The impact of personality traits on attitude to financial risk

The Impact of Personality Traits on Attitude to Financial Risk

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Abstract

While the effects of emotions on attitudes to investment risk are now well documented, the influence of personality factors has been less researched. This paper examines the role of personality traits in determining financial risk tolerance. Using an extensive survey of UK-based retail investors, we show that personality traits and characteristics are more important than emotions in determining attitude to risk. We also observe that the widely adopted 'Big Five' framework is insufficient to characterise this relationship adequately, with significant roles for financial self-efficacy, resilience, and trait anger. Since some of these characteristics can be modified, our findings are suggestive that appropriate training and support for those making financial decisions could lead to better outcomes over the longer term.

Keywords: retail investors, attitude to risk, risk tolerance, emotions, personality traits, financial decisions.

J.E.L. Classifications: G11, G20, J14, C25

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1. Introduction

Behavioural finance has made significant strides over the past decade in providing valuable insights into how financial markets work and how investors make choices (see, for example, Forbes, 2009). A key part of the development of behavioural finance has been a growing acceptance that financial decision-making is not a purely cognitive process, and an increasing literature has documented the profound impact of emotions on decision-making across a range of different contexts (e.g., Thaler, 2000). For instance, Bouzguenda (2018) examines the impact of 'emotional intelligence' in the context of corporate decision-making; Kuhnen and Knutson (2011), Breaban and Noussair (2018), and Conte et al. (2018) study the impact of emotions on risk-taking; Miu and Crisan (2011) focus on the effects of framing on investment decisions. In more specialist research, a recent study showed that the hajj pilgrimage positively affects investor sentiment in the Saudi stock market, which the authors attribute to its positive emotional impact (Abbes & Abdelhédi-Zouch, 2015). Finally, Hirschleifer (2020) re-emphasises the role that social connections can have upon financial decision-making, potentially exacerbating individual biases.

Returning to the effects of emotions on choices, both current emotions and those that the decision-maker anticipates feeling contingent upon the choice made now can influence the selection. In particular, the fear of feeling the pain of regret in the future can lead people to avoid taking risks (Zeelenber & Beattie, 1997). Emotions affect decision-making in general, but financial choices in particular, due to the complexity and volume of the information required to make purely logical decisions. In the investment context, this results in an at best boundedly rational approach (Forgas, 1995; Sahi, 2017; see also Simon, 1955, for an early discussion of bounded rationality). Financial decisions are often made in situations where investors face time pressure and difficulty assessing the real risk levels and expected returns of financial products (Sarasvathy, 2001). In general, a heightened emotional state is believed to impede effective financial decision-making and encourage investors to make choices that are hard to reconcile with the maximisation of expected risk-adjusted returns (Baker & Nosfinger, 2002; Lo et al., 2005)

Emotions can impact the amount of risk that an investor is willing to take through two routes. First, there may be emotions that are integral to the task at hand – how the actual choice to be made makes the investor feel. For example, in the financial context, it is possible that thinking about pensions or investments could engender feelings of worry (about making the wrong decision and losing money or not having enough), excitement (about the possibility of making large returns) or relief (at finally getting around to making a decision at all) – see, for instance, Schlösser et al. (2013). Second, there is also evidence that the incidental or 'background' emotions unrelated to the task that a decision-maker might be feeling when making a choice can influence the outcome. Brooks et al. (2020) examine the role of these two classes of emotions in the context of their impact on investor

attitude to risk, finding both have an influence, although, perhaps unsurprisingly, integral emotions are more important.

It is worth elucidating the differences between affect, emotions and moods. The three concepts are intimately linked, although, in psychology, they are usually viewed as distinct. Affect encompasses a broad range of feelings that includes mood and emotions. Positive affect refers to feelings associated with enthusiasm and energy, whereas negative affect refers to feelings of distress and unpleasantness. Emotions tend to be relatively short-lived and focused on a particular reason for the sentiment, while mood is thought of as longer-term and more general, and no specific factor is required to elicit mood (Beedie et al., 2005; Ekkekakis, 2012). Given our broad objectives in this study, we do not dwell on the subtle distinctions, and we therefore use the terms interchangeably.

Not only emotions but also more deep-seated personality traits will affect decision-making. Yet, in contrast to the vast literature describing how the individual's emotional state affects financial decision-making, there is less research on the influence of personality traits. This is somewhat surprising since the latter are, by definition, much more stable over time for a given individual, and therefore we might expect them to have a much more significant and longer-lived impact on financial decisions (Cobb-Clark & Schurer, 2012; Watson & Humrichhouse, 2006). There is evidence in the literature that personality traits can influence a wide range of financial behaviour and outcomes, including investment choices (Rustichini et al., 2012); investment horizon (Mayfield et al., 2008); susceptibility to behavioural biases (De Bortoli et al., 2019); lifetime earnings (Duckworth & Weir, 2011); spending behaviour (Becker, 2011); and the likelihood of being the primary financial decision-maker in a household (Goldfayn-Frank, 2018).

Although the body of existing research examining the impact of personality traits on financial decision-making (broadly defined) is small, it is, however, not non-existent. A modest, emerging strand of the literature has predominantly found a significant link between the two across various countries, such as Crysel et al. (2012), Chitra & Sreedevi (2011), Filbeck et al. (2005) and Pak & Mahmood (2015). A relevant study by Conlin et al. (2015) examines the link between personality traits and the decision as to whether to invest in the stock market (or not) using data from a national household survey in Finland, finding that excitability, extravagance, sentimentality and dependence have substantial impacts, echoing the findings of an earlier study by Brown and Taylor (2011). Interestingly, recent research has further highlighted the importance of investor-advisor personalities on the trading strategies employed and types of stocks included in an investor’s portfolio. Tauni et al. (2020) report that similarities in openness, conscientiousness, extraversion, and agreeableness between investor and advisor positively impact investment performance, but similar levels of neuroticism between the two negatively influence performance. The researchers conclude that as

emotionally unstable advisors fail to create suitable investment strategies and emotionally unstable investors struggle to be fully immersed in their investment journey and handle their negative emotions, there is a lack of diversification and, consequently, weaker trading performance.

The above studies in the finance domain build upon the underpinning conceptual work by researchers in psychology spanning several decades. The most common framework used in psychology to examine the effects of personality on decision-making in various domains is known as the 'Big Five' taxonomy (so-named by Goldberg, 1990), where personality traits are grouped under five main headings: openness to experience, extraversion, neuroticism, conscientiousness and agreeableness. This structure is the most widely applied in the psychology literature and has received significant support for its stability and applicability (Mayfield et al., 2008), although it has nonetheless been subject to some criticism (e.g., Block, 1995).

Research into personal characteristics and risk-taking behaviour in the financial context also extends beyond the Big Five personality traits. There is evidence demonstrating how trait anger is associated with a willingness to invest in risky assets (Gambetti & Giusberti, 2012) and research exists on how the intolerance of uncertainty links with investment decisions (Conlin et al., 2015). As well as personality traits, we can examine more dynamic personal qualities that can be developed or learned. A negative relationship has been identified between resilience and behavioural biases (Hamurcu, 2019), and financial self-efficacy has been observed to influence financial decisions and satisfaction (Asebedo & Payne, 2019; Tang et al., 2019).

This paper comprehensively examines the effects of positive and negative emotions, personality traits, and personal qualities on attitudes to financial risk by implementing a 15-item attitude to risk scale using a broad survey of over 600 retail investors in the UK. We extend existing research in this area in several important ways. First, by using both emotions and personality measures in the same models, we are able to determine which is more important and whether one subsumes the other. As intuition would lead us to expect, there is evidence that personality traits and emotions are related. For instance, extraversion and neuroticism are related to positive and negative affect, respectively (Costa & McCrae, 1980; Larsen & Ketelaar, 1991), and therefore allowing for both is vital to ensure that we correctly identify which is most affecting risk tolerance. A failure to consider traits may lead the researcher to erroneously conclude that short-term emotional states affect behaviour when it would be more accurately attributed to more deep-seated personality factors.

Second, we go beyond the 'Big Five' classification of personality traits to also consider the roles of financial self-efficacy, resilience, intolerance of uncertainty, and trait anger. The literature cited briefly above and, in more detail, below has demonstrated the importance of these additional characteristics

in influencing investment decisions and yet they have not been given sufficient consideration in much existing research. As we examine the impact of personality traits and emotions on attitudes to financial risk, it is also apparent that such highly pertinent variables should be considered to understand the broader impact of personal characteristics on risk tolerance.

Third, by using a well-established and market-leading attitude to risk questionnaire (ATRQ) as the key outcome variable, we are able to overcome the limitation in several prior studies that attitude to risk and investment choices may be influenced by the complexity of the terminology used and the presentation of financial outcomes or gambling scenarios employed. While several methods exist for eliciting risk preferences from survey participants, ATRQs are often preferred due to their objectivity compared with more informal techniques (MacCrimmon and Wehrung, 1986). If appropriately designed, a major benefit of questionnaires is the lack of need for the complex terminology required to implement, for example, the multiple price list approach or its variants (Charness et al., 2013). Analysis of the factors determining attitude to risk (ATR) is worthwhile since risk tolerance influences investment decisions and which classes of assets investors place their money into (Corter & Chen, 2005; Fellner & Maciejovsky, 2007). Our paper homes in on the impact of personality and emotions on risk preferences specifically, and thus provides a cleaner analysis than papers attempting to examine the factors affecting investment choices, where both personality and risk preferences have a role to play and disentangling them may prove challenging. Finally, we further allow for the effects of numerous control variables in the model that potentially influence attitude to risk, including age, gender, marital status, education, occupation, salary and wealth.

The remainder of the paper is organised as follows. Section 2 discusses in further detail the literature on the impact of personality and emotions on financial decision-making that underlies our framework and motivates the hypotheses that are developed. Section 3 describes the methods that we employ to collect the data and estimate the empirical model, with the results presented and discussed in Section 4. Finally, Section 5 offers concluding remarks and outlines some implications of the findings for independent financial advisors and financial market regulators.

2. Conceptual Framework and Hypotheses Development

This section discusses the theoretical underpinnings of the links between personality, emotions, and financial risk tolerance that lead to the development of several specific hypotheses that we test in the following sections.

2.1 The role of personality in financial decision making

The personality traits which we assign to others or ourselves are a consequence of behaviours that have been observed or experienced. Personality traits, such as the Big Five, have been used to explain differences in behaviour and decisions across various aspects of life, providing insight into universal ways of thinking, feeling, and behaving (McCrae & Costa, 1997). Ajzen (2011) emphasised that background factors, such as the personality traits captured by the Big Five, can influence the dynamics between the predictor variables within the theory of planned behaviour (belief in abilities to perform behaviour, attitudes to behaviour, perceptions of social pressures for performing behaviour) and their impact on intentions and resulting behaviours.

Personality traits also relate to different general decision-making styles. In a recent article, El Olthman et al. (2020) show how those with agreeable traits use dependent decision-making styles where they depend on others for support and guidance when making a decision. Conscientiousness positively relates to rational decision-making in which an individual uses a structured approach, analysing details before making a decision. Extraversion positively relates to an intuitive decision-making style where choices are based on feelings and instinct. Spontaneous types negatively relate to both neurotic and agreeable traits, as those with agreeable traits require advice before deciding, and those who are anxious and emotionally unstable are unwilling to act rapidly. Those open to experience use intuitive decision-making styles, but a negative relationship was found with dependent types as they tend to rely less on the opinions of others, wanting to seek new experiences.

It is apparent that personality traits are essential for the steps and strategies individuals may take before making a decision and can influence intentions and behaviour at large. Behavioural finance theories suggest that investors are not rational and that their financial decisions and behaviours can be influenced by psychological and behavioural factors, and that the biases investors tend to have are related to personality (Pak & Mahmood, 2015; Sadi et al, 2011). Therefore, it is vital that we consider personality traits as we examine willingness to take risk in financial decisions. Personality and psychological characteristics have been found to lead people to have a predisposition to behave in specific ways when required to make a decision where there are risks. Nicholson et al. (2005) provide some information on the mechanisms through which the Big Five personality traits may combine to jointly affect decision-making in the context of risk generally. They argue that extraversion and openness to experience motivate taking risks. At the same time, agreeableness and the absence of neuroticism hold the risk-taker in emotionally good stead in times of turbulence. Finally, not being too conscientious allows individuals not to ‘overthink’ risky situations so that they would become paralysed by indecision. In the sections below, individual personality traits are furthered discussed in relation to attitudes to financial risk.

Openness to experience

People who are open to new experiences tend to be creative and imaginative, and in general, will be more willing to try new financial products and to experiment (Mayfield, 2008); they may also be more accepting of new financial circumstances that result from normal swings in risky investment markets. Hence this trait is expected to be positively linked with financial risk tolerance (De Bortoli et al., 2019; Jiang et al., 2020).

H1: Openness to experience is positively linked with risk tolerance.

Extraversion

People who are extroverts tend to be confident and like to be in the company of other people (Sadi et al., 2011). The existing literature shows extraversion to be positively linked with financial risk tolerance (Mayfield et al., 2008; Wong & Carducci, 2013). A plausible line of reasoning is that such people are more inclined to be led by external stimuli and the actions of others, taking a positive attitude and hoping for the best (Pak & Mahmood, 2015), and extraversion frequently goes hand-in-hand with (over)confidence about likely future market outcomes (Pan & Statman, 2012). Supporting this, Oeheler et al. (2018) found that more extraverted individuals pay higher prices for risky assets and make more purchases when these are overpriced.

H2: Extraversion is positively linked with risk tolerance.

Neuroticism

Neurotic people tend to be emotionally unstable and have a higher tendency than others to experience distress, depression and shame (Costa et al., 2001). Neuroticism may make those individuals feel particularly fearful of failure and be less willing to accept the ups and downs in asset valuation that come with risky investing. They may also be less trusting of financial information (Young et al., 2012) and show greater pessimism about future market states, believing to a greater extent than other investors that the market may crash (Jiang et al., 2020). More neurotic individuals have been found to purchase fewer risky assets than those who are less neurotic (Oehler et al., 2018). Hence, we would expect this trait to be negatively related to risk tolerance (Kuhnen et al., 2013; Nicholson, 2005; Rustichini, 2012), although studies have also documented that neurotic individuals have a higher tendency to become reckless, which would suggest that the trait would cause higher risk-taking (Pinjisakikool, 2017).

H3: Neuroticism is negatively linked with risk tolerance.

Agreeableness

Agreeableness is linked with a wide range of characteristics that are usually believed to be positive, including a tendency to be amiable, caring and trustworthy (Graziano and Eisenberg, 1997). Agreeable people are therefore likely to be less sceptical of information on the past performance of

investment funds, etc., thereby making them more risk-tolerant (Chitra & Sreedevi, 2011). However, the possibility of agreeable investors complying with their advisor out of fear of social disapproval may be crucial to investment decisions rather than as a direct impact of the trusting characteristics they hold (Tauni et al.,2020). Furthermore, Pak & Mahmood (op cit.) found significant negative correlations between agreeableness and risk tolerance. There is also evidence that agreeable individuals would be less likely to make stock market investments (Goldfayn-Frank, 2018). There are, therefore, contrasting findings for the relationship between agreeableness and risk tolerance.
H4: Agreeableness is negatively linked with risk tolerance.

Conscientiousness

Conscientious individuals tend to be compliant, detail-oriented and careful with their savings (Donnelly et al., 2012), and investors who have high levels of conscientiousness have been found to have lower risk tolerance levels (Wong & Carducci, 2013; Pan & Statman, 2012). However, again, the evidence is mixed where conscientiousness has been found to positively relate to stock market investing (Goldfayn-Frank, 2018).
H5: Conscientiousness is negatively linked with risk tolerance.

It is also apparent that personal traits and qualities outside of the umbrella of the Big Five should be explored when attempting to gain further understanding of the impact of personality on attitudes to financial risk. Therefore, evidence supporting relationships between trait anger, intolerance of uncertainty, resilience and financial self-efficacy, with decisions in the context of financial risk are discussed below.

Trait anger

Trait anger is a measure of an individual's persistent tendency to become angry where they experience a provocation, and it is often accompanied by the emotions of hate and disgust (Owen, 2011). There is evidence for a relationship between trait anger and the five personality dimensions outlined by Costa & McCrae (op cit.), although it is often considered a related but identifiably separate personality characteristic. In particular, high neuroticism and low agreeableness have been found to associate with trait anger (Pease & Lewis, 2015). Furthermore, trait anger provides further insight into financial decisions as it positively associates with a willingness to invest money in various risky assets and make longer-term investments. Individuals with high levels of trait anger typically wait before selling investments. Trait anger can lead individuals to underestimate the result of losing money and overestimate gaining money (Gambetti & Giusberti, 2012), which would incline them to invest in risky assets.
H6: Trait anger is positively related to risk tolerance.

Intolerance of uncertainty

Those who are intolerant of uncertainty hold negative beliefs about ambiguity regarding future outcomes, and they, therefore, tend to suffer anxiety and react badly when faced with uncertain events (Buhr & Dugas, 2009). Although intolerance of uncertainty generally relates to risk-taking behaviour and not specifically financial risk aversion, it has been shown to be a good predictor of investment decisions where intolerance or fear of uncertainty relates to less stock market participation (Conlin, 2015).

H7: Intolerance of uncertainty is negatively related to risk tolerance.

Resilience

Resilience is the ability to bounce back and adapt to adverse situations. It has been found to be most strongly correlated with emotional stability (low neuroticism) in comparison to other dimensions among the Big Five (Friborg et al., 2005; Oshio et al., 2018). Although Shafiezadeh (2012) found resilience to correlate positively with emotional stability, extraversion and conscientiousness, only emotional stability was found to be a significant predictor of resilience levels. However, resilience is viewed as a more dynamic process that is more malleable over time, and therefore investors can be supported to develop resilience. It is not a trait that people have or do not have, but involves behaviours, thoughts and actions that can develop (Fleming & Ledogar, 2008; Salignac, 2019). There is as yet little research exploring the relationships between resilience and financial risk-taking behaviour. However, understanding how resilience relates to attitudes to risk can provide further insight into the impact of personal qualities on risk tolerance. A better understanding of financial resilience can then allow for the design of resources to assist individuals during periods of financial adversity (Salignac, 2019).

H8: Resilience is positively related to risk tolerance.

Financial self-efficacy

Financial self-efficacy (FSE) refers to an individual's own perception of their ability to manage their finances to achieve their ultimate financial goals (Lapp, 2010). Financial self-efficacy has been found to relate to financial decisions and satisfaction during periods of market volatility (Asebedo & Payne, 2019; Tang et al., 2019) and has been suggested to have an essential role in financial behaviour independent of financial literacy (Farrell et al., 2016). Having confidence in managing finances allows an individual to be more resilient when faced with adversity, where they are better able to handle stress and regulate their emotions. Self-efficacy is a distinct construct from the Big Five personality traits as, again, it is a dynamic process that motivates and regulates behaviour (Stajkovic et al., 2018).

H9: Financial self-efficacy is positively related to risk tolerance.

2.2 Emotions and financial decision-making

There is now a fairly substantial body of research discussing how emotions can affect decision-making in the financial context – see Brooks et al. (2020) for a recent and detailed discussion of this literature – although there is as yet no clear consensus on the direction of the relationship between many of the specific emotions and risk tolerance. A wide range of emotions have been examined in the psychology literature regarding their influence on decision-making in the context of risk, and similarly, these could potentially impact investing behaviour. Relevant emotions include on the positive side: active, alert, attentive, determined, enthusiastic, excited, inspired, interested, proud, and strong; and on the negative side: afraid, ashamed, distressed, guilty, hostile, irritable, jittery, nervous, scared, and upset.

In terms of the expected relationship between emotions / mood and risk tolerance, being in a good mood is linked with 'seeing the bright side' of news stories, with being optimistic about the outcomes of risky decisions (Forgas, 1995; Forgas & Bower, 1987), and with perceiving the level of risk to be lower (Johnson & Tversky, 1983). Therefore, those in positive emotional states are more inclined to take risks, although these findings do contradict the mood maintenance hypothesis. On balance, the existing evidence is suggestive of a positive link between positive affect and risk tolerance, as Brooks et al. (2020) and Kuhnen & Knutson (2011) found, leading to the hypothesis:

H10: Positive affect is positively linked with risk tolerance.

Existing findings on the relationships between negative emotions and financial risk-taking are much more mixed than is the case for positive emotions, however, with reasonably clear evidence that individual emotions pull in opposite directions that cause conflict in an aggregate affect measure. It is entirely uncontroversial to presume that fear, for instance, is negatively linked with risk tolerance, which indeed has been found to be the case (Lee and Andrade, 2011; Schuilreich et al., 2016). On the other hand, anger causes people to feel more confident in their ability to control events and more reckless in decision-making, leading to greater risk tolerance (Campos-Vasquez and Cuilty, 2014; Lerner and Tiedens, 2006), as discussed above. On balance, we might expect that fear would dominate other emotions in influencing the outcome of financial choices, leading to the hypothesis:

H11: Negative affect is negatively linked with risk tolerance.

3. Data and Methodology

3.1 Data collection

An online questionnaire was designed and distributed to UK-based respondents via the Qualtrics platform. The company invites participation through a random selection from among all those in its database of adults but stratified to conform with quotas that were set in place to recruit a diverse

range of retail investors. An equal proportion of respondents with investing experience and experience working with a financial advisor was requested, as well as a 50:50 gender split. For a detailed breakdown of the respondents' demographics, see table 1, panel D. The survey took place between January and March 2020 and was closed automatically once the required number of responses was received.[1] Respondents were required to complete multiple sub-questionnaires within the survey, with sections on: demographics, attitude to financial risk, investment experience, positive and negative affect, personality, intolerance of uncertainty, trait anger, resilience, and financial self-efficacy. The sample comprised 610 respondents (see table 1). Those who had not appropriately engaged with the survey – i.e., were 'straight lining' (posting the same response for large numbers questions in a row), made apparent inconsistencies in their responses (where similar questions elicited responses at opposite ends of the scale), spent less than a pre-defined time on the survey (8 minutes), or did not complete all sections of the survey, were removed and replaced (152 respondents in total).

3.2 Measures

Attitude to financial risk

The core aim of our analyses is to examine the impact of stable personality traits, dynamic personal qualities and varying emotions measures concerning attitudes to taking financial risk. Therefore, a robust measure of attitude to risk was utilised comprising the 'ATR-15' questionnaire used by Distribution Technology in their 'Dynamic Planner' software.[2] The questionnaire is used by large numbers of financial planners and independent financial advisors when risk profiling their clients in order to design suitable investment propositions for them. This approach to understanding attitude to risk is ideal for this study as the ATR-15 was developed to capture all attitude structures explicitly, whether based on behaviours and experience, logic and knowledge or emotions (Brooks, Hillenbrand and Money, 2018). The ATR-15 questions are measured on a 5-point Likert scale ranging from "strongly disagree" to "strongly agree". A benefit of the ATRQ that we employ is that it was designed precisely as an instrument to measure risk aversion for retail investors. Consequently, it avoids the problem that many such investors may struggle to fully comprehend complex scenarios involving contingent payoffs and probabilities couched in technical mathematical language (Charness et al., 2013). Questionnaires have also received regulatory support, with the Financial Services Authority in the UK (which later became the Financial Conduct Authority) reporting in 2011 that "Where they are used within a suitability assessment process, tools and questionnaires can help

[1] This timing surrounds the onset of the stock market crash arising from the covid-19 lockdowns and the first part of the subsequent recovery. We run a test for whether risk tolerance varies pre- and post-the crash, finding there to be no significant difference across the two sub-periods.

[2] Distribution Technology is the UK's leading provider of software and analytics used by financial advisors and their psychometric questionnaire process has been employed to risk profile more than a million end clients.

to provide structure and promote consistency and so can usefully support the discussion a customer has with their adviser or investment manager".[3]

The ATRQ scale that we employ involves 15 items, each of which aims to assess financial risk tolerance, which are then aggregated to form a single composite score on a 1-10 grading where higher scores indicate more tolerance of risk (i.e., lower risk aversion). Given this scoring system and employing this within our study, risk level (dependent variable) is classified on an ordinal scale. We, therefore, use ordered logit models to explore the influence of emotions and personality on attitudes to risk. The specifications take the same general form throughout all analyses, and we test both specific groups of variables and all of them together:

$$Prob.\ Calculated\ ATR_i = \alpha' + \beta_1 Openness_i + \beta_2 Extraversion_i + \beta_3 Neuroticism_i + \beta_4 Agreeableness_i + \beta_5 Conscientiousness_i + \beta_6 Trait\_anger_i + \beta_7 Intolerance\_of\_uncertainty_i + \beta_8 Resilience_i + \beta_9 Financial\_self\_efficacy_i + \beta_{10} Positive\_affect_i + \beta_{11} Negative\_affect_i + \gamma_i' X_i + \epsilon_i$$

where α' is a vector of cut-off points estimated in ordered logit models[4] (constant terms); $Openness_i$, $Extraversion_i$, $Neuroticism_i$, $Agreeableness_i$, and $Conscientiousness_i$ are a set of Likert scores measuring the respondent's personality traits on several different dimensions (as discussed in more detail above); $Positive\_affect_i$ is an aggregate score of the PANAS positive emotions measure; $Negative\_affect_i$ is an aggregate score of the PANAS negative emotions measure; $Resilience_i$, $Financial\_self\_efficacy_i$, $Trait\_anger_i$ and $Intolerance\_of\_uncertainty_i$ are each aggregate score variables measuring various personality variables; ϵ_i is the i.i.d. standard normal error term; X_i is a vector of control variables (covariates) for gender, age, marital status, education, occupation, salary, wealth, and we also include experience of working with a financial advisor (financial experience) and the timing of taking part in the survey pre or post the stock market crash as a result of the covid-19 lockdown (crash). This was a dummy variable defined as taking the value 1 for any respondent completing the survey from 21st February 2020 onwards and zero for questionnaires completed before this date.

Emotions

To understand individual emotions whilst completing the survey, we used The Positive and Negative Affect Schedule (PANAS – see Watson et al., 1988), which has been widely used and cited as an accurate measure to assessing feelings and emotions during the present moment or more holistically over the past week. Due to the purpose of this research, we asked respondents to evaluate their emotions based on the past week. As for the personality variables, the PANAS also consists of a 5-point Likert scale ranging from "very slightly or not at all" to "extremely" regarding 20 items (i.e.,

[3] Financial Services Authority *Finalised guidance - Assessing suitability: Establishing the risk a customer is willing and able to take and making a suitable investment selection*, March 2011.
[4] The estimated cut-off points are not reported for brevity.

excited, nervous, guilty, strong, etc.) that express different emotions using one term. All items reflect the positive or negative construct of the PANAS and are consequently coded appropriately when scored.

The Big Five personality traits

We employed the Brief Version of the Big Five Personality Inventory (Rammstedt & John, 2007). The brief version was opted for over the full version to reduce respondent fatigue across the wide range of sub-questionnaires, but also to include a concise measure that has been shown to highly correlate with results from the full Big Five Personality Inventory. The brief version consists of 10 items, and the respondents express how they see themselves regarding the statements that describe different personality factors (Openness, Conscientiousness, Extraversion, Agreeableness and Neuroticism) – for example, "I see myself as someone who is relaxed, handles stress well" (emotional stability). A 5-point Likert scale ranging from "disagree strongly" to agree strongly" was again used here.

Personality traits and qualities

Trait anger. As expressed above, we opted to include additional personality traits and qualities beyond the Big Five that are widely studied in research examining financial decisions. We adopted questions from the Spielberg trait anger scale, including nine out of the ten items requesting respondents to state how they generally felt – for example, "I am quick-tempered."[5]. A 4-point Likert scale measure ranging from "almost never" to "almost always" was used in accordance with the Spielberg trait anger scale.

Intolerance of uncertainty. The intolerance of uncertainty short version scale (Carleton, Norton & Asmundson, 2007) is useful as it applies the definition of the degree to handle uncertainty in a broad context, including statements such as, "It frustrates me not having all the information I need". This measure consists of 12 items, and respondents are required to state how each item corresponds to their character using a 5-point scale from "Not at all like me" to "Entirely like me".

Resilience. The 10-item Connor-Davidson Resilience scale was used to gather responses on a 5-point scale ranging from "Not true at all" to "True nearly all the time" on statements relating to the respondent's resilience. Items include "I can deal with whatever comes my way". Resilience is a quality that is important to explore in relation to attitudes to risk, as expressed above, and it can provide further insight in addition to measures such as emotional stability within the Big Five personality questionnaire.

Financial self-efficacy. As explained, there is extensive research into the impact of self-efficacy on behaviour, with recent studies explicitly examining the measure of financial self-efficacy concerning

[5] One item was omitted due to its inappropriateness for the purpose, "When I get frustrated, I feel like hitting someone".

financial decisions and behaviour during periods of market volatility. Here, we use the financial self-efficacy scale (Lown, 2011), gathering responses on a 4-point Likert scale from “Not at all true” to “Exactly true” on six items, for example, “I lack confidence in my ability to manage my finances”.

Control variables

As several demographic variables have been demonstrated to relate to attitudes to risk and financial decisions in the relevant literature (see Kannadhasan, 2015; Anbar & Eker, 2010; Asebedo & Payne, 2019), we also control for the following variables: Gender, Age, Marital Status, Education, Occupation, Salary and Wealth. In addition, we also include the experience of working with a financial advisor and the timing of taking part in the survey due to the stock market crash of 2020 as variables.

'Crash′ is included as a variable due to the stock market crash of 2020. As a result of this and the potential interest of the findings due to the unique situation, the times at which respondents completed the online survey were recorded, and respondents are separated to be in either the pre-crash or post-crash group (see table 1).

3.3 Data Summary

Table 1 presents a set of summary statistics that shows the distribution of attitude to risk scores in parentheses in the header row, indicating that ATR has a roughly bell-shaped distribution with just over half of all respondents having scores of 5 or 6. Note that the number of respondents having the highest degrees of risk tolerance (9 or 10) is extremely low, and therefore the small sample size for these two columns means that results in these cases should be interpreted with caution.

All of the other key variables investigated are presented by ATR score and overall (in the final column). Panel A presents emotions as measured using the PANAS to provide insight regarding respondents’ levels of positive and negative emotions over the past week. The summary results show that as positive emotions increase and negative emotions decrease, respondents are more risk-tolerant. Personality traits according to the Big Five-factor model are presented in panel B. These results mainly show that those who are more risk-seeking are more extraverted and emotionally stable (i.e., less neurotic), although there is no clear pattern for the other three measures within the Big Five. Panel C summarises the additional personality traits and qualities that were measured. It is apparent that those with a higher level of resilience and financial self-efficacy are more risk-tolerant, whereas those who are more intolerant to uncertainty are more risk-averse, but risk tolerance shows no discernible link with trait anger. Panel D includes the control variables, and here we observe that those with no experience of working with a financial advisor are more risk-averse, women are more risk-averse, and those with greater financial resources, in terms of salary and wealth, are more risk-seeking. Reassuringly, these relationships in panel D all accord with

stylised results from the existing body of research, and there is also no noticeable decline in risk tolerance immediately after the stock market crash of February 2020.

To understand these relationships in greater detail, we present a correlation matrix in table 2. There are some interesting findings here regarding the relationships between personality traits, personal qualities, risk tolerance and emotions, where we observe fairly strong correlations. A strong positive correlation between resilience and positive emotions (0.56), and a negative correlation between resilience and neuroticism (-0.58) was found. In contrast, we observe a positive correlation between intolerance of uncertainty and negative emotions (0.52), and intolerance of uncertainty with neuroticism (0.50). We further note that these traits and qualities have the highest correlation coefficients with ATR, although weaker than in relation to one another, (correlation of ATR with positive emotions = 0.23; with neuroticism = -0.19; with resilience = 0.22; with intolerance of uncertainty= -0.21 along with financial self-efficacy = 0.18, and extraversion = 0.13). Our conclusion from this table is that while some moderately high correlations exist between the explanatory variables, these are expected given the nature of what is being measured and are not sufficiently high to cause concern. Reported variance inflation factor (VIF) test results are well below the conventional cutoff of 10, and further indicate that there are no issues of multicollinearity. We wish to retain all of these variables in the model as the literature cited above has emphasised their collective relevance. While a high degree of correlation could cause inflated standard errors, it will not affect the estimator's consistency, unbiasedness or efficiency (Brooks, 2019, p. 216).

4. Results and Analysis

4.1 The effect of personality traits (the Big Five) on ATR

Table 3 presents the results of ordered logit regressions of the Big Five personality traits on attitude to financial risk scores. Column (1) shows the impact of the Big Five only with no control variables, demonstrating that neuroticism is highly significant. As discussed in section 2 above, according to Kuhnen et al. (2013), Nicholson (2005), and Rustichini (2012), higher levels of neuroticism predict that an individual will be more risk-averse, while higher levels of extraversion predict that an individual will be more risk-tolerant (e.g., Mayfield et al., 2008; Wong & Carducci, 2013). The five measures collectively have a pseudo-R^2 of 5% with the expected signs, although agreeableness, conscientiousness and openness to experience are not statistically significant at even the 10% level.

The results from including the control variables alone in column (2) provide support for the existing literature, confirming that those with experience of working with a financial advisor, men, those with higher salaries and wealth, and those who are more educated are more risk-tolerant. However, older age and married respondents are more risk-averse, and we do not find that occupational categories

have any significant explanatory power. Adding control variables (financial experience, market crash, gender, age, marital status, education, occupation, salary, and wealth) alongside the Big Five has a large impact on the pseudo-R^2 compared with including only the personality factors, which rises to 22% (see column (3)), but we continue to see neuroticism being a significant predictor of ATR.

So far, we have focused solely on personality traits as captured by the Big Five, and we find personality, particularly neuroticism and extraversion, to explain a small but worthwhile proportion of variance. Here, we provide support for the previous literature, particularly for these two of the Big Five items, where evidence has been more consistent in the past showing that extraverted and emotionally stable individuals are more risk-tolerant and purchase more risky assets (Mayfield et al., 2008; Wong & Carducci, 2013; Oeheler et al., 2018; Kuhnen et al., 2013; Nicholson, 2005; Rustichini, 2012). Despite this, it is apparent that demographic information provides greater insight into why ATR varies from one person to another, supporting strong relationships found in previous research (Kannadhasan, 2015; Anbar & Eker, 2010). Although research primarily incorporates the Big Five personality traits when examining financial decisions, it is vital that we move beyond these characteristics, not only including other traits relevant to financial decisions, such as trait anger and intolerance of uncertainty, but also the personal qualities that investors possess. These qualities are more dynamic and can be enhanced over time, and therefore not only is it essential to explore their role in determining ATR but uncovering this motivates further research examining how the development and growth of personal qualities can support investors who struggle to cope with risk-taking or who suffer as a result of financial adversity when risk becomes reality.

4.2 The effect of additional personality traits and qualities on ATR

Table 4 explores personality traits and qualities that are not explicit within the Big Five-factor model. Ordered logistic regressions are run with the variables: resilience, financial self-efficacy, trait anger and intolerance of uncertainty. Column (1) shows that all four variables are highly significant and drive a pseudo-R^2 of 12% with the expected signs, which is bigger than the comparable figure of 5% for the Big Five only in Table 2. Column (2) combines these personality traits and qualities with those represented within the Big Five. The regression model shows that resilience, financial self-efficacy, trait anger and intolerance of uncertainty are highly significant along with conscientiousness. Those with higher levels of resilience, financial self-efficacy and trait anger are more risk-tolerant. In contrast, conscientious individuals and those with higher levels of intolerance of uncertainty are more risk-averse. Nevertheless, the addition of the Big Five in column 2 leads to no great change in the proportion of variance explained compared to the model presented in column 1. Adding the control variables (financial experience, market crash, gender, age, marital status, education, occupation, salary, and wealth) leads the pseudo-R^2 to rise to 28% (see column (4)), but we continue to see

resilience, financial self-efficacy, trait anger and intolerance of uncertainty as significant predictors of ATR.

To date, the relationship between personality traits and financial risk tolerance has not been extensively researched, and further, very little incorporates the traits and qualities we introduce here. Thus far, the results show that personality traits and qualities outside of the popularly used Big Five are better than the latter at explaining differences in risk tolerance across investors. Although personality traits and qualities are more stable characteristics than emotions and are arguably more reliable measures of how an individual will behave over time, we acknowledge that emotions are still important to consider, particularly due to the period in which this study was conducted where the covid-19 pandemic sparked considerable fear among investors for not only their health but also their finances. We, therefore, present further results when including variables capturing positive and negative emotions.

4.3 The effect of emotions on ATR

In Table 5, column (1), the results of including positive and negative affect alone are found to compare with the Big Five personality measures in terms of their explanatory power, and their signs support the existing literature. Positive affect is highly significant and, together with negative affect (which is not statistically significant), drives a pseudo-R^2 of 5%. Respondents with higher levels of positive emotions are more risk-tolerant. Combining emotions, personality traits, and personal qualities in an ordered logit regression increases the magnitude of the model to explain 14% of the variance (see column (2)). Adding control variables to the emotion variables (financial experience, market crash, gender, age, marital status, education, occupation, salary, and wealth) leads the pseudo-R^2 to rise to 22% (see column (3)), but we continue to see positive emotions as a significant predictor of ATR.

In column (4), we include personality traits, personal qualities, emotions and control variables, and we no longer see positive emotions as a significant predictor of ATR. Here, we find financial resilience, self-efficacy, trait anger, financial experience, being male and having greater wealth to be good predictors of being risk-tolerant, where intolerance of uncertainty and being married are good predictors of being risk-averse (pseudo-R^2 = 28%). In an additional set of analyses (column 5), we remove the control variables that are consistently statistically non-significant throughout most of the ordered logit regression models (crash, age, occupation and salary). In addition to the results presented in column (4) and reported in the previous paragraph, we now find education and positive emotions to be significant predictors of ATR, driving a pseudo-R^2 of 24% with the expected signs.

In the sections above, we demonstrated the importance of considering personality traits and qualities, particularly those we introduce within this study that have rarely been considered previously when attempting to understand attitudes to financial risk. We continue to find such factors to be important when we introduce emotion measures (both positive and negative) as well as demographic variables into the analyses, where the results covering the latter have been well documented. However, only when we remove non-significant variables from the models do we find that emotions significantly relate to financial risk tolerance. The results show only positive emotions to be good predictors, whereas previous findings have also shown negative emotions to have some, albeit weaker, impact on levels of financial risk tolerance (Brooks et al., 2020). The personality characteristics we measure, such as resilience, can affect how individuals regulate their emotions to cope with negative emotional experiences (Tugade & Frederickson, 2006). Therefore, the weak relationships found in this study between emotions and ATR may be explained by adding personality traits that capture emotional regulation better than the affect variables themselves.

4.4 The relative importance of the explanatory variables and categories

Tables 3 to 5 above have large numbers of different factors with varying levels of statistical significance, which makes comparing their relative explanatory power tricky. Therefore, in Table 6, we report the results of a relative importance analysis which allows us to calculate the percentage contribution of each variable as well as the contribution of the category that each of the variables falls into for explaining attitudes to financial risk. The results show that the large number of control variables included within this study explain 12.35% of the cross-sectional variation in risk tolerance, where financial experience (3.1%) is the largest contributor, followed closely by marital status (2.7%), education (2.5%), and gender (2.4%). The Big Five personality traits alone add little contribution (1.79% for all five), with neuroticism (0.88%) being the largest contributor from within that category. The additional personality traits and qualities we include explain a much larger 7.4% of the variance. Here, we find intolerance of uncertainty to be the greatest contributor (3.75%), followed by resilience (1.47%), financial self-efficacy (1.21%) and trait anger (0.97%). Emotions contribute 2.32%, with positive emotions explaining much of this percentage contribution (1.96%).

5. Conclusions

This paper has examined the roles played by personality traits and emotions in determining an investor's attitude to financial risk. We find that the Big Five personality traits have a broadly equal descriptive influence relative to affect for the cross-sectional variation in risk tolerance scores. Neuroticism is negatively linked with risk appetite. Personality traits and emotions are clearly related, with certain personality types leading to a predisposition to particular emotional states – for example, neurotic people have higher than normal tendencies to feel sad, fearful or angry (Costa & McCrae, 1980; Larsen & Ketelaar, 1991), but it is evident that the Big Five have incremental explanatory

power beyond the role of emotions that has been investigated in several recent studies, and supports the importance of examining the effects of personality (Sadi et al., 2011).

However, it is also clear that the wider set of personality characteristics has a much more important influence on attitude to risk than the Big Five framework, which our research indicates is insufficient to characterise investment behaviour. In particular, trait anger, intolerance of uncertainty, resilience and financial self-efficacy are consistently observed to have explanatory power for attitude to risk, even when a range of relevant control variables is incorporated into the model. Prior research has illustrated how each of these variables relates to financial decisions and behaviour, but until now, there is little that directly examines these measures with a well-established measure of attitude to financial risk.

For future research, our findings suggest that the focus in studies of financial decision-making should be on a broad set of personality-related traits rather than emotional states since the former have considerably more explanatory power. We can also identify several potentially important implications from our results for the financial services sector, particularly for retail investors and those who advise them. It is evident that attitudes to risk are influenced by a range of personality traits and wider characteristics – particularly neuroticism, resilience, financial_self_efficacy, and trait anger, and some of these can be changed over time by supportive educational programmes. Since it is a central tenet of finance theory that higher risks on average are rewarded by higher returns in the long-run, it may be advisable for those saving over the very long-term, such as in pensions, to take calculated risks with their funds rather than holding cash. Financial education might be a way to ensure that retail investors are aware of the implications of selecting no risk or low-risk funds for their projected retirement incomes. Such training could also help counteract personality factors that may result in excessive caution in situations where that might not be their best course of action.

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Table 1: Summary statistics

Risk Level	1 (n=10)	2 (n=25)	3 (n=59)	4 (n=109)	5 (n=210)	6 (n=136)	7 (n=45)	8 (n=13)	9 (n=2)	10 (n=1)	Overall (n=610)
Panel A											
Positive Affect											
Mean (SD)	33.6 (10.5)	23.8 (8.08)	32.3 (7.19)	32.2 (8.53)	33.4 (7.39)	33.9 (7.31)	36.1 (7.63)	39.9 (5.35)	35.0 (12.7)	40.0 (NA)	33.1 (7.96)
Median [Min, Max]	38.5 [13.0, 44.0]	25.0 [12.0, 38.0]	33.0 [10.0, 46.0]	34.0 [10.0, 48.0]	34.0 [10.0, 50.0]	35.0 [14.0, 48.0]	35.0 [13.0, 50.0]	41.0 [32.0, 50.0]	35.0 [26.0, 44.0]	40.0 [40.0, 40.0]	34.0 [10.0, 50.0]
Negative Affect											
Mean (SD)	17.7 (7.94)	28.2 (9.50)	20.7 (8.25)	21.4 (8.93)	23.9 (9.53)	22.2 (9.56)	17.2 (6.63)	18.7 (6.59)	20.5 (9.19)	14.0 (NA)	22.2 (9.28)
Median [Min, Max]	15.5 [10.0, 31.0]	27.0 [12.0, 44.0]	18.0 [10.0, 41.0]	19.0 [10.0, 47.0]	24.0 [10.0, 48.0]	20.5 [10.0, 44.0]	16.0 [10.0, 40.0]	17.0 [12.0, 35.0]	20.5 [14.0, 27.0]	14.0 [14.0, 14.0]	21.0 [10.0, 48.0]
Panel B											
Openness											
Mean (SD)	7.50 (2.59)	6.60 (2.10)	6.41 (1.84)	6.64 (1.50)	6.57 (1.46)	6.53 (1.60)	6.64 (1.48)	6.69 (1.80)	7.50 (2.12)	10.0 (NA)	6.59 (1.60)
Median [Min, Max]	8.00 [4.00, 10.0]	6.00 [2.00, 10.0]	6.00 [3.00, 10.0]	7.00 [2.00, 10.0]	6.50 [2.00, 10.0]	6.00 [2.00, 10.0]	7.00 [3.00, 10.0]	6.00 [4.00, 10.0]	7.50 [6.00, 9.00]	10.0 [10.0, 10.0]	6.00 [2.00, 10.0]
Conscientiousness											
Mean (SD)	8.00 (1.70)	7.16 (2.41)	7.98 (1.72)	7.51 (1.58)	7.43 (1.57)	7.54 (1.58)	8.11 (1.32)	8.15 (1.68)	9.00 (1.41)	6.00 (NA)	7.59 (1.63)
Median [Min, Max]	8.50 [5.00, 10.0]	7.00 [2.00, 10.0]	8.00 [4.00, 10.0]	8.00 [3.00, 10.0]	8.00 [4.00, 10.0]	7.50 [3.00, 10.0]	8.00 [6.00, 10.0]	9.00 [5.00, 10.0]	9.00 [8.00, 10.0]	6.00 [6.00, 6.00]	8.00 [2.00, 10.0]
Extraversion											
Mean (SD)	6.80 (2.35)	5.20 (2.40)	5.73 (2.09)	6.01 (1.82)	5.92 (1.61)	6.26 (1.69)	6.33 (1.78)	7.23 (1.64)	7.50 (3.54)	9.00 (NA)	6.05 (1.81)
Median [Min, Max]	7.00 [3.00, 10.0]	5.00 [2.00, 10.0]	6.00 [2.00, 10.0]	6.00 [2.00, 10.0]	6.00 [2.00, 10.0]	6.00 [2.00, 10.0]	6.00 [4.00, 10.0]	7.00 [5.00, 10.0]	7.50 [5.00, 10.0]	9.00 [9.00, 9.00]	6.00 [2.00, 10.0]

Risk Level	1 (n=10)	2 (n=25)	3 (n=59)	4 (n=109)	5 (n=210)	6 (n=136)	7 (n=45)	8 (n=13)	9 (n=2)	10 (n=1)	Overall (n=610)
Agreeableness											
Mean (SD)	6.90 (1.85)	6.88 (2.37)	7.44 (1.56)	7.15 (1.53)	7.02 (1.52)	7.07 (1.38)	7.18 (1.81)	7.31 (1.44)	5.50 (2.12)	6.00 (NA)	7.10 (1.56)
Median [Min, Max]	7.00 [3.00, 9.00]	7.00 [2.00, 10.0]	8.00 [2.00, 10.0]	7.00 [3.00, 10.0]	7.00 [2.00, 10.0]	7.00 [3.00, 10.0]	7.00 [2.00, 10.0]	8.00 [5.00, 10.0]	5.50 [4.00, 7.00]	6.00 [6.00, 6.00]	7.00 [2.00, 10.0]
Neuroticism											
Mean (SD)	5.00 (2.62)	7.60 (2.55)	5.47 (1.94)	5.76 (1.99)	5.55 (1.86)	5.35 (1.88)	4.51 (1.80)	3.69 (1.75)	7.00 (1.41)	4.00 (NA)	5.50 (2.01)
Median [Min, Max]	4.00 [2.00, 9.00]	8.00 [2.00, 10.0]	5.00 [2.00, 10.0]	6.00 [2.00, 10.0]	6.00 [2.00, 10.0]	5.00 [2.00, 10.0]	4.00 [2.00, 8.00]	3.00 [2.00, 8.00]	7.00 [6.00, 8.00]	4.00 [4.00, 4.00]	5.00 [2.00, 10.0]
Panel C											
Resilience											
Mean (SD)	37.6 (9.70)	29.2 (10.7)	34.7 (7.81)	34.1 (6.79)	35.8 (6.51)	36.1 (6.58)	38.5 (6.39)	41.2 (6.50)	45.5 (3.54)	49.0 (NA)	35.6 (7.21)
Median [Min, Max]	41.5 [21.0, 50.0]	31.0 [10.0, 48.0]	36.0 [14.0, 50.0]	34.0 [18.0, 50.0]	36.0 [11.0, 50.0]	36.0 [14.0, 50.0]	38.0 [22.0, 50.0]	44.0 [27.0, 50.0]	45.5 [43.0, 48.0]	49.0 [49.0, 49.0]	36.0 [10.0, 50.0]
Financial self-efficacy											
Mean (SD)	18.3 (2.75)	14.3 (5.18)	15.9 (3.97)	16.6 (4.43)	16.1 (4.43)	16.8 (4.25)	19.4 (3.28)	19.8 (3.32)	22.0 (2.83)	20.0 (NA)	16.6 (4.38)
Median [Min, Max]	17.5 [14.0, 22.0]	14.0 [6.00, 23.0]	16.0 [6.00, 24.0]	17.0 [6.00, 24.0]	16.0 [6.00, 24.0]	16.5 [6.00, 24.0]	20.0 [12.0, 24.0]	20.0 [15.0, 24.0]	22.0 [20.0, 24.0]	20.0 [20.0, 20.0]	17.0 [6.00, 24.0]
Trait anger											
Mean (SD)	16.8 (5.94)	19.2 (6.23)	16.6 (5.91)	16.0 (5.17)	18.1 (6.76)	18.1 (6.06)	16.1 (5.41)	15.7 (5.11)	21.0 (8.49)	23.0 (NA)	17.4 (6.15)
Median [Min, Max]	16.5 [9.00, 27.0]	20.0 [9.00, 30.0]	15.0 [9.00, 35.0]	15.0 [9.00, 35.0]	17.0 [9.00, 36.0]	17.0 [9.00, 34.0]	15.0 [9.00, 36.0]	17.0 [9.00, 27.0]	21.0 [15.0, 27.0]	23.0 [23.0, 23.0]	16.0 [9.00, 36.0]
Intolerance of uncertainty											

Risk Level	1 (n=10)	2 (n=25)	3 (n=59)	4 (n=109)	5 (n=210)	6 (n=136)	7 (n=45)	8 (n=13)	9 (n=2)	10 (n=1)	Overall (n=610)
Mean (SD)	34.1 (8.17)	40.0 (8.26)	34.8 (7.27)	32.7 (7.76)	33.5 (8.11)	32.3 (6.91)	29.0 (6.78)	27.9 (8.24)	27.5 (0.707)	31.0 (NA)	33.0 (7.85)
Median [Min, Max]	36.0 [18.0, 43.0]	39.0 [22.0, 52.0]	34.0 [19.0, 53.0]	34.0 [14.0, 51.0]	34.0 [11.0, 55.0]	33.0 [15.0, 49.0]	30.0 [13.0, 42.0]	28.0 [16.0, 45.0]	27.5 [27.0, 28.0]	31.0 [31.0, 31.0]	33.0 [11.0, 55.0]
					Panel D						
Financial experience											
Experience with a financial advisor	1 (10.0%)	5 (20.0%)	22 (37.3%)	32 (29.4%)	100 (47.6%)	83 (61.0%)	29 (64.4%)	6 (46.2%)	1 (50.0%)	1 (100%)	280 (45.9%)
No experience with a financial advisor	9 (90.0%)	20 (80.0%)	37 (62.7%)	77 (70.6%)	110 (52.4%)	53 (39.0%)	16 (35.6%)	7 (53.8%)	1 (50.0%)	0 (0%)	330 (54.1%)
Crash											
pre-crash	3 (30.0%)	6 (24.0%)	22 (37.3%)	43 (39.4%)	57 (27.1%)	40 (29.4%)	22 (48.9%)	5 (38.5%)	1 (50.0%)	0 (0%)	199 (32.6%)
post-crash	7 (70.0%)	19 (76.0%)	37 (62.7%)	66 (60.6%)	153 (72.9%)	96 (70.6%)	23 (51.1%)	8 (61.5%)	1 (50.0%)	1 (100%)	411 (67.4%)
Gender											
Female	7 (70.0%)	18 (72.0%)	38 (64.4%)	77 (70.6%)	123 (58.6%)	65 (47.8%)	18 (40.0%)	4 (30.8%)	0 (0%)	0 (0%)	350 (57.4%)
Male	3 (30.0%)	7 (28.0%)	21 (35.6%)	32 (29.4%)	87 (41.4%)	71 (52.2%)	27 (60.0%)	9 (69.2%)	2 (100%)	1 (100%)	260 (42.6%)
Age											
18-24	0 (0%)	0 (0%)	0 (0%)	1 (0.9%)	21 (10.0%)	7 (5.1%)	1 (2.2%)	1 (7.7%)	0 (0%)	0 (0%)	31 (5.1%)
25-34	0 (0%)	2 (8.0%)	5 (8.5%)	18 (16.5%)	38 (18.1%)	22 (16.2%)	5 (11.1%)	1 (7.7%)	0 (0%)	0 (0%)	91 (14.9%)
35-44	1 (10.0%)	3 (12.0%)	9 (15.3%)	18 (16.5%)	27 (12.9%)	31 (22.8%)	10 (22.2%)	2 (15.4%)	0 (0%)	0 (0%)	101 (16.6%)
45-54	2 (20.0%)	6 (24.0%)	14 (23.7%)	19 (17.4%)	35 (16.7%)	12 (8.8%)	11 (24.4%)	4 (30.8%)	1 (50.0%)	0 (0%)	104 (17.0%)
55-64	4 (40.0%)	7 (28.0%)	17 (28.8%)	15 (13.8%)	45 (21.4%)	29 (21.3%)	6 (13.3%)	4 (30.8%)	1 (50.0%)	1 (100%)	129 (21.1%)

Risk Level	1 (n=10)	2 (n=25)	3 (n=59)	4 (n=109)	5 (n=210)	6 (n=136)	7 (n=45)	8 (n=13)	9 (n=2)	10 (n=1)	Overall (n=610)
65-74	3 (30.0%)	5 (20.0%)	11 (18.6%)	29 (26.6%)	33 (15.7%)	28 (20.6%)	12 (26.7%)	1 (7.7%)	0 (0%)	0 (0%)	122 (20.0%)
75+	0 (0%)	2 (8.0%)	3 (5.1%)	9 (8.3%)	11 (5.2%)	7 (5.1%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	32 (5.2%)
Marital status											
Single	1 (10.0%)	5 (20.0%)	11 (18.6%)	23 (21.1%)	67 (31.9%)	42 (30.9%)	12 (26.7%)	3 (23.1%)	1 (50.0%)	1 (100%)	166 (27.2%)
Divorced	1 (10.0%)	3 (12.0%)	5 (8.5%)	7 (6.4%)	24 (11.4%)	13 (9.6%)	5 (11.1%)	2 (15.4%)	0 (0%)	0 (0%)	60 (9.8%)
Married	7 (70.0%)	15 (60.0%)	40 (67.8%)	68 (62.4%)	109 (51.9%)	73 (53.7%)	26 (57.8%)	5 (38.5%)	1 (50.0%)	0 (0%)	344 (56.4%)
Separated	0 (0%)	2 (8.0%)	1 (1.7%)	5 (4.6%)	6 (2.9%)	3 (2.2%)	1 (2.2%)	2 (15.4%)	0 (0%)	0 (0%)	20 (3.3%)
Widowed	1 (10.0%)	0 (0%)	2 (3.4%)	6 (5.5%)	4 (1.9%)	5 (3.7%)	1 (2.2%)	1 (7.7%)	0 (0%)	0 (0%)	20 (3.3%)
Education											
School leaver	4 (40.0%)	15 (60.0%)	18 (30.5%)	22 (20.2%)	50 (23.8%)	27 (19.9%)	4 (8.9%)	0 (0%)	0 (0%)	0 (0%)	140 (23.0%)
A levels or equivalent	5 (50.0%)	3 (12.0%)	18 (30.5%)	37 (33.9%)	67 (31.9%)	44 (32.4%)	13 (28.9%)	5 (38.5%)	0 (0%)	1 (100%)	193 (31.6%)
Degree	0 (0%)	6 (24.0%)	17 (28.8%)	41 (37.6%)	59 (28.1%)	42 (30.9%)	17 (37.8%)	7 (53.8%)	1 (50.0%)	0 (0%)	190 (31.1%)
Higher degree	1 (10.0%)	1 (4.0%)	6 (10.2%)	9 (8.3%)	34 (16.2%)	23 (16.9%)	11 (24.4%)	1 (7.7%)	1 (50.0%)	0 (0%)	87 (14.3%)
Occupation											
Retired	3 (30.0%)	7 (28.0%)	15 (25.4%)	36 (33.0%)	47 (22.4%)	35 (25.7%)	8 (17.8%)	1 (7.7%)	0 (0%)	0 (0%)	152 (24.9%)
Full-time employment	6 (60.0%)	4 (16.0%)	20 (33.9%)	32 (29.4%)	85 (40.5%)	62 (45.6%)	26 (57.8%)	8 (61.5%)	2 (100%)	1 (100%)	246 (40.3%)
Houseperson	1 (10.0%)	4 (16.0%)	8 (13.6%)	13 (11.9%)	11 (5.2%)	4 (2.9%)	1 (2.2%)	0 (0%)	0 (0%)	0 (0%)	42 (6.9%)
Part-time employment	0 (0%)	4 (16.0%)	10 (16.9%)	23 (21.1%)	45 (21.4%)	18 (13.2%)	6 (13.3%)	3 (23.1%)	0 (0%)	0 (0%)	109 (17.9%)
Semi-retired	0 (0%)	0 (0%)	2 (3.4%)	1 (0.9%)	3 (1.4%)	5 (3.7%)	2 (4.4%)	0 (0%)	0 (0%)	0 (0%)	13 (2.1%)
Student	0 (0%)	0 (0%)	0 (0%)	1 (0.9%)	6 (2.9%)	2 (1.5%)	0 (0%)	1 (7.7%)	0 (0%)	0 (0%)	10 (1.6%)

Risk Level	1 (n=10)	2 (n=25)	3 (n=59)	4 (n=109)	5 (n=210)	6 (n=136)	7 (n=45)	8 (n=13)	9 (n=2)	10 (n=1)	Overall (n=610)
Unemployed	0 (0%)	6 (24.0%)	4 (6.8%)	3 (2.8%)	13 (6.2%)	10 (7.4%)	2 (4.4%)	0 (0%)	0 (0%)	0 (0%)	38 (6.2%)
Salary											
Less than £10,000	1 (10.0%)	7 (28.0%)	13 (22.0%)	16 (14.7%)	35 (16.7%)	13 (9.6%)	4 (8.9%)	1 (7.7%)	0 (0%)	0 (0%)	90 (14.8%)
£10,000 - 19,999	3 (30.0%)	7 (28.0%)	15 (25.4%)	24 (22.0%)	50 (23.8%)	23 (16.9%)	8 (17.8%)	3 (23.1%)	0 (0%)	0 (0%)	133 (21.8%)
£20,000 - 29,999	3 (30.0%)	6 (24.0%)	9 (15.3%)	35 (32.1%)	48 (22.9%)	32 (23.5%)	7 (15.6%)	3 (23.1%)	0 (0%)	0 (0%)	143 (23.4%)
£30,000- 49,999	3 (30.0%)	3 (12.0%)	14 (23.7%)	27 (24.8%)	54 (25.7%)	45 (33.1%)	12 (26.7%)	1 (7.7%)	0 (0%)	0 (0%)	159 (26.1%)
£50,000+	0 (0%)	2 (8.0%)	8 (13.6%)	7 (6.4%)	23 (11.0%)	23 (16.9%)	14 (31.1%)	5 (38.5%)	2 (100%)	1 (100%)	85 (13.9%)
Wealth											
Less than £10,000	2 (20.0%)	13 (52.0%)	19 (32.2%)	41 (37.6%)	77 (36.7%)	31 (22.8%)	5 (11.1%)	2 (15.4%)	0 (0%)	0 (0%)	190 (31.1%)
£10,000 - 49,999	2 (20.0%)	8 (32.0%)	20 (33.9%)	32 (29.4%)	49 (23.3%)	37 (27.2%)	12 (26.7%)	2 (15.4%)	0 (0%)	0 (0%)	162 (26.6%)
£50,000 - 99,999	2 (20.0%)	1 (4.0%)	9 (15.3%)	12 (11.0%)	38 (18.1%)	24 (17.6%)	8 (17.8%)	3 (23.1%)	0 (0%)	1 (100%)	98 (16.1%)
£100,000 - 199,999	3 (30.0%)	3 (12.0%)	6 (10.2%)	9 (8.3%)	26 (12.4%)	22 (16.2%)	10 (22.2%)	3 (23.1%)	0 (0%)	0 (0%)	82 (13.4%)
£200,000+	1 (10.0%)	0 (0%)	5 (8.5%)	15 (13.8%)	20 (9.5%)	22 (16.2%)	10 (22.2%)	3 (23.1%)	2 (100%)	0 (0%)	78 (12.8%)

This table presents the summary statistics of attitudes to financial risk by the Big 5 personality traits, additional personality traits and qualities, emotions, and control variables. In Panel A, **Risk level** is the result of the attitude to risk questionnaire where a score of 1 indicates the lowest risk tolerance level and a score of 10 the highest. **Resilience** is an aggregate mean score ranging from 10 to 50 where 50 indicates the highest level of resilience. **Financial self-efficacy** is an aggregate mean score ranging from 6 to 24, the higher the value the greater the confidence of the investor in managing their finances. **Trait anger** is an aggregate mean score ranging from 9 to 36 where a higher value indicates an individual to have a higher level of trait anger. The **Intolerance of uncertainty** variable is an aggregate mean score ranging from 12 to 60. Here, a lower value relates to being more tolerant of uncertainty. Panel B includes **Positive affect** which is made up of 10 items and therefore the mean results range from 10 to 50 with a rating of 50 indicating a higher level of positive affect. Similarly, a higher score on the **Negative affect** scale, which is designed in the same way as positive affect, results in a higher level of negative affect. In Panel C aggregate mean scores of the Big Five personality traits are presented. Two items for each of the five dimensions were included, therefore scores for each measure (**Openness, Conscientiousness, Extraversion, Agreeableness, and Neuroticism**) range from 2 to 10 where a higher score indicates a higher level of the respective trait. Finally, Panel D includes a list of all control variables (**Financial experience, Crash, Gender, Age, Marital status, Education, Occupation, Salary, and Wealth**) broken down into the subcategories that make up these variables. Each value is the number of respondents within the risk level and variable level. The values within parentheses represents the percentage of respondents within that risk level (i.e., 70% of those in risk level 1 were females).

Table 2

	VIF	Risk level	Positive affect	Negative affect	Openness	Conscientiousness	Extraversion	Agreeableness	Neuroticism	Resilience	Financial self-efficacy	Trait Anger
Risk level												
Positive affect	1.64	0.23 ***										
Negative affect	1.88	-0.08 *	-0.29 ***									
Openness	1.09	0.0	0.12 ***	0.02								
Conscientiousness	1.34	0.03	0.32 ***	-0.3 ***	0.09 *							
Extraversion	1.32	0.13 ***	0.34 ***	-0.18 ***	0.17 ***	0.19 ***						
Agreeableness	1.25	-0.02	0.09 *	-0.23 ***	0.0	0.2 ***	0.12 ***					
Neuroticism	2.18	-0.2 ***	-0.45 ***	0.53 ***	0.05	-0.29 ***	-0.38 ***	-0.21 ***				
Resilience	2.05	0.22 ***	0.56 ***	-0.34 ***	0.12 ***	0.42 ***	0.40 ***	0.11 ***	-0.58 ***			
Financial self-efficacy	1.55	0.18 ***	0.24 ***	-0.48 ***	-0.03	0.30 ***	0.09 *	0.08	-0.38 ***	0.25 ***		
Trait Anger	1.80	0.02	-0.03	0.48 ***	0.08 *	-0.20 ***	-0.03	-0.38 ***	0.30 ***	-0.14 ***	-0.44 ***	
Intolerance of uncertainty	1.79	-0.21 ***	-0.14 ***	0.52 ***	0.1 **	-0.18 ***	-0.22 ***	-0.22 ***	-0.50 ***	-0.32 ***	-0.38 ***	0.5 ***

A Spearman's correlation matrix is presented here of attitude to risk (**Risk level**), **Positive and Negative affect**, **Openness, Conscientiousness, Extraversion, Agreeableness and Neuroticism, Resilience, Financial self-efficacy, Trait anger and Intolerance of uncertainty.** *, ** and *** indicate significance at the 5%, 1% and 0.1% levels, respectively. VIF test results are also provided showing that there are not concerns of multicollinearity.

Table 3: Big Five personality traits and attitude to risk – Ordered logit results

	Dependent variable:		
	Risklevel		
	(1)	(2)	(3)
Extraversion	0.079		0.093
	(0.046)		(0.048)
Agreeableness	-0.077		-0.030
	(0.049)		(0.051)
Conscientiousness	-0.024		0.019
	(0.048)		(0.052)
Neuroticism	-0.178***		-0.113*
	(0.043)		(0.046)
Openness	0.008		-0.023
	(0.049)		(0.050)
Financial_experience=No experience		-0.730***	-0.708***
		(0.166)	(0.167)
crash=post-crash		0.097	0.044
		(0.172)	(0.173)
Gender=Male		0.732***	0.705***
		(0.169)	(0.172)
Age=25-34		0.039	0.119
		(0.393)	(0.403)
Age=35-44		0.300	0.295
		(0.411)	(0.420)
Age=45-54		-0.290	-0.294
		(0.415)	(0.425)
Age=55-64		-0.354	-0.410
		(0.419)	(0.434)
Age=65-74		-0.257	-0.427
		(0.498)	(0.513)
Age=75+		-0.797	-1.055
		(0.588)	(0.608)
Maritalstatus=Divorced		0.189	0.101
		(0.305)	(0.309)
Maritalstatus=Married		-0.587**	-0.615**
		(0.202)	(0.204)
Maritalstatus=Separated		-0.243	-0.229
		(0.453)	(0.450)
Maritalstatus=Widowed		-0.043	-0.050
		(0.481)	(0.484)
Education=A levels or equivalent		0.392	0.368
		(0.207)	(0.208)
Education=Degree		0.355	0.326
		(0.213)	(0.213)
Education=Higher degree		0.474	0.452
		(0.267)	(0.269)
Occupation=Full-time employment		0.320	0.213

		(0.339)	(0.343)
Occupation=Houseperson		-0.303	-0.299
		(0.400)	(0.402)
Occupation=Part-time employment		0.376	0.291
		(0.325)	(0.327)
Occupation=Semi-retired		0.601	0.504
		(0.543)	(0.559)
Occupation=Student		0.542	0.453
		(0.681)	(0.699)
Occupation=Unemployed		0.078	0.170
		(0.445)	(0.443)
Salary=£10,000 - 19,999		0.086	0.081
		(0.265)	(0.265)
Salary=£20,000 - 29,999		-0.063	-0.028
		(0.274)	(0.275)
Salary=£30,000- 49,999		0.128	0.123
		(0.288)	(0.289)
Salary=£50,000+		0.620	0.599
		(0.353)	(0.354)
Wealth=£10,000 - 49,999		0.226	0.142
		(0.204)	(0.206)
Wealth=£50,000 - 99,999		0.373	0.261
		(0.247)	(0.251)
Wealth=£100,000 - 199,999		0.573*	0.494
		(0.274)	(0.277)
Wealth=£200,000+		0.835**	0.751**
		(0.290)	(0.291)
Observations	610	610	610
R^2	0.049	0.200	0.221
chi^2	29.680*** (df = 5)	131.080*** (df = 30)	146.814*** (df = 35)

This table reports the results of ordered logit regressions estimated with robust standard errors in parentheses. **Openness, Conscientiousness, Extraversion, Agreeableness, and Neuroticism** are measures of personality on separate scales from 2 to 10. **Financial experience** is a binary variable which equals one if the respondent has no experience with a financial advisor and zero if they do. **Crash** is a binary variable which equals one if the respondent took part in the study after the real-life market crash and zero if before the crash. **Gender** is a binary variable which equals one if the respondent is male and zero if female. **Age** is measured using seven categories ranging from 18 to more than 75 years where 18-24 is the reference level. **Marital status** is measured in five categories, single is the reference level. **Education** is measured using four categories ranging from school leaver to higher degree, where school leaver is the reference level. **Occupation** is categorised into seven groups, retired is the reference level. **Salary** is measured in five categories ranging from less than £10,000 to more than £50,000, less than £10,000 is the reference level. Wealth is categorised into five groups ranging from £10,000 or less to more than £200,000, where less than £10,000 is the reference level. *, ** and *** indicate significance at the 5% and 1% and 0.1% levels, respectively.

Table 4: Additional personality traits and personal qualities with attitude to risk – Ordered logit results

	Dependent variable:			
	Risklevel			
	(1)	(2)	(3)	(4)
Resilience	0.040***	0.043**	0.028*	0.032*
	(0.011)	(0.014)	(0.012)	(0.014)
Financial_self_efficacy	0.072***	0.077***	0.060**	0.066**
	(0.019)	(0.020)	(0.022)	(0.023)
Trait_Anger	0.076***	0.072***	0.062***	0.061***
	(0.015)	(0.016)	(0.016)	(0.017)
Intolerance_of_uncertainty	-0.054***	-0.051***	-0.064***	-0.066***
	(0.012)	(0.012)	(0.012)	(0.013)
Extraversion		0.038		0.062
		(0.047)		(0.049)
Agreeableness		-0.017		0.007
		(0.052)		(0.054)
Conscientiousness		-0.090		-0.038
		(0.051)		(0.056)
Neuroticism		-0.013		0.052
		(0.053)		(0.056)
Openness		0.005		-0.010
		(0.049)		(0.051)
Financial_experience =No experience with a financial advisor			-0.776***	-0.788***
			(0.169)	(0.170)
crash=post-crash			0.084	0.074
			(0.174)	(0.174)
Gender=Male			0.691***	0.721***
			(0.171)	(0.175)
Age=25-34			0.205	0.275
			(0.399)	(0.408)
Age=35-44			0.332	0.388
			(0.418)	(0.425)
Age=45-54			-0.195	-0.128
			(0.421)	(0.431)
Age=55-64			-0.369	-0.285
			(0.432)	(0.446)
Age=65-74			-0.388	-0.332
			(0.512)	(0.526)
Age=75+			-0.887	-0.847
			(0.603)	(0.623)
Maritalstatus=Divorced			0.018	0.004
			(0.309)	(0.309)
Maritalstatus=Married			-0.617**	-0.626**
			(0.203)	(0.204)
Maritalstatus=Separated			-0.178	-0.196
			(0.455)	(0.456)

Maritalstatus=Widowed			-0.167	-0.159
			(0.472)	(0.473)
Education=A levels or equivalent			0.365	0.373
			(0.208)	(0.209)
Education=Degree			0.433*	0.447*
			(0.215)	(0.216)
Education=Higher degree			0.408	0.424
			(0.269)	(0.271)
Occupation=Full-time employment			0.265	0.276
			(0.344)	(0.347)
Occupation=Houseperson			-0.238	-0.206
			(0.408)	(0.411)
Occupation=Part-time employment			0.333	0.332
			(0.330)	(0.331)
Occupation=Semi-retired			0.598	0.565
			(0.567)	(0.575)
Occupation=Student			0.693	0.712
			(0.693)	(0.702)
Occupation=Unemployed			0.294	0.242
			(0.451)	(0.451)
Salary=£10,000 - 19,999			0.066	0.056
			(0.269)	(0.270)
Salary=£20,000 - 29,999			-0.057	-0.091
			(0.279)	(0.281)
Salary=£30,000- 49,999			-0.014	-0.040
			(0.291)	(0.294)
Salary=£50,000+			0.500	0.461
			(0.357)	(0.360)
Wealth=£10,000 - 49,999			0.122	0.131
			(0.209)	(0.211)
Wealth=£50,000 - 99,999			0.222	0.216
			(0.255)	(0.258)
Wealth=£100,000- 199,999			0.484	0.498
			(0.281)	(0.284)
Wealth=£200,000+			0.548	0.546
			(0.302)	(0.306)
Observations	610	610	610	610
R^2	0.116	0.122	0.273	0.276
chi^2	72.767*** (df = 4)	76.860*** (df = 9)	187.374*** (df = 34)	189.961*** (df = 39)

Ordered logit regressions estimated with robust standard errors in parentheses are presented here as in Table 2. In addition to the variables previously explained. The additional variables here are **Resilience** measured on a scale from 10 to 50, **Financial self-efficacy** measured on a scale from 6 to 24, **Trait anger** measured on a scale from 9 to 36 and **Intolerance of uncertainty** measured on a scale from 12 to 60. *, ** and *** indicate significance at the 5% and 1% and 0.1% levels, respectively.

Table 5: Emotions and attitude to risk – Ordered logit results

	Dependent variable:				
	Risklevel				
	(1)	(2)	(3)	(4)	(5)
Resilience		0.031*		0.026	0.026
		(0.014)		(0.015)	(0.015)
Financial_self_efficacy		0.079***		0.066**	0.059**
		(0.021)		(0.023)	(0.022)
Trait_Anger		0.059***		0.056**	0.062***
		(0.016)		(0.017)	(0.017)
Intolerance_of_uncertainty		-0.062***		-0.070***	-0.074***
		(0.013)		(0.013)	(0.013)
Positive_Affect	0.051***	0.035**	0.029**	0.018	0.025*
	(0.010)	(0.012)	(0.011)	(0.013)	(0.012)
Negative_Affect	-0.003	0.023*	-0.015	0.010	0.018
	(0.008)	(0.011)	(0.009)	(0.012)	(0.011)
Extraversion		0.022		0.054	0.048
		(0.047)		(0.050)	(0.048)
Agreeableness		-0.022		0.006	0.010
		(0.052)		(0.055)	(0.053)
Conscientiousness		-0.090		-0.041	-0.058
		(0.052)		(0.056)	(0.053)
Neuroticism		-0.009		0.054	0.054
		(0.056)		(0.059)	(0.058)
Openness		0.002		-0.013	-0.023
		(0.049)		(0.051)	(0.050)
Financial_experience =No experience with a financial advisor			-0.677***	-0.741***	-0.628***
			(0.171)	(0.173)	(0.166)
crash=post-crash			0.119	0.069	
			(0.173)	(0.175)	
Gender=Male			0.634***	0.696***	0.608***
			(0.172)	(0.176)	(0.160)
Age=25-34			0.041	0.283	
			(0.397)	(0.407)	
Age=35-44			0.267	0.427	
			(0.417)	(0.425)	
Age=45-54			-0.277	-0.042	
			(0.423)	(0.434)	
Age=55-64			-0.440	-0.220	
			(0.430)	(0.448)	
Age=65-74			-0.373	-0.229	
			(0.510)	(0.530)	
Age=75+			-1.031	-0.776	
			(0.602)	(0.626)	
Maritalstatus=Divorced			0.050	-0.079	-0.345
			(0.313)	(0.314)	(0.285)
Maritalstatus=Married			-0.670**	-0.676**	-0.873***
			(0.206)	(0.206)	(0.179)
Maritalstatus=Seperated			-0.238	-0.255	-0.591
			(0.452)	(0.457)	(0.452)
Maritalstatus=Widowed			-0.105	-0.206	-0.713
			(0.483)	(0.476)	(0.443)

Education=A levels or equivalent			0.398	0.341	0.411*
			(0.208)	(0.211)	(0.207)
Education=Degree			0.322	0.415	0.552**
			(0.214)	(0.217)	(0.210)
Education=Higher degree			0.436	0.401	0.631*
			(0.268)	(0.272)	(0.259)
Occupation=Full-time employment			0.255	0.257	
			(0.340)	(0.348)	
Occupation=Houseperson			-0.342	-0.198	
			(0.401)	(0.410)	
Occupation=Part-time employment			0.254	0.319	
			(0.327)	(0.332)	
Occupation=Semi-retired			0.571	0.490	
			(0.551)	(0.574)	
Occupation=Student			0.523	0.678	
			(0.694)	(0.700)	
Occupation=Unemployed			0.129	0.246	
			(0.443)	(0.452)	
Salary=£10,000 - 19,999			0.101	0.074	
			(0.267)	(0.270)	
Salary=£20,000 - 29,999			-0.063	-0.070	
			(0.275)	(0.281)	
Salary=£30,000- 49,999			0.048	-0.022	
			(0.291)	(0.295)	
Salary=£50,000+			0.560	0.496	
			(0.356)	(0.362)	
Wealth=£10,000 - 49,999			0.194	0.118	0.050
			(0.204)	(0.212)	(0.204)
Wealth=£50,000 - 99,999			0.372	0.240	0.217
			(0.249)	(0.260)	(0.246)
Wealth=£100,000 - 199,999			0.571*	0.497	0.504
			(0.273)	(0.285)	(0.267)
Wealth=£200,000+			0.787**	0.547	0.440
			(0.290)	(0.307)	(0.283)
Observations	610	610	610	610	610
R^2	0.050	0.140	0.217	0.279	0.242
chi^2	30.052*** (df = 2)	88.893*** (df = 11)	143.773*** (df = 32)	192.478*** (df = 41)	163.160*** (df = 24)

Here, ordered logit regressions estimated with robust standard errors in parentheses are presented as in tables 3 and 4. In addition to the variables previously explained. The additional variables here fall under the category of emotions. **Positive affect** is measured on a scale from 10 to 50 and **Negative affect** on a separate construct also from 10 to 50. *, ** and *** indicate significance at the 5% and 1% and 0.1% levels, respectively.

Table 6: Relative importance

	Variable (%)	Variable Category (%)
Control variables		12.35
Marital status	2.7	
Education	2.5	
Wealth	1.64	
Financial experience	3.1	
Gender	2.37	
Personality traits (Big Five)		1.79
Extraversion	0.46	
Agreeableness	0.1	
Conscientiousness	0.29	
Neuroticism	0.88	
Openness	0.05	
Additional personality traits and qualities		7.4
Trait Anger	0.97	
Intolerance of uncertainty	3.75	
Resilience	1.47	
Financial self-efficacy	1.21	
Emotions		2.32
Positive affect	1.96	
Negative affect	0.36	

This table presents the results of a relative importance analysis that identifies the percentage contribution of each independent variable and variable category. The estimated model is an OLS with robust standard errors. This analysis is based on the variables present in model 5 of Table 4 after removing control variables that were non-significant throughout previous models (**Crash, Age, Occupation, Salary**). The variables included are grouped into the following factors: control variables (**Marital status, Education, Wealth, Financial experience, and Gender**), Big Five personality traits (**Extraversion, Agreeableness, Conscientiousness, Neuroticism, Openness**) and additional personality traits and qualities (**Trait anger, Intolerance of uncertainty, Resilience, Financial self-efficacy**). The overall proportion of variance explained by the model is 23.86.