the minimum payments on my credit cards each month.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I enjoy ‘retail therapy’ shopping helps me forget the stress in my life.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I buy things to reward and ‘treat’ myself.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I purchase things because I know they will impress others.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I often feel guilty after buying things.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I worry about my spending habits but still go out and shop and spend money.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I feel others would be shocked if they knew of my spending habits.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>There are times when I have a strong urge to buy.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>More often than not, I spend all that I earn.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I sometimes buy things I can’t really afford.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I often spend money now and worry about the consequences later.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I often buy items/clothes that I never use/wear.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I spend a significant amount of money on non-essential items (i.e. shoes, handbags, computer games, sports equipment).</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I like luxurious things and am prepared to buy them even if I don’t have much money.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I often run out of money before my next pay day.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I regularly set aside some of my income as savings.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
I put a lot of thought into managing my money effectively.  
When it comes to my finances I plan for the future.  
I make plans to ensure I will have enough money in the future.  

<table>
<thead>
<tr>
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<th>Very Accurate</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
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<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>7</td>
<td></td>
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</tbody>
</table>

Deferred-Gratification

| I am good at planning things way in advance. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| I enjoy things all the more because I have had to wait and plan for them. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| I can’t tolerate being kept waiting for things. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Once I have bought something I have to use it as soon as possible. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| If my favourite band/comedian/show etc. was on I would go to watch even if it meant being ill prepared for an exam or meeting. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

Impetuousness

| I act impulsively. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| I find it hard to keep from ‘blowing my top’ when I get very angry. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| I am easily excited. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| I do things I later regret. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| I barge in on conversations. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| I act on the spur of the moment. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| I make rash decisions. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| I jump into things without thinking. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

Risk-Taking

| I often take risks | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| I would never make a high risk investment | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| When rules are inconvenient I break them | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| I would risk driving early after a night of heavy drinking | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| I would enjoy bungee jumping | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| If gambling I prefer to make a risky bet that would return greater winnings over a safer bet that would return smaller winnings | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| I often drive a car without wearing a seat belt | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| I would choose a less safe career that I truly enjoy over a more secure one | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

Section B: The following questions aim to understand your level of credit usage. All responses will remain **anonymous**. Please check the box and print your answers where relevant.

**Do you currently own any credit cards?**  
No ☐  Yes ☐

**How many credit cards do you own?**

0 ☐  1 ☐  2 ☐  3 ☐  4 ☐  5+ ☐

**Approximately what is your current total outstanding credit card balance (i.e. the total balance across all cards)?** £_______________
**Do you currently hold any loans?**  No ☐ Yes ☐

**How many loans (excluding mortgages and student loans) do you currently hold?**  
0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5+ ☐

**Approximately what is your current total of loaned credit?** (i.e. total money borrowed across all loans, except mortgages and student loans)  £__________________

**Have you ever been refused credit in the form of either a loan or credit card?**  
No ☐ Yes ☐

**Do you regularly put money aside for savings?**  No ☐ Yes ☐

**Approximately how much do you save each month?**  £__________________

**Approximately what is your total balance of personal savings?**  £__________________

---

**Section C:** The following statements again describe people’s behaviour. Please use the rating scale below to describe how accurately each statement describes your behaviour. Please answer quickly and honestly, there are no right or wrong answers, your responses will remain anonymous. *Please circle the number for each question below that best represents you.*

<table>
<thead>
<tr>
<th>Very INaccurate</th>
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<th>Very Accurate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
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<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>7</td>
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</tbody>
</table>

**Consideration of Future Consequences**

<table>
<thead>
<tr>
<th>Consideration of Future Consequences</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>I consider how things might be in the future, and try to influence those things with my day to day behaviour.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>Often I engage in a particular behaviour in order to achieve outcomes that may not result for many years.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>My convenience is a big factor in the decisions I make or the actions I take.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>I am willing to sacrifice my immediate happiness or well-being in order to achieve future outcomes.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>I think it is more important to perform a behaviour with important distant consequences than a behaviour with less-important immediate consequences.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>I generally ignore warnings about possible future problems because I think the problems will be resolved before they reach crisis level.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>I think that sacrificing now is usually unnecessary since future outcomes can be dealt with at a later time.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>I only act to satisfy immediate concerns, figuring that I will take care of future problems when they arise.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
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<td>7</td>
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### Compulsivity

<table>
<thead>
<tr>
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<th>Very Accurate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>I love order and regularity.</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>When I see things out of place, I have an almost uncontrollable urge to put them back.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>I am happiest when my time is carefully organized.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>I spend a lot of time making sure that everything is exactly the way it should be.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>I spend hours trying to make everything as exact as possible.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>I measure everything precisely, never relying on estimates.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>I cannot tolerate mess.</td>
<td>1</td>
<td>2</td>
<td>3</td>
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</tbody>
</table>

### Anxiety

<table>
<thead>
<tr>
<th></th>
<th>Very Inaccurate</th>
<th>Neither Accurate nor Inaccurate</th>
<th>Very Accurate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>My life is worthwhile.</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>My life does not fulfil my potential.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>I have a great deal of influence over any matters of my life that I feel concerned about.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>I have a great deal of influence in deciding how organise and live my life.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>The social status of things I do in my life are very high.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>My life does not make use of my skills and abilities.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Most people think my way of life is desirable.</td>
<td>1</td>
<td>2</td>
<td>3</td>
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</tbody>
</table>

### Narcissism

<table>
<thead>
<tr>
<th></th>
<th>Very Inaccurate</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>I am only really satisfied when people acknowledge how good I am.</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Being accepted by others is very important to me.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>I really need to know that people approve of me.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>I have the most energy to do things after I have been admired by others.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>It is important to me to be noticed by other people.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>I feel happiest when all eyes are on me.</td>
<td>1</td>
<td>2</td>
<td>3</td>
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</tbody>
</table>

### Insecure Attachment

<table>
<thead>
<tr>
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<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>I am only really comfortable when I have someone to keep me company.</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>I become anxious when I have to be alone for any length of time.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>I try to have people around me all of the time.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>I worry about being abandoned by the person/people I love.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>I feel I have to impress people in order for them to love me.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>People like me for me not because of what I do for them.</td>
<td>1</td>
<td>2</td>
<td>3</td>
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</tbody>
</table>

### Self-Regulation

<table>
<thead>
<tr>
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<th>Very Accurate</th>
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<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>I can always say “enough is enough”.</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>I am a highly disciplined person.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>I keep my emotions under control.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>I easily resist temptation.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>I experience very few emotional highs and lows.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>I let myself be taken over by urges to eat too much.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>
**Demographics:** (Tick ✓ where applicable)

**Gender:**  Female ☐  Male ☐  Other ☐

**Age:**

**No. of Dependents:**

**Ethnicity:**
- White ☐  Asian or Asian British ☐  Chinese ☐
- Mixed ☐  Black or Black British ☐  Other (please specify):

**Marital Status:**
- Single (never married) ☐  Divorced/Annulled ☐  Remarried ☐
- Living with partner ☐  Separated ☐
- Married ☐  Widowed ☐  Other (please specify):

**Level of education** (Select highest level completed):
- No Schooling ☐  Secondary to age 18 ☐  University ☐
- Secondary to age 15/16 ☐  Non-University higher education ☐

**Employment Status:**
- Employed (Full-time) ☐  Student ☐
- Employed (Part-time) ☐  Retired ☐
- Self employed ☐  Unemployed ☐  Other (please specify):

**Occupational Group:**
- Professional/Senior managerial ☐  Skilled worker ☐  Semi-skilled/Unskilled ☐
- Junior managerial ☐  Other white collar/service ☐  Other (specify):

**Annual salary (not including bonuses):**
- Under £10,000 ☐  £30,000 - £35,000 ☐  £55,000 - £60,000 ☐  £80,000 - £85,000 ☐
- £10,000 - £15,000 ☐  £35,000 - £40,000 ☐  £60,000 - £65,000 ☐  £85,000 - £90,000 ☐
- £15,000 - £20,000 ☐  £40,000 - £45,000 ☐  £65,000 - £70,000 ☐  £90,000 - £95,000 ☐
- £20,000 - £25,000 ☐  £45,000 - £50,000 ☐  £70,000 - £75,000 ☐  £95,000 - £100,000 ☐
- £25,000 - £30,000 ☐  £50,000 - £55,000 ☐  £75,000 - £80,000 ☐  £100,000 + ☐