WEALTHY INVESTORS AND FINANCIAL ADVISORS PERCEPTUAL VARIATIONS, PORTFOLIO RECOMMENDATIONS AND GENDER DIFFERENCES

Ylva Maria Charlotta Baeckström

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Cass Business School. City, University of London

Faculty of Finance

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ABSTRACT

This thesis explores financial advice to wealthy investors in the UK. The multidisciplinary research spans finance and psychology and contributes to the literature about financial advice by exploring social cognition and how it is formed. This is achieved in three studies which investigate the perceptual social judgements that financial advisors make about the investment needs of individuals who are millionaires, as well as the perceptual self-judgements that wealthy investors make of themselves.

To date little attention has been paid to how social cognitive judgements can influence how financial advisors interpret and respond to the needs of millionaire investors, and if this varies depending on the gender of the investor. This research, therefore, investigates whether experienced professional financial advisors who work with millionaire investors make different assumptions regarding the control and knowledge that investors have of their investments, and if they vary their investment portfolio recommendations to equivalent male and female investors. A gender bias is identified which sees advisors perceiving female investors as having less control of their investments.

Further analyses explore how the personal attributes of both the investors and the financial advisors relate to the perceptual judgements that advisors make of the millionaires. Findings show that financial advisors make reasonable social cognitive judgements about the information that they are presented with which describe the investors. However, advisors are also seen to draw on their own personal characteristics when making portfolio recommendations and unmeasured advisor attributes are found to be as influential as investor characteristics. These findings challenge the expectations that, in accordance with metrics and regulatory assumptions, advisors base their recommendations on the risk tolerance of each

individual investor to which only the characteristics of investors contribute. The findings have important practical implications for the financial regulator, the wealth management industry, and for investors to consider when choosing advisors. This analysis is made possible by using vignette methodology where millionaire investors are described in pen portraits. The method then controls for investor gender, thus allowing for the impact of investor and advisor characteristics to be isolated. With a long history in social psychology, the vignette methodology is introduced to the field of finance in this thesis.

Finally, using a sample of wealthy UK individual investors the thesis examines self-perceived investment confidence, knowledge and risk tolerance among men and women, who either rely on financial advisors or self-manage their investments. Although the results illustrate that women perceive themselves to be less risk tolerant than men, gender differences showing lower confidence and knowledge among female relative to male investors are not replicated. Moreover, investors who have financial advisors are more risk tolerant than those who self-manage. Furthermore, the group of women who have female financial advisors is identified as having a higher risk tolerance than is the case for men. These findings suggest that more attention should be paid to interactions between financial advisors and investors in order to identify and explain potential sources of bias in the wealth management industry.

The research presented in this thesis makes important contributions to the finance literature by examining the interactions between financial advisors and wealthy investors. Its findings and the methodology utilised can furthermore be replicated by future researchers to deepen the knowledge of social cognition, how it is formed and how it impacts on financial advice to individual investors.

Chapter 1

Introduction to the Studies

1.1 INTRODUCTION

The research in this thesis is about financial investment advice to wealthy individual investors in the UK. The multidisciplinary research spans finance and psychology and contributes to the literature on financial advice by exploring social cognition and how it is formed. This is achieved in three studies which investigate the perceptual social judgements that financial advisors make about the investment needs of individuals who are millionaires, as well as the perceptual self-judgements that wealthy investors make with a specific focus on gender differences in studies one and three and a focus on the personal characteristics of both investors and advisors in study two.

In this introductory chapter the research motivation is presented, the structure of the thesis is outlined and the three studies are introduced.

1.1.1 Motivation for Studying Wealthy Investors and Financial Advisors in the UK

1.1.1.2 Theoretical Motivations

Wealthy investors are important because the most prosperous 1% of the global population possess 50% of the world's fortunes (Treanor 2015) and individuals with financial assets in excess of US$100,000 control 86.2% of global wealth. Among these, millionaires control 45.6%, and individuals with between US$100,000 and US$1 million control 40.6% (Credit Suisse 2016). The wealth owned by millionaires amounts to US$116.6 trillion, i.e., exceeding the world gross domestic product of US$74.19 trillion (The World Bank 2017). The UK is home to 7% of the world's millionaires who own 24% of the country's household wealth (Credit Suisse 2016). This, combined with a renowned private wealth management industry,

makes the UK well suited for an investigation into financial advice to wealthy investors. Given that female wealth growth outpaces that of men within this wealthy sector of society, investigations into wealthy women are particularly pertinent. As noted in The Telegraph on August 28, 2015, women between 22-29 in this group earn more than men, and it is thought that by 2020 women will make up 53% of all the millionaires in the UK (Centre for Economics and Business Research 2013).

Financial advice to wealthy investors is important because, as US statistics show, 60% of households with over US$500,000 in investable assets receive financial advice, compared to 20% of less wealthy households (Winchester and Huston 2014). Yet, despite their dominance in wealth terms, extant literature about financial advice does not extend to investors with financial assets exceeding US$100,000 to invest and usually concerns investors with US$50,000 or less (e.g., Dorn and Huberman 2005; Foerster et al. 2017; Hoechle 2017; Karabulut 2010; Kramer 2012). The agency relationship between advisors and millionaire investors is such that the advisor (i.e., the agent) imparts information and investment advice to the principal investor (Golec 1992; Sappington 1991; Starks 1987). Advisor activities in the UK are regulated by the Financial Conduct Authority (FCA) which ensures that advisors obtain professional qualifications as evidence of their expertise in investment recommendations and portfolio construction. Wealthy individuals may turn to advisors to assist in managing their vast and often complex estates. Considering the prevalence amongst the wealthy of engaging financial advisors, it is clear that the latter have the potential to influence how this important demographic invests their funds and also the substantial economic and social impacts that may follow.

Social cognition is important because when individuals engage financial advisors, as these advisors will make perceptual judgements about the needs of their clients based on the information that is presented to them. These judgements determine their investment recommendations and may thus influence how wealth is invested. Within the social psychology literature it is accepted that observers make different perceptual judgements about people who they observe, and that the variations relate both to the person who they observe and also to their own personal characteristics (Harvey et al. 2014; Weiner 1985; Wong and Weiner 1981). Although conflicts of interest are documented which see advisors recommending investments to increase their own economic utility (Inderst and Ottaviani 2012; Mullainathan, Noeth, and Schoar 2012; Sappington 1991) or recommending investments with which they have a high level of familiarity (Foerster et al. 2017), social cognition is currently overlooked in the finance literature. Researchers have not considered that, in a way akin to that of investors who misjudge their own needs and make biased investment decisions (Kahneman and Tversky 1979; Thaler 2016), advisors may make different perceptual judgement about their clients and therefore make biased investment recommendations.

1.1.1.3 Practical Motivations

In additional to theoretical motivations, the research in this thesis is meaningful to the industry and the financial regulator. Problems already identified in the private wealth management industry clearly illustrate the high level of face validity of this research. Firstly, there is an industry preoccupation with wanting to attract female clients and encourage women to convert their cash into investments. However, despite efforts by institutions (Barclays Wealth Insight 2007; Merrill Lynch 2015), strategies have fallen short of their aims. With a lower risk tolerance (Charness and Gneezy 2012), women remain underinvested relative to men as is evident in smaller allocations to risky assets in retirement portfolios (Lusardi and

Mitchell 2007). Therefore the research in this thesis speaks both to the business opportunity that wealthy women present to the industry and addresses the societal problem that women, who despite living longer than men (83 compared to 79 years: World Health Organization 2016), hold portfolios with less potential for future growth and less variance in returns.

A second practical motivation arises from the current regulation of advisor activities. The financial regulator in the UK (The FCA) requires that advisors base their recommendations on the needs of individual investors, and therefore a given investor ought to receive the same recommendations regardless of who their advisor is. However, in reality, a given investor receives varied recommendations from different advisors. The present assumption by the financial regulators, e.g., the Financial Conduct Authority in the UK (The Financial Conduct Authority 2011), that advisors act according to metrics is addressed in study two in this thesis.

1.2 STRUCTURE OF THE THESIS

The thesis presents three separate studies (reported in chapters 2-4), which draw on two independent data sets collected by the author. The final chapter (chapter 5) presents an overall discussion and conclusion.

1.2.1 Study One: "Millionaire Investors: Financial Advisors, Attribution Theory and Gender Differences"

Study one investigates the perceptual judgements that financial advisors make of equivalent male and female millionaire investors to explore if there is a gender based bias in the social cognitive assessment made by financial advisors.

Notwithstanding the fast paced growth in female wealth, there is a lacuna of research about gender difference among wealthy investors, and none exist which explore the judgements

that financial advisors make of their investment needs. Despite evidence in the social psychology literature that observers vary the judgements they make of others depending on their gender (Silvester and Koczwara 2012), social cognition is not currently explored in studies of gender differences in the finance literature. That gender, which in the social psychology literature is found to be an important frame of reference for making sense of both one's own behaviour and the behaviour of others (Ridgeway 2009), might also be relevant for how financial advisors judge the needs of and make portfolio recommendations to both male and female millionaire investors is therefore explored in this study.

The study is undertaken using vignette methodology, in which pen portraits describing ten different millionaire investors are included in a survey. Financial advisors are asked to make an assessment of the investment knowledge and the control that they believe the millionaires have over their investments, and to recommend one of seven portfolios with different compositions of risky assets. In order to compare the effects of investor gender, two versions of each vignette were created: one of which portrays a male investor and one which portrays a female investor. Thus, gender was allowed to vary while all other details remained constant so as to allow a comparison of the judgements that advisors make of equivalent male and female millionaires.

The results: a) demonstrate that financial advisors perceive female millionaire investors to have less control over their investments relative to equivalent male millionaires, b) indicate that female advisors assume less knowledge among female millionaires than their male advisor colleagues and c) tend to show that female advisors are more likely to provide lower risk recommendations to female millionaires, while their male colleagues keep their recommendations consistent regardless of investor gender.

Study one has been presented at two conferences: Academy of Behavioral Finance & Economics conference paper, March 2016 and Queen Mary University Behavioural Finance Working Group conference paper, June 2016. The paper was submitted to the European Journal of Finance in November 2016, accepted for publication in January 2018 and published online 22 February 2018. The paper presented in this thesis is the accepted paper, co-authored with Jo Silvester and Rachel A. J. Pownall.

1.2.2 Study Two: "Variations in Investment Advice Provision: A Study of Financial Advisors and Millionaire Investors"

Sharing the same data set as study one, this second study provides in depth analyses of the social cognitive judgements that financial advisors make of the millionaire investors and how these are informed by the personal attributes of both investors and advisors, which extend beyond gender differences. This study therefore undertakes more detailed analysis of (a) investor characteristics, and (b) advisor characteristics, in order to test whether these contribute to variations in the perceptual judgements that advisors make of the knowledge, control and risk tolerance of millionaires.

This is important because present literature does not allow for the possibility that advisors may vary their portfolio recommendations depending, not only on the needs of their clients, but might also reflect the advisors themselves. This study contributes to recent studies which demonstrate that advisors base their recommendations on the allocation to risky assets in their own portfolios (Foerster et al. 2017) and that their recommendations follow their personal trading patterns (Linnaimaa, Melzer, and Previtero 2017), thus showing that much of what informs their recommendations is left unanswered by measured advisor variables.

However extant studies have not considered social cognition. These analyses are possible because the vignettes were developed using a range of investor attributes, which in addition to gender, created realistic portraits of millionaire investors. The vignettes were contained within a questionnaire which also collected information about the personal attributes of the financial advisors, all which are applied to the analyses in this study. Therefore study two extends extant findings and addresses the regulatory and industry assumptions that advisors base their recommendations on the needs of individual investors by isolating for the effects of both investor and advisor variables in a controlled experiment.

The results show that advisors make good use of the personal characteristics of the investors portrayed in the vignettes when making their recommendations. However, the analyses demonstrate that portfolio recommendations are also informed by the advisors' own personal attributes, e.g., age and experience as measured in the survey. Additionally the findings illustrate that unmeasured advisor variables contribute equally to investor characteristics regarding the decisions that advisors make of which portfolio is suitable for a given investor.

Study two was presented at the WU Gutmann Symposium Financial Advice and Asset Management in June 2017.

1.2.3 Study Three: "Financial Advice, Gender and Wealth: Risk Tolerance, Knowledge and Confidence in Advised and Self-Managed Investors"

In the third study the focus is altered from social perceptual judgements made by financial advisors to investigate the perceptual judgements that wealthy male and female investors make of themselves and thus investigates gender differences in investor self-perceptions and how this relates to financial advisors.

This is important because present studies about gender differences have not considered wealthy investors and it is therefore unknown if the persistent reports about lower confidence, knowledge and risk tolerance hold for wealthy investors. These investors they own more assets than most people spend during their lifetime, their financial goals and therefore their investment strategy may differ from those seeking to secure their financial future. Secondly, it is unknown if there are differences in the perceptual judgements that wealthy investors who engage financial advisor, and those who manage their own investments make of themselves. Finally, and building on the gender based bias identified in the social cognitive judgements made by financial advisors in study one, this study investigates if self-rated investment confidence, knowledge and risk tolerance vary according to the gender combination of investor and financial advisor.

This study uses survey methodology to collect responses from 500 wealthy UK investors with between £50,000 and £2.5 million in investable assets and thus investigate preferences among a much wealthier demographic than those in extant literature.

The results, although not demonstrating any gender differences in self-perceived investment confidence or knowledge, show that wealthy women report being less risk tolerant then men and also have a higher relative allocation to cash in their portfolios. Financial advice

is associated with a higher risk tolerance and a lower allocation to cash. Furthermore, when the advisor gender is female rather than male, women investors report higher investment confidence, knowledge and risk tolerance and have a lower allocation to cash in their portfolios. Further analyses indicate that investors who seek advice are more conservative than those who self-manage, but that having a financial advisor contributes to increasing their risk tolerance to exceed that of self-managed investors. Furthermore, the results imply that women who engage female, instead of male, advisors are inherently more confident and risk tolerant but that female advisors facilitate increases in their financial literacy.

Study three contributes to a small yet growing literature on financial advising (Bhattacharya et al. 2012; Lusardi and Mitchell 2007; Glaser, Weber, and Langer 2010) by examining the potential for stereotyped beliefs and unconscious bias toward women investors in the financial wealth industry. This is conducted by exploring how these relate to the social cognitive judgements that wealthy male and female investors make of their own confidence, knowledge and risk tolerance themselves.

Study three was presented at Queen Mary University Behavioural Finance Working Group conference in June 2017 and in June 2018.

1.3 OVERALL CONTRIBUTION

Overall this thesis makes an important contribution to the finance literature by examining the interactions between financial advisors and wealthy investors (Hirshleifer 2015). Its findings give rise to the need to further explore the social interactions to better understand how social cognition is formed and how it affects financial advice to individual investors. Both theoretical and methodological contributions are detailed below.

1.3.1 Theoretical Contributions

Study one draws on social psychology and attribution theory to predict and study the potential for social cognitive bias in interpersonal decision-making. Attribution theory helped to inform and expand existing literature about financial advice by showing that social perception also matters when financial advisors judge the needs of millionaire investors, potentially influencing the investment advice provided and ultimately how the wealth is invested. Furthermore, the research focuses on a specific need, namely the importance of providing appropriate and valid advice to millionaire female investors, a group that is growing significantly in size, yet for whom advice is often perceived as unsatisfactory (Friedland 2013), and which has received little attention in the academic literature.

Study two makes an important contribution by analysing the social cognitive judgements that financial advisors make of millionaire investors and how this is informed by the personal attributes of both the investor and advisor, previously unexplored in the finance literature.

Studies one and two investigate the judgements of individuals who work as financial advisors and have many years of experience advising millionaire clients. As such they extend

existing research beyond laboratory based studies and consider the judgements of experts rather than novices. Furthermore, the studies concern the economically important, yet under researched, demographic of millionaires and their advisors. As millionaires own 24% of the household wealth in the UK (Credit Suisse 2016), their investment decisions have powerful economic consequences such that biases in the finance advice process could have greater economic impact than for less affluent investors.

Study three extends the findings in the first two studies by turning the focus to the self-perceptions of wealthy investors. It contributes to a small yet growing literature on financial advising (Bhattacharya et al. 2012; Lusardi and Mitchell 2007; Glaser, Weber, and Langer 2010) by examining the potential for stereotyped beliefs and unconscious bias regarding wealthy women investors in the financial wealth industry. Pre-existing studies that document persistent gender differences have overlooked the demographic of wealthy investors. The study demonstrates that previously held assumptions about mass affluent investors are not necessarily generalisable to wealthy investors such as those in this sample. This indicates a need to focus on more thorough interpretation of the data (Nelson 2015), rather than accepting gender differences as a blanket assumption for all types of investors.

With the exception of studies one and two in this thesis, researchers have not analysed how the gender combination of investors and advisors might contribute to perceptual differences. This study demonstrated that this might be important, particularly for female investors, who if they are more confident, knowledgeable and risk tolerant, might be more likely to seek female, instead of male advisors.

1.3.2 Methodological Contribution

Together, studies one and two introduce new methodology to the finance literature. Despite its useful application to financial decision making and social cognitive sense making, vignette methodology has mostly been confined to use in organizational behaviour, human resource management and psychology research (Aguinis and Bradley 2014). In this thesis the methodology is extended to the area of financial advice. Vignette methodology, a tried and tested research method to investigate gender and other group differences, proved a useful methodology to investigate gender differences in the perceptual judgements that financial advisors make of millionaire investors. Further analyses to explore the isolated impacts of both investor and advisor characteristics were possible because the vignettes were developed using a range of investor attributes, which in addition to gender, created realistic portraits of millionaire investors. These vignettes were contained within a questionnaire which also collected information about the personal attributes of the financial advisors who participated in the research. The vignette methodology therefore facilitates a parsimonious experiment in which investor and advisor effects could be isolated while controlling for other factors.

The three studies now follow in chapters 2, 3 and 4 after which the concluding chapter 5 is presented.

Chapter 2, Study 1

Millionaire Investors: Financial Advisors, Attribution Theory and Gender Differences

ABSTRACT

To date little attention has been paid to how social cognitive bias can influence how financial advisors interpret and respond to the needs of millionaire investors, and if this varies depending on the gender of the investor. This research investigates whether experienced professional financial advisors who work with millionaire investors make different attributions for the control and knowledge that investors have of their investments, and if they make different investment portfolio recommendations to equivalent male and female investors. Using methodology novel to finance, this vignette-based study that controls for gender finds evidence that professional financial advisors judge millionaire female investors to have less control over their investment portfolios relative to men. Empirical results also show that female advisors judge women to be less knowledgeable about investments than men. Despite such perceptual differences, advisors recommend equally risky portfolios to male and female investors. These results have implications for wealth management institutions and the monitoring of financial advisors for millionaire individuals.

JEL Classification: G11, G12.

Keywords: Portfolio Choice; Investment Decisions; Financial Advice; Risk-Taking; Gender.

2.1 INTRODUCTION

A growing literature in behavioural finance shows that investors rely on their own perceptions and intuitive beliefs when making investment decisions, rather than selecting efficient portfolios that optimally balance risk and reward (Benartzi and Thaler 2001; Kahneman 2003). However, a large proportion of millionaires do not make investment decisions themselves, but rely instead on advice provided by financial advisors. As such, these investment decisions also depend on the judgements that advisors make about the needs and preferences of their clients (i.e., the investors). To date, very little research has considered how advisors judge the needs of their clients, or indeed the role that social cognition plays in the way that advisors make sense of their clients' needs. More specifically, there has been little consideration of how social cognitive judgements may differentially impact how advisors interpret and make sense of the needs and preferences of different groups (e.g., male and female investors), and how this in turn influences advisors' portfolio recommendations. In the present research a difference would be identified in relation to advisors making differential judgements of male and female investors (vignettes) who, apart from gender, share otherwise identical characteristics.

This paper addresses this notable lacuna in existing research by drawing on attribution theory from social psychology (Harvey et al. 2014), and by utilising vignette methodology to investigate whether practising professional financial advisors explain and respond to the needs and preferences of male and female millionaire investors differently. Vignettes, (i.e., pen-portraits of fictional millionaire investors), are used to ascertain the judgements that advisors make about the investment knowledge, control and risk tolerance of potential clients. This methodology, which is frequently used in social psychology yet novel to finance, is effective in extracting attitudes and judgements in quantitative research (Schoenberg and Ravdal 2000).

In this study, the vignettes allow for a clean experiment where each of the ten vignettes explicitly defines a client and provides the same information to advisors who rate the vignettes.

By introducing attribution theory to behavioural finance, and asking financial advisors working with millionaire investors to complete an innovative vignette based survey, it is possible to investigate whether advisors judge the needs of male and female fictional millionaire investors, with the same characteristics and circumstances, in the same manner or whether they exhibit a bias. The study tests the hypotheses that social cognitive bias leads experienced advisors who work with millionaire investors to (a) perceive female investors as having less knowledge and control over their investments than men, and (b) to recommend comparatively less risky investment portfolios to women.

The study makes several contributions to the behavioural finance literature. Firstly, it draws on attribution theory to provide a basis for predicting and studying the potential for social cognitive bias in interpersonal decision-making. While this theory has received extensive study in other fields of psychology and social judgement, it has yet to be fully explored in the context of financial advice. Secondly, the research design introduces a new and innovative methodology (i.e., vignettes), which provides a tried and tested method to investigate gender and other group differences in the way that financial advisors support and advise clients. Thirdly, the study investigates the judgements of individuals who work as financial advisors and have many years of experience advising millionaire clients. As such it extends existing research beyond laboratory based studies and considers the judgements of experts rather than novices. Finally, the research is important because it focuses on a specific need, namely the importance of providing appropriate and valid advice to millionaire female investors, a group that is growing significantly in size, yet for whom advice is often perceived as unsatisfactory (Friedland 2013).

2.1.1 Millionaire Investors

According to the World Wealth Report (2013), high net worth, or 'millionaire' investors are defined as individuals who hold at least US$1million, or the equivalent, in financial or investable assets. Millionaires play an important investment role in the global economy. For example, in the UK, millionaires own 46% of the household wealth, and the UK has the third highest number of millionaires globally (Credit Suisse 2016). In 2015, when the data for this study were collected, 961,000 UK households had assets worth over US$1m excluding property and luxury goods; a 12.4% increase from the previous year (Boston Consulting Group 2016). There are also approximately 40 financial institutions in the UK that provide support for these individuals and manage in excess of US$50 million each (A.T. Kearney 2013).

Among the wealthy, female wealth growth has outpaced that of men. The Telegraph reported that women aged between 22-29 years are earning more than men (Fraser 2015), and by 2020 it is predicted that women will make up 53% of all UK millionaires (Centre for Economics and Business Research 2013). Women's economic empowerment therefore represents a major social change (The Economist December 30, 2009). Yet, despite this apparent financial success, there is evidence that women remain disadvantaged relative to men in terms of their investments[1]. For example, while women have a longer life expectancy than men (83 compared to 79 years: World Health Organization 2016), they are less likely than men to have a pension plan (Hung and Yoong 2010), and those women who do have a pension plan have built up a smaller amount typically due to a higher prevalence of part-time work and taking time out for family care. Moreover, women have been shown to have a lower allocation

[1] Here 'disadvantaged' refers simply to the underinvestment in risky assets in women's portfolios relative to those held by men. As a group millionaires are per se not financially disadvantaged.

to risky assets in their retirement savings (Sundén and Surette 1998). Interestingly there is also evidence from recent studies that indicates women are more likely to be dissatisfied with their financial advisors compared to men, and typically perceive financial advising to be a male orientated activity (Friedland 2013). These findings have prompted many investment organisations to question what more they can do to better understand and support the needs of wealthy women, and ultimately to attract and retain this important client group.

However, one area that has received relatively little attention from finance researchers to date, concerns the way in which advisors interpret and explain client needs, and how this can be influenced by unconscious stereotypical assumptions or group bias. For example, studies investigating social cognition in other work contexts have found that people are routinely and often unconsciously biased in the way they perceive others, including making different causal judgments about the needs and behaviour of men and women (Deaux and Major 1987; Feather and Simon 1975). This study builds on existing work by drawing on attribution theory to investigate whether financial advisors interpret the needs of equivalent male and female millionaire investors differently, and whether these differences affect the portfolio recommendations they make.

2.2 BACKGROUND ON ADVISING INVESTORS: ATTRIBUTION THEORY

By introducing cognitive psychology to the traditional rational agent model, Tversky and Kahneman (1986) demonstrated robust and consistent evidence of irrational decision making behaviour among investors previously unexplained by traditional rational economic theory. They argued that the rational economic theory had been "conceived as a normative model of an idealised decision maker, not as a description of the behaviour of real people"

(Tversky and Kahneman 1986, 251). In doing so attention shifted to the subjective and sometimes irrational biases that influence decisions. Behavioural finance researchers have been particularly interested in the impact of psychological bias on investor decision-making (Muradoglu and Harvey 2012) and how different biases illustrate errors that investors make as they allow irrational behaviour into their decision making process. Kahneman (2003) describes these as emotional brain filters that allow emotions to manipulate decision making. Loewenstein et al. (2001) suggest that risk attitudes are emotional expressions, rather than rational evaluations, with situational complexity and uncertainty likely to increase the influence of emotions (Forgas 1995).

While behavioural finance adds complexity to traditional models that explain optimal, but not actual, decision making behaviour (Nofsinger 2005), its focus has tended to remain on decisions about investments rather than decisions about investors. For example, studies have explored the influence of self-attribution bias on investor decisions; researchers have shown that individuals are consistently more likely to attribute positive outcomes (e.g., successful investment) to self and negative outcomes (e.g., unsuccessful investment) to external causes**,** making it difficult for investors to learn from their mistakes (Hoffmann and Post 2014) and improve their investment outcomes. Mittal (2010) found evidence that investors differ in the extent to which they demonstrate this self-attribution bias, and that investors showing high levels of bias are more likely to believe that they have both superior knowledge relative to others and a belief that they can outperform the market (Barber and Odean 1999). Those investors who are prone to the self-attribution bias have a tendency to realise gains too quickly and to hold on to underperforming investments (Feng and Seasholes 2005). Overconfident investors also attach importance to past return experiences to reinforce their convictions

(Hoffmann and Post 2016) leading them to trade too much, generating higher transaction costs and ultimately lower returns (Hoffmann and Post 2016; Odean 1999).

As yet very little behavioural finance research has considered interpersonal attributional bias in situations where one individual (i.e., a professional financial advisor) gives investment advice to another (i.e., a client). These situations require the advisor to interpret the client's needs, and to make a recommendation about how he or she should invest their wealth on the basis of these interpretations. In these situations, interpersonal and inter-group attributional bias have been shown to influence the way in which observers interpret and respond to the behaviour and needs of others (Kelley 1973; Martinko and Thomason 1998).

2.2.1 Delegated Portfolio Management

Unlike self-managed wealth, wealth managed through financial advisors involves joint decision making within an agency relationship. This is defined by Ross (1973, 134) as a "relationship... between two (or more) parties when one, designated as the agent, acts for, on behalf of, or as representative for the other, in a particular domain of decision problems".

In this study, the principal (i.e., the investor) delegates some decision making authority to the agent (Jensen and Meckling 1976) by appointing them as their investment portfolio advisor responsible for providing them with information and investment advice (Bhattacharya and Peiderer 1985). In the UK, the activities of financial advisors are regulated by the Financial Conduct Authority (FCA) in order to protect investors and ensure fair treatment. Importantly, in situations where investors engage a professional financial advisor, investment decisions are not made in isolation, but rather in conversation with the advisor. He or she can then influence the decision making process by providing information and advice about different investment possibilities, depending on their understanding of the investor's need.

Yet, like investors, professional advisors can be vulnerable to cognitive bias (De Bondt 1998; Chalmers and Reuter 2010; Karabulut 2010) and may also fail to correct the biases an investor may have (Mullainathan, Noeth and Schoar 2012). It is therefore possible that advisors' judgements about clients, and any recommendations they make, will be influenced by the stereotypes and assumptions they have about investors' needs, based on investor characteristics such as gender.

2.2.2 Gender Differences

Gender differences are of particular interest to wealth management institutions and regulators due to the rapid growth in female wealth and the resultant economic impact of investment decisions made by women. Differences in the investment behaviour between men and women are well documented. Previous research has found that women invest less, trade less frequently and select lower risk investments in their portfolios, and with a smaller allocation into risky assets, it is argued that women are more risk averse (Charness and Gneezy 2012; Koedijk, Pownall, and Statman 2015). Studies show that women also tend to perceive themselves as less confident in making investment decisions (Estes and Hosseini 1988; Barber and Odean 2001), and are generally and historically less financially literate than men (Campbell 2006; Lusardi and Mitchell 2007). Dwyer, Gilkeson, and List (2002) find that this lower financial literacy translates into women making lower risk investment decisions. Agnew et al. (2008) report a similar link between lower financial literacy, confidence and increased risk aversion, with 38% of women in their study opting for a less risky annuity retirement option compared to 29% of men. These findings provide further support for Sundén and Surette's (1998) assertion that women make less risky retirement asset allocation choices than men.

However, extant research has generally focused on identifying differences between the preferences and styles of male and female investors, with women typically perceiving themselves to be less knowledgeable about investing, less confident when making investment decisions and more likely to demonstrate a lower risk tolerance which translates into a desire for lower risk investments decisions compared to men (Barber and Odean 2001, 2002; Croson and Gneezy 2009; Hira and Loibl 2008). Yet to date there has been no attempt to investigate whether such differences might arise because women receive different investment advice based on advisors' assumptions about their risk tolerance. For example, while many wealthy women engage professional advisors to guide them through the investment decision making process, less is known about whether the risk tolerance of female and male investors is perceived differently by professional financial advisors.

Evidence that such differences may exist can be found in research concerned with attribution theory, which considers the everyday causal explanations that people make both for their own behaviours and the behaviour of others (Harvey et al. 2014; Heider 1958; Weiner 1985; Wong and Weiner 1981), which in turn influence future decisions and actions (Fincham and Jaspars 1979; Martinko and Thomason 1998). Attribution theorists have studied the impact that perceptions, biases and stereotypes have on behaviour, particularly in relation to their impact on differential decision-making for men and women (Silvester and Koczwara 2012). For example, in work psychology, *attributional rationalisation* is the tendency for managers to attribute successful performance by women to unstable and circumstantial causes (e.g., effort and luck) and equivalent male performance to internal and stable causes (e.g., ability) as a result of in-group/out-group bias (Heilman, Block, and Martell 1995; Swim and Sanna 1996). There is now considerable evidence that observers make different judgements depending on the gender of the observed, with female success more typically attributed to luck (Deaux and

Emswiller 1974; Feather and Simon 1975). In the workplace, Silvester and Koczwara (2012) found that senior managers attributed the success of female junior managers to more external and temporary causes like the actions of others, while they attributed success on the part of junior male managers to more internal controllable and stable causes like talent and ability. In general, observers tend to judge men to have more control or confidence over their actions than women (Weiner et al. 1971).

To date, however, no research has considered this bias in the context of investment advice; nor to whether it might lead advisors to perceive the needs of wealthy male and female investors differently, and thus to provision of different types of investment advice. Yet circumstantial evidence exists to support this proposition, for example, a study of undergraduate students by Daruvala (2007) found that both male and female observers, (i.e., the students in the sample), judged women to be more risk-averse than men. Likewise, in a study conducted in the financial services industry, Wang (1994) found that brokers providing investment advice to individuals with US$25,000 to invest, allocated less time and recommended less risky investments to women relative to men.

The existence of biased social perception is likely to be particularly important for wealthy investors who rely on advisors who make investment recommendations on their behalf. Yet, existing research focuses on how professional advisors are prone to behavioural biases when making investment decisions, rather than whether the perception that advisors have of different investors is biased. Moreover, the few studies that do consider advisors' perceptions look at how they perceive affluent investors (Wang 1994) or students (Daruvala 2007), and not millionaire investors. Therefore, investigating the judgements that advisors make about wealthy female and male investors provides an important addition to current

understanding of potential gender differences in the way investment recommendations are made.

2.2.3 Hypotheses

Drawing on behavioural finance research that finds that female investors tend to rate themselves as less knowledgeable, less confident and more risk averse relative to male investors, and attribution research which finds differences in the way that the behaviour of men and women is explained by others, this study tests whether a similar bias may apply to how financial advisors perceive the relative knowledge, control and risk tolerance of male and female millionaire investors. We hypothesise that, in situations where all other characteristics and investment circumstances are held equal:

Hypothesis 1: Financial advisors will rate female millionaire investors to be less knowledgeable about investments than male millionaire investors.

Hypothesis 2: Financial advisors will perceive female millionaire investors to have less control over their investments than male millionaire investors.

Hypothesis 3: Financial advisors will allocate lower risk portfolios to female millionaire investors relative to male millionaire investors.

2.3 METHODOLOGY

2.3.1 Context and Participants

This study introduces new methodology into behavioural finance through the use of vignettes to elicit attributions from financial advisors about male and female millionaire investors under controlled conditions. The vignette experiment was conducted in the UK private banking sector. The UK is of particular interest due to its high proportion of millionaire investors and its prominence globally in the wealth management sector. This sector continues to grow, both in terms of total wealth under management, and specifically the growth in female

wealth. Additionally, changes in the regulatory environment following the credit crisis has increased the focus that the Financial Conduct Authority (FCA) places on advisors' behaviour towards their clients, adding to the study's relevance to and potential impact on practices in the marketplace.

Data were collected directly from financial advisors, employed by private banks and other wealth management firms in the UK, who are working with millionaire individual investors (i.e., those with more than US$1 million or equivalent to invest). This unique data set was accessible due to the first researcher's extensive insight into the sector obtained through nearly twenty years of working in the industry. In the UK advisors are regulated by the FCA through their employer. The FCA requires that all advisors undertake investment and portfolio construction qualifications to ensure they understand how to risk profile investors, and are therefore able to recommend suitable investment portfolios with an asset allocation appropriate to each risk profile. This training also ensures that, before providing any advice, an advisor must first establish which investments are suitable for a particular client using pre-designed investment questionnaires. These questionnaires are designed to meet regulatory requirements by evidencing suitable investment recommendations for clients (Estrada 2016); categorising investors' risk profiles using information about their personal circumstances, such as age, amount of wealth, source of wealth, goals, marital status, dependents, expenditure, profession, investment experience. Although risk profiles may vary depending on the institution, they typically range from 1 (risk averse) to 5 (aggressive), with each rating associated with a recommended target asset allocation or investment portfolio. For example, institutions may create model investment portfolios for each level of investor risk classification depending on the investor's personal characteristics which set the boundary as to which investments are suitable for each investor. Although the FCA does not determine the metrics used by

institutions it overseas the suitability process for assessing the risk investors are prepared to take (Financial Services Authority 2011)[2].

Although individual advisors are responsible for providing suitable investment advice, they can also influence this initial determination of the client's risk profile, thereby adding further opportunity for subjectivity. Importantly, advisors' judgements of investors are critical for determining what investments can be offered. The industry and the financial regulator expect that advisors rationally follow these sorts of metrics, but as yet relatively little attention has been paid to the possibility that advisors are influenced by other client characteristics, like gender, that ought not to affect portfolio recommendations.

2.3.2 Development of Vignette Questionnaire

This study utilises a vignette based questionnaire to collect ratings for hypothetical millionaire investors that respondents might typically encounter in their work. Although vignette methodology has a long history in psychological and sociological research, it is not common in the finance literature. Atzmüller and Steiner (2010: 128) define a vignette as "a short, carefully constructed description of a person, object, or situation, representing a systematic combination of characteristics". Vignettes are often used as part of a questionnaire in order to allow researchers to capture ratings for standardised scenarios from multiple respondents. By asking questions on decision-making following a brief hypothetical scenario, vignette methodology combines a traditional survey with an experiment and is particularly suited to eliciting attitudes and judgements in quantitative research (Schoenberg and Ravdal 2000).

[2] The Financial Services Authority underwent a name change to the Financial Conduct Authority in April 2013.

In this study ten vignettes were developed; each was approximately 100 words in length and described a different fictional millionaire investor. Care was given to making sure that the narratives were realistic, and that each vignette included sufficient detail and contextual factors to ensure face validity, verified by professional financial advisors consulted during the development phase. For example, every vignette contained information about the investor that an advisor might expect to know soon after being introduced to a new client and would enable them to make judgements about their investment needs. The same categories of variables were included in each vignette (e.g., age, profession, wealth), but varied to increase the credibility and range of likely investors.

In order to compare the effects of investor gender, two versions of each vignette were created: one where the investor was male and one where they were female. Thus, gender was allowed to vary while keeping all other details constant. Table 1 shows examples of two vignettes illustrating the changes made for male and female versions. For example, the first vignette in Table 1 is a 36 year old IT consultant with £800,000 in liquid wealth and a property portfolio. Half of the respondents will rate this vignette as Susan (i.e., a woman) and half the respondents as Michael (i.e., a man). The second vignette portrays another fictional client, namely a 59 year old CEO called Nick or Anna. The methodology enables advisors to rate different types of fictional clients in a clean experiment where only gender is altered.

Table 1. Example vignettes

(1) Susan (Michael), a 36-year old IT consultant, has done well in the London property boom. She (He) has generated liquid wealth of £800,000 in addition to a property portfolio worth £1.8 million net of mortgages. The portfolio generates about £105,000 bringing her (his) total yearly income to £180,000. Together with her (his) long-term partner she (he) is expecting a baby in 3 months. It is her (his) dream to resign from her (his) boring job in 5 years to look after her (his) family. Her (his) partner has got bond and stock investments, but Susan (Michael) has always focused on property. However, she (he) realises that she (he) ought to diversify and is prepared to commit an initial £500,000. Susan (Michael) loves to travel and may buy a property abroad in the future.
(2) Nick (Anna), 59, is the CEO of a FTSE250 company. You are aware that he (she) has about £1.5 million exposure to the company stock through incentive schemes. He (She) is paid £580,000 including bonuses per year, of which he (she) only spends half. It is very hard to get time in his (her) diary but he (she) is polite and forthcoming when you meet. He (She) has expressed an interest in bonds and asks you what alternative investments are. He (She) confesses to having panic-sold his (her) portfolio and lost a lot of money during the credit crisis. Nick (Anna) would like to hedge his (her) single stock exposure and invest an initial £1 million of his (her) £2.5 million savings. He (She) is married and his (her) twins will be graduating from University this year. His (Her) wife (husband) would like him (her) to retire at 62 so that they can move to the Caribbean.

Notes: gender of the client in each vignette was varied as shown in ( ).

In order to ensure that both a female and a male version of each vignette were rated, two versions of the survey (i.e., survey A and survey B) were created. In both versions the vignettes are presented in the same order, but in version A, even-numbered vignettes describe male investors and odd numbered vignettes describe female investors, while in version B even-numbered vignettes are female and odd-numbered vignettes are male. This approach follows the methodology pioneered by Schein (1976, Schein et al. 1996), and allows the gender of the hypothetical millionaire client in each vignette to vary, while controlling for other individual and situational factors.

After reading each vignette, study participants were asked to respond to three questions: firstly, `On a scale from 1–10 how knowledgeable would you rate this client to be about investments?' (where 1 = not at all knowledgeable, 10 = extremely knowledgeable), secondly `Relative to the average investor, how much control do you think this client is likely to have over their investments?' (where 1 = a lot less than the average investor and 5 = a lot more than the average investor).

Thirdly, respondents were presented with seven investment portfolios that varied according to risk and asked: 'Which of the following portfolios would you recommend to this client?' In order to enable a controlled measure of risk, seven investment portfolios were constructed using varied asset allocations, to reflect differing levels of risk ranging from 1 (very low) to 7 (very high). This approach is consistent with Modern Portfolio Theory, where investors select a portfolio that balances likely risk and reward (Wilford 2012), and follows methodology used in previous research by De Bondt (1998) and Karabulut (2010). Each portfolio includes a mix of investments, including stocks, bonds and other assets (Marston 2011). Table 2 shows the asset allocation of the seven portfolios.

Table 2. Portfolio asset allocation composition

Asset class	Portf 1 (%)	Portf 2 (%)	Portf 3 (%)	Portf 4 (%)	Portf 5 (%)	Portf 6 (%)	Portf 7 (%)
UK Equities	11	19	27	35	37	40	42
International Equities	8	11	14	18	28	38	44
Bonds	51	45	39	32	20	7	3
Cash	6	5	5	5	4	2	0
Commercial Property	6	5	5	5	5	5	3
Alternatives / Hedge funds	18	15	10	5	6	8	8
Total	100	100	100	100	100	100	100

Note: asset allocation of Portfolios 1 - 7 = Portf.

In each of the seven portfolios the asset mix is varied to represent different risk, and asset volatility is measured by the standard deviation of the return distribution of the portfolios. For example, Portfolio 1 contains 51% bonds and 19% equities, while Portfolio 7 contains 3% bonds and 86% equities. Portfolio 1 has the lowest risk (as measured by the standard deviation of the empirical distribution) and portfolio seven the highest risk, with a gradual increase in the ratio of risky assets (1) to higher-risk assets (7). These portfolios mirror the standard approach taken to match investor risk tolerance by allocating them to one of five or more risk profiles, and matching them with suitable portfolios with varied asset allocation. The asset allocation in the portfolios is derived from the FTSE Wealth Management Association Private Investor Indices (portfolios), regarded as benchmark portfolios for the wealth management industry in the UK and thus familiar to advisors (The Wealth Management Association 2015). Although advisors may disagree about the riskiness of certain asset classes, e.g., hedge funds which despite having low levels of volatility carry liquidity and other risks which may vary depending on the strategy, the portfolio choice reflects that which is an industry benchmark in the UK rather than one which is specific to a certain institution. Finally, biographical questions were included in the questionnaire, asking respondents to indicate their gender, age and the number of years they had worked as a financial advisor.

The questionnaire was piloted with three financial advisors and three investment specialists, who each provided feedback on the vignettes, questions, and the portfolio composition. This process ensured that the questions were easy to understand, and that the advisors were able to correctly infer that portfolio risk increased incrementally between portfolios 1 to 7, without the standard deviation being disclosed to respondents. It also provided confirmation that the vignettes were believable and realistic (Rahman 1996) in their depiction of credible millionaire clients (Finch 1987). Feedback provided during piloting resulted in

minor amendments to some questions and vignettes. The amended questionnaire was further tested with ten advisors who completed it online, resulting in a few additional minor changes to language.

2.3.3 Procedure

The online questionnaire was distributed randomly to over 400 professional financial advisors, whose responses were recorded anonymously. Consent was also sought from respondents to use their anonymised data as part of an academic study about investment advice provision that would be published. Distribution occurred in two ways. First, a major UK private bank agreed to disseminate the questionnaire to all investment advisors in their UK offices who were working with millionaire UK clients. Participants were invited to take part in the research by a senior director, and reassured that all information would be treated in confidence such that respondents would be anonymous to the researchers and their employer. This generated a total of 51 respondents (47 male and 4 female, mean age 37.9 years and mean experience 9.0 years). As this institution employs approximately 200 investment advisors, the sample represented about 25% of the population.

Secondly, a snowball sampling methodology was utilised to secure respondents from over ten additional financial institutions. This involved emailing financial advisors who were known to the researchers and working with millionaire clients. These individuals were invited both to complete the questionnaire and to distribute the online questionnaire to other colleagues in similar roles. Again, all information was provided anonymously. This methodology generated 78 respondents from ten UK institutions (55 male and 23 female, mean age 44.2 years and mean experience 14.3 years). Respondent ages ranged from 32 to 59 years for the first sample (A) and 27 to 67 for the second sample (B). Despite slight differences between the two samples, a decision was taken to treat them as a single data set for the purposes of analysis,

given that the age range and experience of respondents in both samples were broadly similar, and the target group for respondents (i.e., financial advisors working with millionaire investors) is an exceptionally hard-to-reach group.

Although 151 respondents began the survey, respondents who had not rated more than one vignette were removed. Their ratings were deemed to be not randomly missing as they had commenced but not completed the survey and thus excluded from the analysis (Newman 2014). A total of 129 respondents were included in the analysis, yielding 1147 observations in total (64 respondents completed survey A and 65 completed survey B).[3] The full sample of respondents reported in Table 3 is very similar to the demographics of the financial advisor population as a whole as reported by Hannon (2014): 79.1% of advisors in the sample are male, they have a mean age of 41.74 years and an average of 12.78 years of experience advising wealthy clients.[4]

[3] Should all 129 respondents have rated all 10 vignettes that number of observations would have been 1,290 but instead this is 1,147 as not all advisors completed the full survey.

[4] Further information about the sample is available in Appendix III.

Table 3. Descriptives for respondents, by Sample A and Sample B.

Sample A (N = 51)	Mean	SD	Median	Min	Max
Age (M)	37.86	8.06	36	32	59
Experience (M Years)	9.00	6.90	9	5	33
Clients (M)	77.86	84.86	60	0	417
Millionaire clients (%)	87.59	18.78	95	80	100
Sample A Male (N=47)					
Age (M)	38.15	8.28	36	25	59
Experience (M Years)	10.70	7.01	10	0	33
Clients (M)	78.65	88.36	58	0	417
Millionaire clients (%)	86.85	19.35	95	0	100
Sample A Female (N=4)					
Age (M)	35.75	4.20	36	30	41
Experience (M Years)	7.50	4.56	6	4	15
Clients (M)	68.75	12.60	70	50	85
Millionaire clients (%)	96.25	3.81	98	90	100

Sample B (N = 78)	Mean	SD	Median	Min	Max
Age (M)	44.21	8.43	43	27	67
Experience (M Years)	14.31	8.32	15	0	40
Clients (M)	66.56	100.45	40	0	650
Millionaire clients (%)	70.82	36.98	91	0	100
Sample B Male (N=55)					
Age (M)	43.69	8.33	42	27	67
Experience (M Years)	13.89	8.61	13	0	40
Clients (M)	76.98	115.44	40	0	650
Millionaire clients (%)	72.98	36.05	95	0	100
Sample B Female (N=23)					
Age (M)	45.43	8.55	45	30	62
Experience (M Years)	15.30	7.52	20	0	31
Clients (M)	42.61	39.55	20	0	150
Millionaire clients (%)	65.65	38.72	90	0	100

Notes: The full sample of participating financial advisors split by Sample A and Sample B and advisor gender.

2.4 RESULTS

In order to analyse differences between the way in which advisors perceive equivalent female and male investors, and how this translates into portfolio recommendations, our identification strategy using vignettes with gender as a treatment effect results in a simple approach of testing difference in means. Means were calculated and two-tailed t-tests were used to compare responses for knowledge rating (H1), perceived control (H2) and recommended portfolio risk (H3). The analysis included responses from 129 participants who rated the ten vignettes. Taking account of missing data this yielded a total of 1147 observations included in the analysis. Means of ratings were computed for the overall responses per vignette and then split into the gender of the vignette. Significance is reported using P values. Additional analysis calculating means and ratings based on the gender of the advisor are also considered.

The results for the full sample are presented with the summary results in table 4 below.[5] The overall mean computations show that advisors are on average in agreement with how knowledgeable the investors in the vignettes are and the portfolios that they recommend regardless of the gender of the investor portrayed in the vignettes. However, means show that male and female vignettes are judged to have different levels of control over their investments. Male vignettes are attributed an average rating of 3.27 whereas female vignettes were rated to have less control (M = 3.08), which is significant at the 1% level. The results for each rating are presented in more detail below. Robustness tests are presented in Appendix VI.

[5] Additional tests which analyse the differences in medians are available in Appendix IV for robustness. These tests do not indicate differences in the results when using median instead of means.

Table 4. Summary results for vignette ratings by all respondents.

	All vignettes			Male Vignettes			Female Vignettes		
Rating	Mean	SD	Obs	Mean	SD	Obs	Mean	SD	Obs
Knowledge	5.68	2.20	1147	5.76	2.19	572	5.61	2.22	575
Control	3.17	1.03	1147	3.27	1.02	572	3.08***	1.02	575
Rec. Portfolio	3.94	1.58	1147	3.96	1.58	572	3.91	1.58	575

Notes: (1) Based on responses of 129 respondents for all 10 vignettes with the number of observations (Obs) adjusted for missing data. *** Significant at 1% level when comparting the ratings made of male vignettes (M=3.27) and female vignettes (M=3.08).

Result 1: The results for knowledge ratings (H1) are presented in more detail in table 5. Our analysis does not find evidence that advisors perceive women to be significantly less knowledgeable than men (M = 5.76 for male vignettes and M = 5.61 for female vignettes), therefore we reject Hypothesis 1: 'Financial advisors will rate female millionaires less knowledgeable about investments than male investors who are millionaires'. Additional t-test analysis reveals that female respondents rate millionaires in male vignettes to be more knowledgeable (M=5.60) than they do millionaires in female vignettes (M= 5.22), which is significant at the 5% level.

Table 5. Knowledge ratings by gender of advisor and gender of vignette.

Knowledge Rating	All Respondents			Male Respondents			Female Respondents		
	Mean	SD	Obs	Mean	SD	Obs	Mean	SD	Obs
All Vignettes	5.68	2.20	1147	5.75	2.14	919	5.41	2.41	228
Male Vignettes	5.76	2.19	572	5.79	2.16	458	5.60	2.30	114
Female Vignettes	5.61	2.22	575	5.71	2.12	461	5.22**	2.52	114

Notes: Shows the differences for the knowledge rating with the gender of both the vignettes and the respondents varied between male and female. Observations = Obs. ** Significance at 5% level when comparting the ratings made by male advisors of female vignettes (M=5.71) and female advisors made of female vignettes (M=5.22).

Result 2: The control ratings yield significant differences. Overall advisors rated female millionaires as having less control over their investments relative to males (M = 3.27 for male vignettes and M = 3.08 for female vignettes. Therefore we fail to reject Hypothesis 2: 'Financial advisors will perceive female millionaires to have less control over their investments than male investors who are millionaires'. Additional analysis taking advisor gender into account shows that, overall, the lowest control ratings were made by female respondents for female millionaires (M = 2.96), whereas female respondents rated male millionaires to have the highest control over their investments (M = 3.27), significant at the 5% level. Also male advisors attribute lower control to female millionaires (M=3.11) versus male millionaires (M=3.27), significant at the 5% level (see table 6).

Table 6. Control ratings for vignettes by gender of advisor and gender of vignette.

	All Respondents			Male Respondents			Female Respondents		
Control Rating	Mean	SD	Obs	Mean	SD	Obs	Mean	SD	Obs
All Vignettes	3.17	1.03	1147	3.19	1.00	919	3.12	1.11	228
Male Vignettes	3.27	1.02	572	3.27	1.02	458	3.27	1.05	114
Female Vignettes	3.08***	1.0227	575	3.11**	0.99	461	2.96**	1.16	114

Notes: Shows the differences for the control rating with the gender of both the vignettes and the respondents varied between male and female. Observations = Obs. *** Significant at 1% level. when comparting the ratings made of male vignettes (M=3.27) and female vignettes (M=3.08). ** Significant at 5% level when comparting the ratings made by male and female advisors of female vignettes.

Result 3: T-tests revealed that when all advisors were considered together there was no significant difference in the type of portfolios they recommended to male and female millionaires (female investors M = 3.91, male investors M = 3.96). Thus hypothesis 3: 'Financial advisors will allocate lower risk portfolios to female millionaires relative to male investors who are millionaires', was also rejected. However, inspection of the data reveals that the lowest risk portfolios are recommended to female investors by female advisors (M = 3.67), relative to male investors (M = 3.97); this difference is significant at the 10% level. Conversely the highest risk portfolios are more likely to be recommended to male millionaires by male advisors (M = 3.99) and female advisors (M = 3.97). The results for the recommended portfolio ratings are summarised in table 7.

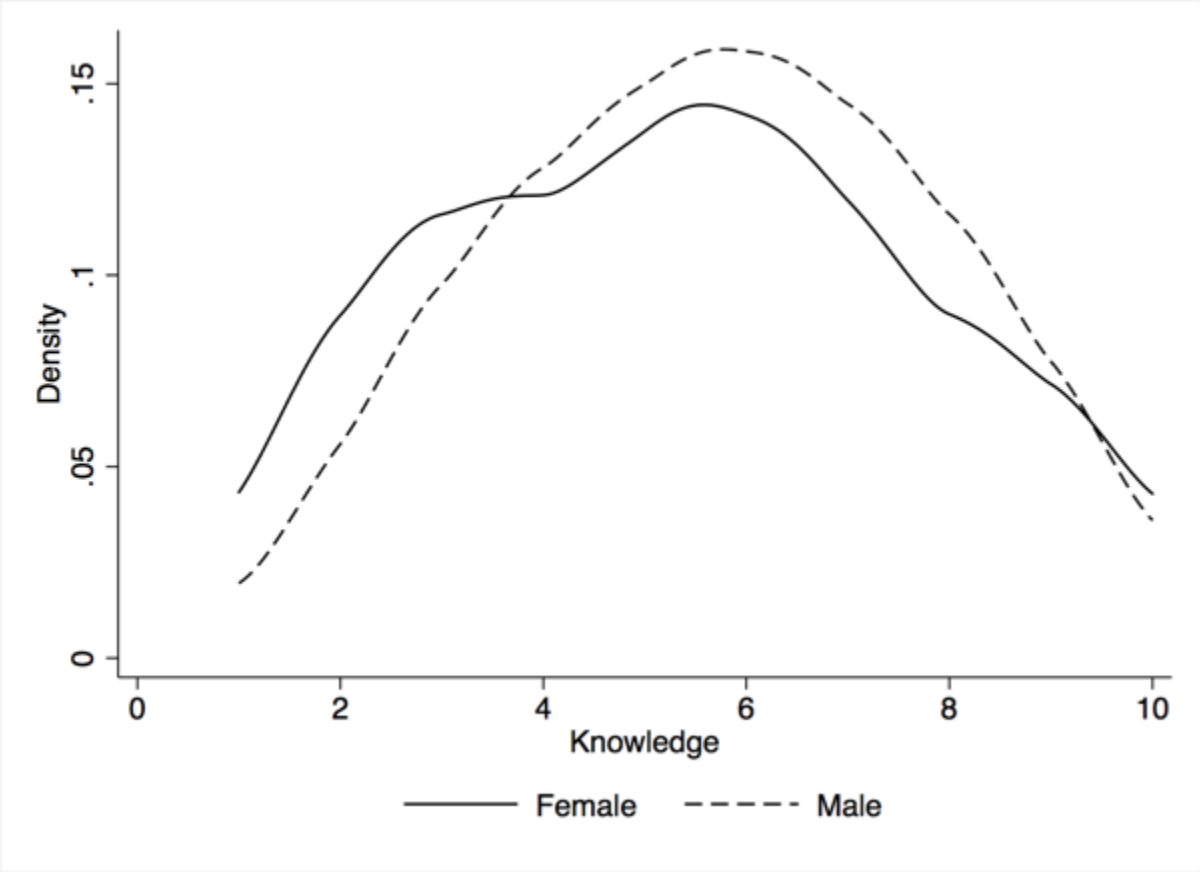
Table 7. Recommended portfolio rating by gender of advisor and gender of vignette.

	All Respondents			Male Respondents			Female Respondents		
Portfolio Rating	Mean	SD	Obs	Mean	SD	Obs	Mean	SD	Obs
All Vignettes	3.94	1.58	1147	3.98	1.58	919	3.75	1.56	228
Male Vignettes	3.96	1.58	572	3.99	1.60	458	3.84	1.49	114
Female Vignettes	3.91	1.58	575	3.97	1.56	461	3.67*	1.63	114

Notes: Shows the differences for the recommended portfolio rating with the gender of both the vignettes and the respondents varied between male and female.

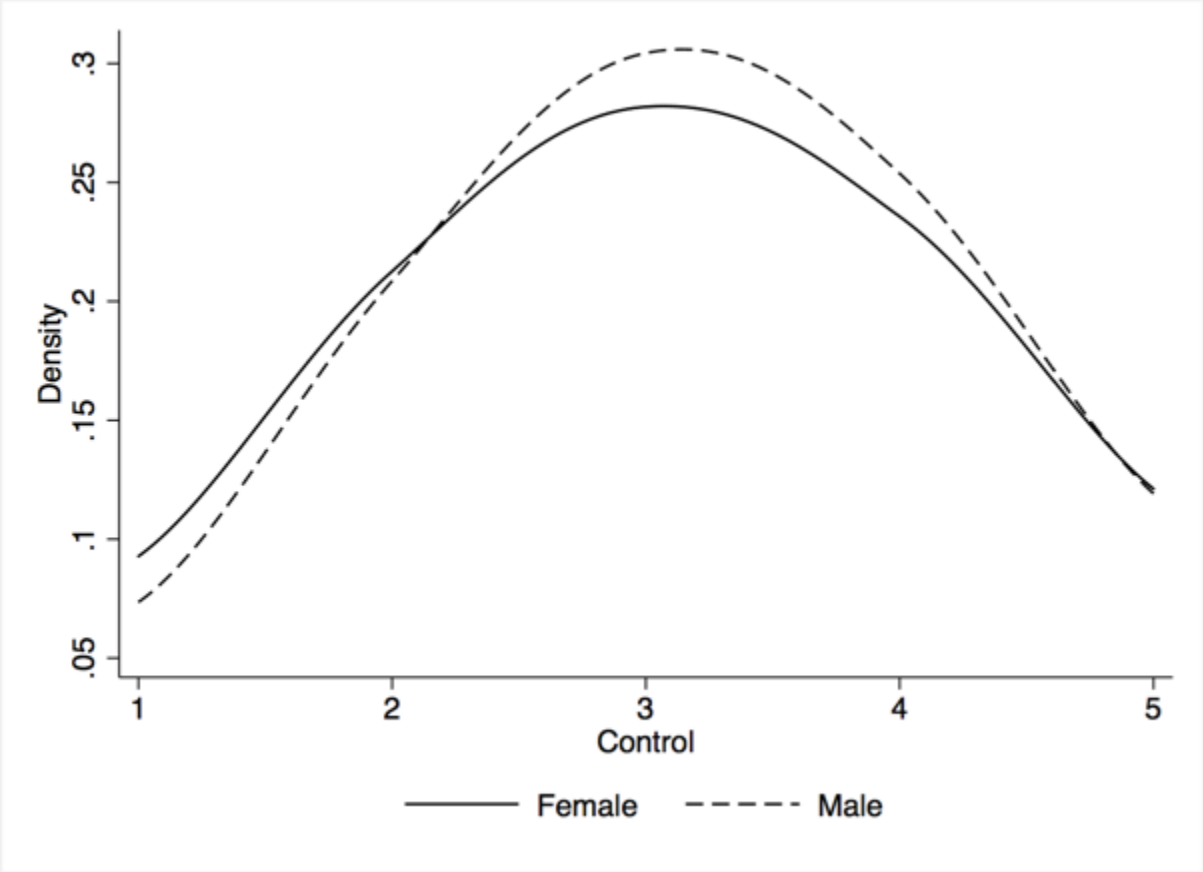
Observations = Obs. (3) * Significant at 10% level.

Figure 1. Conditional density function: knowledge.



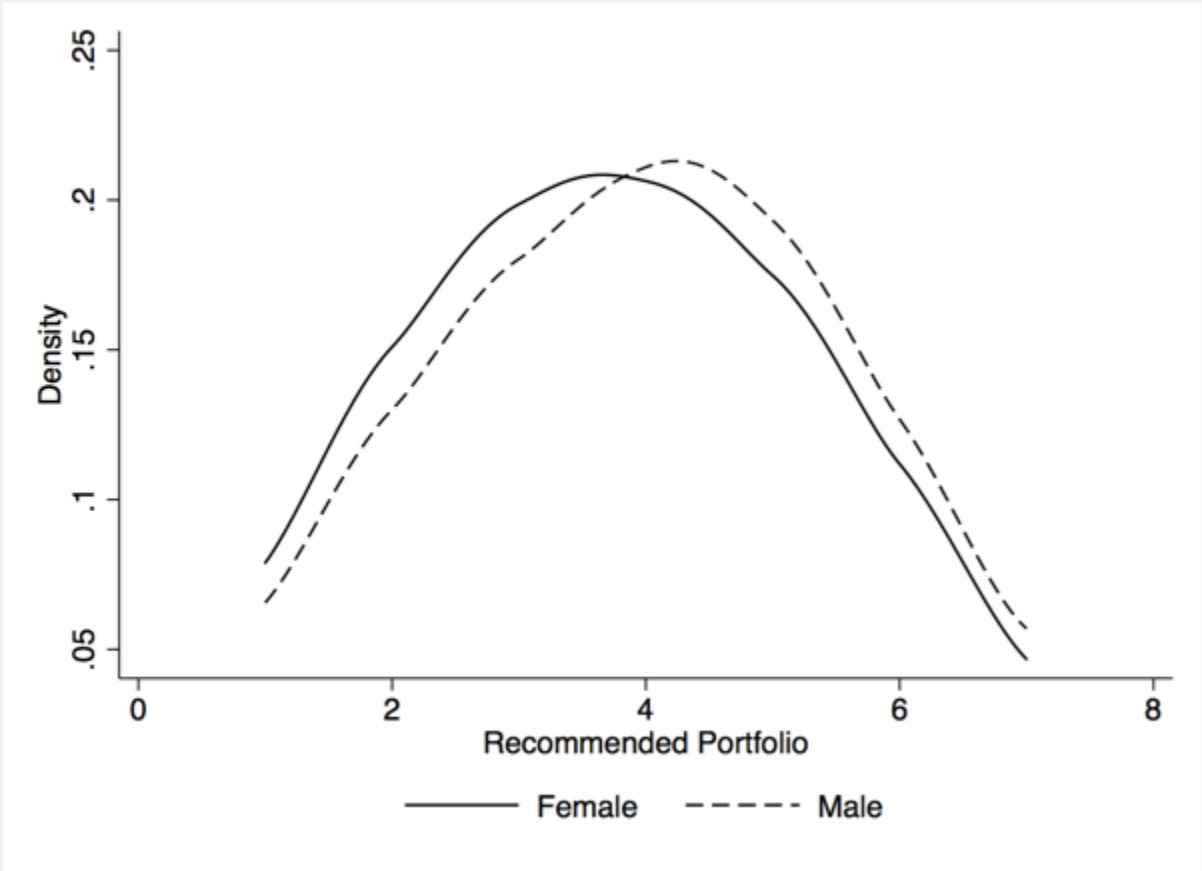
Notes: The density graph shows the difference in the distribution of the degree of knowledge, conditioning on gender of the financial advisors.

Figure 2. Conditional density function: control.



Notes: The density graph shows the difference in the distribution of the degree of control, conditioning on gender of the financial advisors.

Figure 3. Conditional density function: recommended portfolio.



Notes: The density graph shows the difference in the distribution of the recommended portfolio, conditioning on gender of the financial advisors

To analyse more carefully where in the distribution these differences between gender occur, conditional densities are drawn which show variation in the ratings conditioned on the gender of the financial advisor, for the ratings made across all vignettes without varying vignette gender. These follow the non-parametric technique proposed by Racine and Li (2004), which applies a kernel method of density estimation to discrete variables. Density functions that show the differences in the degree of knowledge, control as well as the recommended portfolios are shown in figures 1 – 3. Although there is a slight shift to the left for all three variables for female advisors, it is not significant at the 95% level.

2.5 DISCUSSION

The rapid increase in the number of women millionaires in the UK, means that the way in which these women invest their wealth is of social and economic interest. It is also of particular interest to wealth management institutions that wish to attract and support female clients, and to institutional regulators of financial advice provided to individual investors. Although behavioural finance theorists demonstrate how individual investors use their own intuitive beliefs and apply biases when making investment decisions for themselves (Kahneman 2003; Benartzi and Thaler 2001), much less attention has been given to whether financial advisors who aid millionaire investors may display similar biases when judging the needs and providing investment advice for male and female clients. Consequently, there is a need to explore how advisors understand and respond to the needs of male and female millionaire investors.

By introducing a novel vignette based methodology to finance this study draws on attribution theory to explore if advisors perceive investors differently due to their gender, whilst holding variables, other than gender, within each individual vignette constant. Since the

variables are varied across the ten vignettes this experiment allowed comparison of the judgments made of ten different male and female millionaires. Based on previous findings in the literature about differences between male and female investors, and previous attribution theory research, the expectation was that advisors would judge female vignettes (millionaire investors) to be less knowledgeable, to have less control over their investments, and to recommend lower risk portfolios to female relative to male vignettes. This study found that advisors did not rate the investment knowledge of men and women differently, but that women millionaires were perceived to have less control over their investments.

Contrary to the hypotheses, the results also show that advisors did not recommend lower risk portfolios to investors in the female compared to male vignettes. Although most researchers find a lower risk tolerance among female relative to male investors, this result speak to other studies that do not demonstrate gender differences (Fourtes, Muradoglu, Ozturkkal 2014). The perceived control findings in this study are in line with attribution research that has found that both male and female observers attribute female success to less controllable causes (Silvester and Koczwara 2012), and judge men as likely to have more control or confidence over their actions (Weiner et al. 1971). Investors who are judged to have less control over their investments might also be perceived to be more reliant on their advisors, and more likely to seek investment advice (Guiso and Japelli 2006; Karabulut 2010; Bluethgen et al. 2008). However, results from the present study do not provide evidence of differences in the social perception that advisors have regarding the financial literacy of men and women, instead they demonstrate that advisors recommend portfolios with the same allocation to risky assets to equivalent male and female investors despite judging women to have less control over their investments.

Yet, when varying the gender of advisor, the results show that both the knowledge that advisors perceive investors in the vignettes to have and the portfolios that they recommend are significantly altered. Relative to male advisors, female advisors judge female vignettes to have less investment knowledge, but they also recommend less risky portfolios to female investors than to male investors. The control rating was also significantly lower for female investors when varying the gender of both advisors and investors.

Whilst it may be problematic to generalise with a sample of 129 advisors from ten UK wealth management institutions (Berk 1983), it is particularly difficult for researchers to access the community of advisors for millionaire investors. Indeed, the response rate for this voluntary survey was 38%, which is similar to the average of 35.7% cited by Baruch and Holtom (2008), suggesting a good level of engagement despite the absence of financial compensation. Likewise, as there are only forty UK institutions that individually manage over US$50 million (A.T. Kearney 2013), the sample is broadly representative of the wider population. Due to the anonymity of the survey data, information about the characteristics of non-respondents was not available for comparative analysis (Viswesvaran, Barrick, and Ones 1993). While it is possible that this sample is not an exact representation of the advisory industry, and may be subject to sample selection bias (Berk 1983), we argue that it has high external validity due to its broad representation of a unique target population. Thus, while ratings were provided by respondents who were recruited in two different ways, splitting the sample into two subgroups for analysis purposes would have substantially reduced the sample size with effects on significance (Wheatley and Hills 2001) and hence the credibility of any subgroup effects (Sun et al. 2012). Similarly, while the proportion of women respondents in the total sample resembles that found in the advisory market as a whole (i.e., 21% female advisors: Hannon 2014), sample A had only 8% female respondents. Advisors in sample A were also slightly younger and less experienced than those in sample B. Consequently, it was not possible with this data to explore

meaningful sub-group differences. That said, the findings presented in this paper suggest that the gender of an advisor may be influential in investment recommendations, with the lowest mean ratings for knowledge, control and portfolio recommendation all given by female advisors for female vignettes. Interestingly, the highest ratings on these measures are provided by male respondents for male vignettes. These findings deserve further exploration in future research.

Previous research has also found that an observer's own risk tolerance may influence the risk rating they make for another person (Daruvala 2007). Therefore, future studies might examine whether female advisors are less risk tolerant than their male peers, and thus more prone to recommend lower risk investments. Similarly, the level of self-rated knowledge of an advisor might influence the level of knowledge they attribute to others. However, it may also be the case that female advisors are simply more accurate in interpreting the extent to which their clients feel knowledgeable, confident, and averse to risk.

According to classical theory we would not have expected a significant difference between the male and female investors. Yet based on previous findings of self-perceived lower financial literacy, confidence and risk tolerance among women, we expected that the judgements or social perception that advisors make of male and female investors would follow a similar pattern. The data source and findings presented in this paper provide unique new insights into advising millionaire individuals in a study with relevance to and potential impact on practices in the marketplace. Although varied, the results illustrate that advisors interpret the needs of female millionaire investors differently to male investors, and that the gender of the advisor significantly contributes to differences in that judgement. Although advisors exhibited less bias than expected, they judge female investors to have significantly less control over their investments. Such findings highlight the complex and subjective nature of how the

needs of male and female millionaires are understood. Financial markets regulators, and the institutions that the advisors work for, may trust that advisors follow metrics, yet it seems that attributional bias may also contribute to the investment advice received by male and female investors; with the gender of the professional who provides the investment advice an important consideration.

2.5.1 Practical Implications

This study has significant implications as it addresses one of the problems faced by the wealth management industry: how to attract and encourage wealthy female clients to invest their wealth. A recent report shows that only 25% of affluent women in the US have an advisor, and of this group 67% feel their advisor misunderstands their needs (Hewlett and Moffitt 2014). Moreover, women are generally less satisfied with their advisors, and more likely to perceive financial advising as a male orientated activity (Friedland 2013). Yet, despite significant growth in female wealth, women are less likely than men to have retirement savings (Hung and Yoong 2010) and less likely to have a high allocation to risky assets (Sundén and Surette 1998), which means that with a longer life expectancy than men, women risk outliving their savings. Consistently lower risk investment portfolio recommendations to female investors result in underinvestment relative to both the market and their peers and a likelihood of lower risk-adjusted returns.

It may of course also be problematic that the advisors in this study perceive women to be equally knowledgeable to men and to have less control over their investments but still recommend equally risky portfolios to women. This has potential consequences for the financial industry with regards to savings and retirement portfolios, and increases the scope for more tailored investment advice. These findings may also be of interest to financial regulators

in relation to consideration of the fair treatment of consumers regardless of their gender, and the need to raise awareness among advisors of the effect that psychological heuristics can have on financial decision-making.

2.5.2 Theoretical Implications

Through introducing attribution theory to the finance field, the concept that social perceptions matter when investors make investment decisions jointly with an investment advisor, contributes to extant behavioural finance research. Such attributions and social perceptions that advisors make of millionaire investors are elicited through the employment of novel vignette based methodology with results that underpin previous findings in attribution theory where both male and female observers perceive female millionaire investors to have less control over their investments. Attribution theory can therefore help to inform and expand existing behavioural finance theory by showing that social perception also matters when financial advisors judge the needs of millionaire investors, potentially influencing the investment advice provided and ultimately how the wealth is invested. Additionally, this study illustrates how the finance literature can benefit from the application of vignette methodology to elicit judgements in controlled experiments.

2.5.3 Limitations and Future Research Directions

There are several interesting areas for future research. The study can be replicated for less wealthy investors to explore if perceptions are different for another demographic. Future research could also consider geographical differences. Although out of scope in the current study, exploration of the correlation between advisor's own risk tolerance and the risk perception of investors could add further insight and inform the findings presented in this paper. Increased understanding of other biases which result from agency conflicts, caused by

mismatches between the agent's and the principal's own self-interests would also be beneficial. Such potential conflicts are important and may lead to advisors recommending riskier portfolios that attract higher incentives for the advisor. Additionally, millionaire investors may have several dedicated financial advisors, a complexity not considered in this study. Other studies might consider this as well as the depth and length of the relationship between the advisor and the investor**.**

To advance knowledge about the interaction between financial advisors and investors future researchers may consider how the judgements that advisors make of investors match the expectation of investors. One might argue for lower risk portfolios to investors who display a higher level of dependence and lower level of confidence. Since this study concerns the study of judgements made by very experienced advisors, it may well be that this contributes to perceptual differences as experience is negatively correlated with biases (Feng and Seasholes, 2005). Millionaires might also be judged differently than those who are less wealthy and advisors might attribute a higher risk tolerance to millionaires who can absorb a higher level of risk relative to those with less in investable wealth.

2.6 CONCLUSION

By introducing attribution theory to behavioural finance through the employment of an innovative vignette based study this paper examined whether advisors alter their judgment of the needs of millionaire investors depending on the client's gender. With all other variables held constant within each of ten vignettes, advisors were asked to rate the investment knowledge and the control that investors have over their investments, and to recommend one of seven investment portfolios with varied asset allocation (risk) to ten pen portraits (vignettes) of male and female investors. The study tested whether previous research findings, which

indicate that female investors are less knowledgeable, less confident and less risk tolerant relative to male investors, hold in how millionaire investors are perceived by advisors. The results found that both male and female advisors rated female investors as having less control over their investments than male investors suggesting that women millionaires may be perceived as less confident and more reliant on advice provided by their investment advisors. However, advisors make the same judgements about the investment knowledge of men and women and make equally risky portfolio recommendations regardless of the gender of the investor. The findings add to extant behavioural finance literature in relation to the potential for bias and gender differences in client relationships by considering the impact of social cognition (i.e., attribution theory) on the perceptions of financial advisors providing advice to millionaire investors.

Chapter 3, Study 2

Variations in Investment Advice Provision: A Study of Financial Advisors and Millionaire Investors

ABSTRACT

Building on study one and sharing its data set, this study investigates how the personal characteristics of both investors and financial advisors shape the portfolio recommendations and the perceptual judgements that advisors make of the investment knowledge and control of the millionaire investors portrayed in the vignettes. Results show that advisors make less risky portfolio recommendations for older investors. Experienced investors are judged to have higher levels of financial literacy and control over their investments, and are directed towards riskier portfolios. However, importantly this study also finds that the judgements advisors make of the portfolio suitability for a given investor are related to the personal characteristics of the financial advisors. More experienced advisors recommend higher-risk portfolios, as do young advisors and those with a wealthier client base. Moreover, unmeasured advisor attributes are as influential as investor characteristics to determine portfolio recommendations. These findings provide new insight into how advisors inform the portfolio recommendations with relevance to financial market regulators who monitor advisor activities and for investors to consider when choosing advisors.

JEL Classification; G11, G12, G41.

Keywords: investment advice; investors; risk tolerance; vignette; financial advisors

3.1 INTRODUCTION

Ideally, financial advisors consider the personal characteristics of their clients to evaluate their unique needs. The advisor derives a risk return profile for that client and recommends an investment portfolio that is both suitable for, and meets the financial goals of, the client. This method satisfies the financial regulator, which requires that advisors evidence the suitability of their recommendations (The Financial Conduct Authority 2011).

However, the financial advice literature is inconclusive regarding the benefits of financial advice. Although advisors encourage increased portfolio diversification (Von Gaudecker and Martin 2016), advisors may also increase costs and lower portfolio returns (Hoechle et al. 2017; Kramer 2012), frequently attributed to higher fees associated with advised portfolios (Von Gaudecker and Martin 2016). Foerster et al. (2017) demonstrate that advised mass affluent investors[6] in Canada hold portfolios with similar risk profiles to those held by their financial advisors. Additional analysis of the Canadian data shows that the trading pattern and returns are closely aligned (Linnaimaa, Melzer, and Previtero 2017) between advisors' personal portfolios and those of their clients. Instead of correcting underperforming portfolios, advisors are also found to base their recommendations on the commission they can earn (Mullainathan Noeth and Schoar 2012).

Study one (chapter two) presented evidence that advisors make different perceptual judgements of how much control millionaires have over their investments depending on the gender of the investor, and a tendency for female relative to male advisors to make lower knowledge attributions and recommend lower risk portfolio recommendations to female

[6] Mass affluent investors can be defined as having less than US$100,000 in investable assets (Europe Economics 2014).

investors. Thus, the literature suggests an inherent bias in how advisors cognise about investors' needs, and the possibility that this relates, not only to the characteristics of investors, but also to other factors. Financial advice therefore seems to contain an element of subjectivity which appears to reach beyond the judgements that advisors make about observable client characteristics, e.g., gender (study one).

However, with the exception of the gender-based exploration presented in study one, researchers have not yet considered the perceptions that advisors form of their clients and their implications for portfolio recommendations. This is the focus for this study, which is a natural extension of study one which raised questions about the need to conduct more comprehensive analyses about how the personal attributes of both investors and advisors relate to the portfolio recommendations that advisors make and how advisors form their social cognitive judgements.

Another limitation of extant literature is the underrepresentation of research about wealthy investors. Millionaires are an important demographic that controls 45% of the world's fortunes (Credit Suisse 2016), and that frequently engages financial advisors who assist with managing their investments. Figures show that in the US, 60% of households with over US$500,000 in investable assets are likely to receive financial advice (Winchester and Huston 2014). Yet, despite their prominence, the extant literature about financial advice does not typically extend beyond analysing the transactional data of mass affluent investors, usually with less than US$50,000 to invest (e.g., Dorn and Huberman 2005; Foerster et al. 2017; Hoechle 2017; Karabulut 2010; Kramer 2012). This gap is addressed in the present study which provides analyses of the actual behaviour (Kahneman and Tversky 1979; Thaler 2016) of financial advisors who provide investment advice to the much wealthier demographic of millionaire individual investors in the UK.

That observers make different perceptual judgements, relating both to the personal characteristics of the observer and of the person whom they observe, is documented in the social psychology literature (Harvey et al. 2014; Weiner 1985; Wong and Weiner 1981). Whether this is also true for the judgements that financial advisors make of millionaire investors is investigated in the present study. Following the methodology in study one, perceived risk tolerance is measured by asking advisors to recommend one of seven portfolios with varied asset allocation. In addition, the study explores how advisors judge investors' financial literacy and the control that they have over their investments. These measures are relevant as investors with previous investment experience or a high level of financial literacy have been found to be more tolerant of investment risk (Feng and Seasholes 2005; List 2011). Previous investment experience also contributes to determining the risk tolerance of investors and to evidence the suitability of advisors' recommendations.

The amount of control an individual is perceived to have over their successes or failures might determine how confident they are about their decisions or how dependent they are on outside factors, e.g., advice. Overconfidence, for example, has been linked to investors adopting more aggressive trading behaviour (Barber and Odean, 2000). Within the social psychology literature, the explanation for how individuals make decisions, or the success of their decisions, is internally justified through self-attributions. Individuals process outcomes to determine the locus of causality (Harvey et al. 2014) and whether these are due to external factors or factors within the individual's control. A successful outcome deemed to be within one's control makes the individual more confident that they can repeat their success. Similarly, observers make judgements and social attributions when evaluating other people's successes or failures. Observers attribute these to internal factors within the individual's control or external factors that are out of their control. A perceived lack of control may contribute to a

heightened awareness of risk and more risk averse behaviour (Dake 1991). Applied to the interaction between investors and advisors, individuals who are perceived to have less control of their investments may be judged to have a higher level of dependence on their advisor, whereas those who are deemed to have a high level of control over their investments make decisions more independently and have more confidence over their decision-making ability (Weiner 1985).

Therefore, sharing the same data set as study one (chapter two), the present study provides analysis of the social cognitive judgements that financial advisors make of millionaire investors and how this is informed by the personal attributes of both the investor and advisor, which extend beyond gender. This study therefore undertakes more detailed analysis of (a) investor characteristics and (b) advisor characteristics to test whether these contribute to advisor judgements of the knowledge, control and risk tolerance of millionaires. In study one, the vignettes enabled analysis of advisor judgements for male and female millionaires that, aside from varying the gender, were described using the same variables in the vignettes. In this study their application allows a fully controlled experiment in which the impact of the observed investor variables and the impacts of observed advisor variables are isolated to provide comprehensive analyses for how social cognition is informed.

The results show that, although the characteristics included to describe the investors in the vignettes contribute to both the portfolio recommendations and the judgements that advisors make about the millionaires, there is substantial variation in the portfolios that different advisors make to the same client. Advisors, it seems, evaluate which asset allocation is suitable for a given investor, not only on the needs of that investor, but also their own characteristics. Furthermore, unmeasured advisor variables, i.e., advisor fixed effects, are

found to be as influential as investor variables for determining portfolio recommendations. Similarly, the results also show that advisors disagree about how much investment knowledge and control that they attribute to the same vignette.

This study makes important contributions to the literature about financial advice by examining the portfolio recommendations and judgements that advisors make about millionaires, to demonstrate that potential biases relate both to the person receiving the advice and to the person providing the advice. The findings uncover previously unknown sources of bias and challenge how the activities of advisors are monitored and regulated today, with relevance both to the wealth management industry and investors who select financial advisors. Previous efforts which have been placed on investigating how investment advice may be biased in relation to investor characteristics, are thus extended in this study to examine how advice may be biased in relation to the characteristics and motivations of financial advisors.

3.1.1 Individual Investors and Financial Advisors

It is accepted by the FCA and more generally that, based on prudent investment principles derived from Markowitz (1952), Merton (1969) and Samuelson (1969), observable individual characteristics contribute to the risk preferences of an investor. Risk, often expressed as standard deviation, is the possibility that returns can be positive or negative and is something that investors need to withstand in their quest to increase their final wealth position. Investment portfolios are diversified, often using financial modelling tools (Markowitz 2010), by combining securities (e.g., stocks, bonds and cash) with different standard deviation to decrease the overall portfolio risk. Depending on their risk and return profile rational investors select, or are advised to select, an optimised portfolio from the efficient frontier (Campbell and Viceira 2003).

However, people are not assigned a portable investment risk tolerance profile. Instead, they are left to make their own evaluation of about that which is suitable given their circumstances. For example, economic theory argues that investors with high income and / or net worth can withstand more volatility (Brown 1990). Younger investors who have a longer investment time horizon can allocate a higher proportion of their wealth to risky assets (Morin and Suarez 1983; Samuelson 1989) and studies find that individual risk tolerance decreases with age (Grable and McGill 2011). Individuals with a high level of investment knowledge are experienced and more skilled at evaluating investment options (Agarwal and Mazumder 2013; Finke and Guillemette 2016) and thus have a higher capacity for financial risk taking (List 2011; Feng and Seasholes 2005). Other personal attributes, such as gender and profession, are not necessarily assumed to contribute to individual risk capacity, but studies demonstrate that they do. For example, relative to equivalent men, female investors are less confident (Barber and Odean 2001; Estes and Hosseini 1988; Grinblatt and Keloharju 2009), exhibit lower levels of financial literacy (Campbell 2006; Lusardi and Mitchell 2007), and have a lower tolerance for investment risk that translates into a smaller allocation to risky assets in women's retirement portfolios (Agnew et al. 2008; Dwyer, Gilkeson and List 2002; Sundén and Surette 1998). Entrepreneurs, who characteristically have more unpredictable income than employees, and would therefore benefit from risk diversification, are frequently identified to have higher risk tolerance relative to employees with stable incomes (Steward and Roth 2001). This risk-taking attribute has been linked to overconfidence, and a higher level of equity market participation (Hvide and Panos 2014). Married investors, who are often associated with dependents and increased financial responsibilities, have been demonstrated to have both lower (Kannadhasan 2015) and higher (Grable 2000) risk tolerance relative to single, dependent-free investors.

After evaluating their risk profile, individuals make decisions about how to invest their wealth. However, the literature shows that, left to their own devices, investors fall foul of suboptimal investment decision making (De Bondt, Muradoglu, Shefrin and Staikouras, 2008). Despite being aware that more optimal investing is beneficial, investors are inherently biased in their decision-making behaviour and consistently apply heuristics when making portfolio decisions (Kahneman and Tversky 1973; Kahneman, Slovic, and Tversky 1982; Tversky and Kahneman 1974). These investors may turn to financial advisors with the expectation that the expert will apply appropriate analysis and recommend optimal portfolios suitable for their risk profile.

In situations where individuals seek investment advice as in the present study, the evaluation of their risk tolerance is an important responsibility for the financial advisor. To assist in making an accurate assessment of the individual risk preference, advisors capture information about their clients in investment questionnaires (Charness, Gneezy, and Imas 2013; Rosen and Wu 2004). The advisor is expected to improve investment decisions, increase portfolio return and reduce or eliminate behavioural biases that the investor would exhibit in their own investment decision making. However, there is a possibility that advisors, who akin to investors have been demonstrated to deviate from rational investment metrics (Hoechle 2017), are vulnerable to social cognitive influences. It is problematic that, despite the assumption by the financial regulator and the industry that advisors apply metrics and rational judgments and thus provide suitable investment recommendations, advisors have been found to deviate from rational decision making and may provide biased advice (Glaser, Langer and Weber 2010).

This is muddied by an absence of exact criteria for evaluating correct advice. For example, UK's FCA, although requiring that recommendations are suitably evaluated against the needs of individual investors (Financial Conduct Authority 2017), leaves the suitability interpretation in the hands of institutions and financial advisors. This, combined with the lack of an industry standard investment questionnaire, means that advisors do not have precise guidelines how to interpret investor needs. Despite this, how advisors arrive at their interpretations remains unexamined, giving rise to the need to increase understanding about how advisors evaluate investors and indeed what influences their perceptions.

This is important because, although theory and prudent investment management principles support the view that observable individual characteristics are components which determine their capacity for investment risk and therefore contribute to variations in portfolio recommendations (Rosen and Wu 2004), the absence of a standardised risk tolerance evaluation measure means that this suitability judgement is left to financial advisors and therefore subject to their interpretation. Furthermore, neither portfolio theory, nor the metrics available to advisors allow for variation in portfolio recommendations which relate to the personal characteristics of financial advisors. Therefore, this study contributes to the small body of literature which demonstrates that advisor effects are influential for investment recommendations and that advisors inform their recommendations on their own portfolio allocations (Foerster et al. 2017) and seek to maximise their own economic utility (Sappington 1991) when making recommendations to their clients. This context about self-manged investors is important because without an industry benchmark for advised portfolios the FCA presupposes that advisors follow the same principles as those for self-managed investors.

Advisors' expertise, experience, and access to information are important because they predispose them to rational decision making behavior (Feng and Seasholes, 2005; List, 2011), which ought to assist when making investment recommendations. However, although financial advising has been shown to encourage reluctant individuals to increase their future wealth position by investing more (Gennaioli, Shleifer, and Vishny 2015), there is currently no clear confirmation as to whether advised portfolios are better diversified and have higher returns than self-managed portfolios (Hoechle et al. 2017). Some researchers find that advisors increase portfolio diversification (Kramer 2012) but others show that advised portfolios may carry higher fees and market risk yet have lower returns (Chalmers and Reuter 2010). Advisors are found to reduce bias in the investment decision-making made by investors themselves (Kaustia 2012; Kaustia, Alho, and Puttonen 2008), but are also found to be more overconfident than investors (Glaser, Weber, and Langer 2010) and to chase returns (De Bondt 1998). Others show that advisors provide conflicted advice with an absence of return benefits (Bergstresser, Chalmers, and Tufano 2009; Hung and Yoong 2010; Karabulut 2010; Kramer 2012), with lower returns (Hackethal et al. 2012) for advised portfolios relative to self-directed portfolios. Conflicted advisors may vary their recommendations to maximise their fee income (Sappington 1991), encourage overtrading and unsuitable investment recommendations (Inderst and Ottaviani 2012) to their clients.

Mullainathan, Noeth, and Schoar (2012) demonstrate that advisors, when presented with suboptimal US$50,000 portfolios held by fictional investors, recommend investments that generate high fees instead of improving the asset allocation. Analysing transactional data of Canadian mass affluent investors, Foerster et al (2017) find that advisor fixed effects strongly influence the portfolio recommendations they make to clients. Advisors are furthermore seen to recommend investment portfolios for their clients that mirror their own investments. This is

especially problematic because advisors trade too much, exhibit return chasing behaviour, buy expensive mutual funds and hold under-diversified portfolios (Linnaimaa, Melzer, and Previtero 2017).

3.1.2 Research Questions

Despite the regulatory assumption that advisors evaluate the suitable risk tolerance of each individual client and make recommendations that are in the best interest of their clients, it seems that advisors allow their own personal characteristics and conflicts of interest to interfere. It is thus possible that advisors project their own biased investment behaviour onto their clients and make recommendations which are not necessarily suitable for their clients' circumstances. However, these findings are not immediately generalisable to millionaire investors and their advisors since millionaire clients are likely to be considerably wealthier and therefore, one might expect, in need of distinct and tailor-made portfolios.[7] Furthermore millionaires are different to mass affluent investors because they have successfully acquired substantial amounts of wealth, have more resources than they need to fund their retirement, often have prominent positions in society, and may make considerable donations to charitable causes (Smeets Bauer and Gneezy 2015). Due to their advantageous wealth position, their behaviour and investment decisions have large economic impacts and it would therefore be improper to extrapolate findings from less financially fortunately investors to the way in which millionaires are perceived by financial advisors.

The lack of precise regulatory guidelines combined with the absence of an industry standard investment questionnaire, mean that advisors do not have exact guidelines about how

[7] Financial advisors earn on average US$90,000[7] annually and might therefore be equally as wealthy as their clients. It is therefore possible for advisors of mass affluent clients to hold similar portfolios, subjectively judging that which is suitable for themselves to also be suitable for their clients.

to interpret investor needs and the suitability of their recommendations. Despite this, how advisors arrive at their interpretations remains untested, giving rise to the need to increase extant understanding about how advisors cognise about investors and indeed what influences their perceptions. Analysed with regards to gender in study one, this is extended in this study to include all available variables that describe the investors in the vignettes as well as those collected about the financial advisors.

How advisors evaluate the information that they are presented with about the millionaires in the vignettes is formulated in the first research question:

1. How do the personal characteristics of millionaire investors relate to the evaluative judgements that financial advisors make of the investment risk tolerance, knowledge and control of millionaire investors?

How the social cognitive judgement that advisors make of millionaire investors in the vignettes are informed by the characteristics related to the financial advisors is formulated in the second research question:

2. How do the personal characteristics of financial advisors relate to the evaluative judgements that they make of the investment risk tolerance, knowledge and control of millionaire investors?

3.2 METHODOLOGY

This study shares the data set from study one (chapter two), as described in section 2.3.1 and the data collection procedure follows that described in section 2.3.3. The

methodology lends itself well to the task of addressing the research questions in this study, to provide in depth analysis of the investor variables within the vignettes as well as those known about the advisors and collected in the survey. These include advisors' age, gender, years' experience, number of clients and the investable wealth of their clients (see Appendix I).

The three questions which asked advisors to rate how knowledgeable and in control they perceive the investors to be and which portfolio they would recommend to that investor, (section 2.3.2, study one), were designed using Likert scale methodology. This method involves asking respondents to state their agreement, or not, with statements in order to elicit attitudes (Clason and Dormody 1994). It is popular in a wide range of research domains (de Winter and Dodou 2010) and has a high level of familiarly for survey participants. This allowed advisors to focus on studying the vignettes and provide their ratings, but at the same time the answer scales were varied to avoid automatic answer selection and to reduce response bias (Croasmun and Ostrom 2011). Participants were therefore asked rate how knowledgeable would you they judge the client to be about investments on a scale from 1–10 (where 1 = not at all knowledgeable, 10 = extremely knowledgeable), how much control they think that the client has over their investments on a 5-point scale (where 1 = a lot less than the average investor and 5 = a lot more than the average investor) and finally to recommend one of seven investment portfolios that varied according to risk (see section 2.3.3).

3.2.1 Vignette Methodology

The vignette methodology described in section 2.3.2 (study one), lends itself particularly well to investigating social cognition. However, despite its useful application to financial decision making, the methodology has mostly been confined to use in organizational

behaviour, human resource management and psychology research (Aguinis and Bradley 2014) but is extended to finance in this and the previous study.

Several methods were evaluated before adopting the vignette methodology. Observation of meetings between financial advisors and millionaire investors are confidential and therefore difficult to gain access to or allow recording of. Observations also provide limitations caused by the impact that the observer might have on the behaviour of those attending the meeting (Taylor 2006). Semi-structured interviews with financial advisors could have provided important insights into the social judgements that they make of their existing clients. However, interviews would not have enabled comparison of the judgements that a panel of advisors make of equivalent investors, nor allow the exploration of gender based differences as described in study one. Furthermore, interviews or observations might have been contaminated by noise or non-verbal factors such as body language, personal appearance and casual conversation, this potentially influencing decisions made by respondents. Their confidential nature would also not have facilitated recording. Previous financial advice researchers have used historic transaction data records of retail accounts (e.g., Foerster et al. 2017; Hoechle et al. 2017) to analyse patterns of trading activity, return and diversification differentiation for advised accounts. Database methodologies often lack information about the social cognitive judgements that advisors make of investors impact on the trading decisions, analyses made possible by using vignettes.

Vignettes have been used to elicit clinical judgements by doctors and nurses who are presented with fictional patient scenarios (Ludwick and Zeller 2001), transferrable to the advice decisions made by financial advisors, thus allowing analysis of the social cognitive

interpretation (Stolte 2001) to provide a different dimension of what shapes the financial advice intermediation process.

By regulating the variables used to describe the investors, vignettes allow for a controlled experiment where each advisor judges and recommends portfolios to an identical set of ten investors which are perfectly matched to allow comparison across the population (Salomon, Tandon and Murray 2001) of financial advisors. Since there are no other factors apart from the variables in the pen portraits that can obscure advisors' judgements, the methodology allows for isolation of the effects of both investor variables contained in the vignettes and the advisor characteristics collected in the survey. In this context it allows the testing of how the same investor is perceived by 129 different advisors and how they relate to the portfolios the advisors recommend, something not previously attempted by financial advice researchers.

Care and attention is focused on ensuring that vignette narratives are realistic (Hughes and Huby 2004), and that the vignettes include sufficient specific detail and contextual factors to ensure face validity and to allow for realistic judgements. Following the FCA suitability requirements and typical risk profile questionnaires (Rosen and Wu 2004), the variables as described in Table 1 were included in each vignette.

Subsequently the vignettes combine variables used by advisors in order to derive the risk tolerance of their clients. However, in the absence of an industry standardised questionnaire, a major UK private bank assisted in evaluating the variables during the design and pilot process to verify that they included realistic variables from which advisors may be able to derive risk tolerance. Although the vignettes include the same range of variables, the

presentation of the information is varied to increase the credibility of the fictitious investors as well as a variation of the assumed risk tolerance as illustrated in Table 1. The ten vignettes used in studies one and two are available in Appendix I.

Table 1. Variables in Each Vignette

	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Name (gender)	Lucy /Adam	Stella / Andy	Sarah / Edward	Susan / Michael	Alison / Patrick	Paula / Paul	Martha / Kevin	Anna / Nick	Caroline / Peter	Catherine / John
Age	45	42	74	36	25	51	47	59	60	38
Retirement	20	23	0	29	40	14	18	6	5	27
Net worth	8M	3.5M	15M	2.6M	35M	0.8M	4M	4M	40M	5M
Dependents	No	No	No	Yes	No	Yes	Yes	Yes	Yes	Yes
Income	125K	0	0	180K	0	300K	90K	580K	0	800K
Outgoings	230K	100K	50K	180K	300K	200K	90K	290K	100K	700K
Investment	3M	1.5M	5M	0.5M	3M	0.8M	2M	1M	5M	1.7M
Experience	Yes	No	No	No	No	Yes	No	No	No	Yes
Profession	Entr.	None	Ret.	Empl.	Entr.	Empl.	Entr.	Empl.	None	Empl.

Notes: This table shows the variables contained within each of the 10 vignettes. Each vignette has a male and a female version, illustrated by 'name'. M = million, K = thousand, Entr. = entrepreneur, Empl. = employed, Retirement = years to retirement, Investment. = total funds available for investment, Experience = investment experience.

3.2.2 Portfolio Asset Allocation

In line with theories of portfolio construction and industry practice, studies one and two use a range of investment portfolios that the advisors in the sample choose from when asked to recommend a portfolio to the millionaires as described in section 2.3.2 (study one). Advisors or the institutions that they work for may have different views on what the asset allocation in investment portfolios should look like and may have a set of internally developed 'model' portfolios with varied asset allocation to suit the various risk profiles of their client base. To provide a range of portfolios, four of the seven portfolios used, i.e., portfolios 2, 4, 5 and 6 in Table 2, are the Wealth Management Association's benchmark portfolios prevailing at the time the survey was constructed (The Wealth Management Association 2015). Portfolios 1, 3 and 7 are interpolated and extrapolated from these benchmarks to provide a full range of alternatives.

The final row of Table 2 gives an estimate of the volatility of the portfolio returns using recent historical date from the time the portfolios were constructed, designed to be indicative of the level of risk each portfolio is expected to have. It is apparent that, by construction, the risk levels of the portfolios increase monotonically and in an almost linear fashion. The effect of the explanatory variables is addressed in terms of how many portfolio units they alter according to the dependent variable. One portfolio unit increase represents a move from portfolio 3 to 4 (or from 1 to 2, or from 6 to 7). Based on computed standard deviations reported at the foot of Table 2, the average change in portfolio risk in moving between adjacent portfolios is fairly consistent at 0.7. Therefore, a one portfolio unit increase also corresponds to an approximate 0.7 percentage point increase in risk. Results can therefore also be interpreted in terms of portfolio risk. Only the asset mix of each portfolio is disclosed to participants, not the historical mean returns or risk levels.

The equity component in the portfolios consists of UK and international equities. A possible home bias, i.e., an over allocation to domestic securities at the expense of international diversification (Levis, Muradoglu and Vasileva 2016), is not considered to apply in this context as the stocks in UK indices have substantial international exposure. According to iShares (2016), with 49% of revenues from Europe 49% of revenues from Europe, 22% from North America and 22% from Asia Pacific, the FTSE 100 can be regarded as a global index.

Table 2. Portfolio Asset Allocation

Asset class (%)	**Portfolio 1**	**Portfolio 2**	**Portfolio 3**	**Portfolio 4**	**Portfolio 5**	**Portfolio 6**	**Portfolio 7**
UK Equities	11	19	27	35	37	40	42
International Equities	8	11	14	18	28	38	44
Bonds	51	45	39	32	20	7	3
Cash	6	5	5	5	4	2	0
Commercial Property	6	5	5	5	5	5	3
Alternatives / Hedge funds	18	15	10	5	6	8	8
Total	100%	100%	100%	100%	100%	100%	100%
Note:							
Weighted Avg. Vol.	6.31%	7.13%	7.91%	8.69%	9.42%	9.98%	10.60%

Notes: This table illustrates the asset allocation of the 7 Portfolios based on the FTSE Wealth Management Association (`WMA') Private Investor Indices.

3.3 RESULTS

3.3.1 Data Analysis

A total of 129 respondents are included in the analysis, yielding 1,147 vignette/advisor responses. An overview of the 102 male and 27 female advisors, corresponding to a male dominated financial advice sector.[8] with a mean age of 41.74 and the composition of their client base is provided in Table 3[9]. Reflecting the relative wealth of their clients, advisors only have on average 63 clients on their books[10].

[8] Studies show that only 23% of the advisors in the marketplace are female (Hannon 2014).
[9] Further information about the sample is available in Appendix III.
[10] Advisors of less wealthy mass affluent clients may have up to 250 clients (William-Smith 2018).

Table 3. Descriptives of the advisors in the sample.

All advisors N = 129	Mean	SD	Median	Min	Max
Age (M)	41.74	8.83	41	25	67
Experience (M Years)	12.78	8.01	12	0	40
Clients (M)	70.98	94.80	50	0	650
Millionare clients (%)	77.45	33.68	70	0	100
Male Advisors N = 102					
Age (M)	41.14	8.75	41	25	67
Experience (M Years)	12.42	8.07	11	0	40
Clients (M)	77.52	103.94	50	0	650
Millionare clients (%)	79.37	33.01	70	0	100
Female Advisors N = 27					
Age (M)	44.00	8.76	43	30	62
Experience (M Years)	14.15	7.67	15	0	31
Clients (M)	46.48	37.96	33	0	150
Millionare clients (%)	70.19	36.01	80	0	100

Notes: This table provides summary statistics for the respondents and composition of their client base.

First, we describe the data and show summary results for the distribution of the ratings for the three dependents variables 'portfolio recommendations', 'knowledge' and 'control' *across* the ten vignettes and *within* each individual vignette and present the relationship between the three dependent, vignette and advisor variables. This is followed by considering the correlation between the dependent, vignette and advisor variables. Second, we analyse the relationship between the ratings and the variables included to describe the investors in each vignette 'investor variables'. Finally, we investigate how ratings are influenced by that which is known about the financial advisors 'advisor variables' in linear regression models. Initially this is conducted using ordinary least squares regression. The regression analysis extends the t test analysis in study two which only incorporated vignette and advisor gender as explanatory variables, to include all known explanatory variables in an attempt to predict their relationship with the three dependent variables.

Then, to ensure that the results are robust, and to acknowledge for how the answer scales are varied and that the difference between each point on the answer scales can not to be assumed to be equal, data are treated as ordinal and ordered probit regressions, a standard model for ordinal data (Salomon, Tandon and Murray 2001) and a robust method for analysing Likert scale data (Sullivan and Artino 2013) complement the OLS regressions. Ordered probit acknowledges that, for example, the distances between each of the 10 points of the knowledge scale (where 1 = not at all knowledgeable, 10 = extremely knowledgeable) and the control scale (where 1 = a lot less than the average investor and 5 = a lot more than the average investor) are subjective to the advisor who provides the rating. The standard deviation estimates in table 2 show that the portfolios' risks are closely and almost linearly related and one portfolio unit increase represents a move from portfolio 3 to 4 (or from 1 to 2, or from 6 to 7) with a fairly consistent change in risk at 0.7. However, the standard deviations were not shared in the

questionnaire and an assumption that advisors estimate a cardinal distance between each portfolio unit is avoided in the analysis method. Ordered probit acknowledges both that respondents interpret the value of the distance between each unit differently and that the underlying scale is ordered. In line with Foerster et al. (2017), the regressions include robust standard errors to account for any cross-section heteroscedasticity (Wooldridge 1989) in the error terms as some vignettes might be harder to interpret and therefore include errors with a higher variance than others. It thus addresses the violations of homoscedasticity.

In section 3.3.3 the explanatory variables included in the vignettes are considered. This is then repeated for advisor variables in the subsequent section, thus isolating for investor and advisor effects to address research questions one and two in turn. Finally, both sets of variables are combined to complete the analysis, which also includes knowledge and control as explanatory variables. This procedure allows the exploration of how ratings relate to both the characteristics of the investors and the advisor as well as the relationship between perceived investment knowledge, control and the portfolios recommended. The dependent variables are presented in the order of portfolio recommendations (perceived risk tolerance), knowledge and control. To acknowledge that the investors portrayed are fictional rather than real investors, the tables refer to 'vignette variables' rather than investor variables.

The economic implications of the results are presented in the discussion which follows the results section of the study.

3.3.2 Distribution of Ratings

Table 4 shows that there is considerable variation in the mean ratings *across* the vignettes. Vignettes 8 and 3 are regarded as requiring low risk portfolios and have mean

portfolio recommendations of 2.7 and 2.8. Conversely, Vignettes 4, 5 and 10 are viewed as more risk-tolerant and are given mean portfolio recommendations of 4.5 or more with the divergence of 2 portfolio units between the lowest and higher risk recommendation. Advisors judge vignette 7 to have both the lowest investment knowledge (3.6) and control (2.4), whereas vignette 1 receives the highest rating for both knowledge (8.33) and control (4.28). The same two vignettes rank 6 out of 10 in terms of portfolio risk allocation. There is therefore, as expected and following prudent portfolio theory principles, significant across vignette heterogeneity to be explained in terms of the investor characteristics contained in each vignette (Table 1) as advisors agree that the same asset allocation is not suitable for all ten vignettes.[11]

Second, as illustrated by the min (max) columns in Table 4, there is considerable *within* vignette disagreement among advisors. It is particularly noteworthy that for nine of the ten vignettes, every one of the seven alternative portfolios are recommended by at least one advisor. Similarly, though the information given about the client is carefully controlled and limited to that given in the short vignettes, advisors do not make the same judgements of the investment knowledge and control of investors.

[11] Although the lowest and highest rating is selected for nearly all vignettes, there is variation in the ratings to give confidence that the data is not limited by a skewness towards a floor or ceiling effect (Clason and Dormody 1994).

Table 4. Summary of Recommended Portfolio, Knowledge and Control Ratings

		Recommended Portfolio			**Knowledge Ratings**			**Control Ratings**		
	Observations	Mean	St. Dev.	Min (Max)	Mean	St. Dev.	Min (Max)	Mean	St. Dev.	Min/Max
Vignette 1	129	4.07	1.40	1 (7)	8.33	1.52	2 (10)	4.28	0.97	1 (5)
Vignette 2	124	3.96	1.31	1 (7)	5.02	1.57	1 (9)	2.95	0.65	1 (4)
Vignette 3	120	2.83	1.35	1 (7)	5.25	1.82	1 (10)	3.08	0.96	1 (5)
Vignette 4	115	4.50	1.49	1 (7)	4.35	1.61	1 (8)	2.65	0.78	1 (5)
Vignette 5	113	4.73	1.54	1 (7)	4.11	1.79	1 (8)	2.66	0.88	1 (5)
Vignette 6	110	4.33	1.36	1 (7)	6.35	1.46	3 (9)	3.26	0.73	1 (5)
Vignette 7	109	4.30	1.35	1 (7)	3.61	1.7	1 (9)	2.39	0.81	1 (5)
Vignette 8	109	2.71	1.46	1 (7)	6.06	1.94	2 (10)	3.24	1.11	1 (5)
Vignette 9	109	3.05	1.43	1 (7)	5.89	1.52	2 (9)	3.30	0.70	2 (5)
Vignette 10	109	4.90	1.26	2 (7)	7.64	1.62	3 (10)	3.79	1.05	1 (5)

Notes: The table shows the number of ratings per vignette for Recommended Portfolio, Knowledge and Control Ratings.
Min (Max) = highest and lowest rating per vignette

The relationship between the three dependent variables, vignette and advisor variables, are shown in the correlation matrices in Tables 5 and 6. Variables are defined as follows: age in years, gender (0 for male and 1 for female), dependents (0 if childfree and 1 if having children), investment experience (1 for having prior experience and 0 otherwise), entrepreneur (1 if entrepreneur and 0 otherwise), net worth total amount of investable assets in GBP, investment amount is the notional amount the investors is willing to invest in GBP and income is the annual income in GBP, all millions. The investable wealth in the advisors' client base 'millionaires', Table 7 is expressed in US$. Hence, the variable 'millionaires', Table 7 denotes the proportion of clients who are millionaires in US dollar terms. These are estimated using Spearman's rank correlation to account for the ordinal nature of some of the data (Winter, Gosling, and Potter 2016). Table 5 demonstrates a strong positive relationship between the knowledge and control ratings with significance at the 1% level but a weaker, albeit positive, relationship with the recommended portfolio (significant at the 10% level). Furthermore, several of the within vignette investor characteristics are closely correlated, with indications that age and investment experience are variables likely to influence all three dependent variables with significance at the 1% level. In addition to the significance in the correlation between the advisor variables, e.g., age and years' experiences, table 6 illustrates that the relationship between advisor age and both knowledge and control is significant at the 5 and 10% levels respectively.

Table 5. Correlation Matrix: Dependent Variable and Vignette Variables

Vign. Variable	**Dependent Variables**			**Vignette Variables**						
	Rec. Port.	Knowledge	Control	Age	Gender	Depend.	Inv. Exp.	Entr.	Net Worth	Inv. Amt.
Knowledge	0.057*									
Control	0.053	0.654***								
Age	-0.402***	0.103***	0.088***							
Gender	-0.020	-0.030	-0.091***	-0.001						
Dependents	0.014	-0.210***	-0.225***	0.070***	0.011					
Inv. Exp.	0.206***	0.539***	0.404***	-0.104***	0.010	-0.095***				
Entr.	0.179***	-0.056	-0.007	-0.327***	-0.015	-0.103***	0.093			
Net Worth	-0.140***	0.074	0.120***	0.196***	-0.016	-0.703***	-0.175***	0.317***		
Inv. Amt.	-0.165***	0.063	0.114***	0.377***	-0.018	-0.714***	-0.129***	0.343***	0.919***	
Income	-0.008	0.347***	0.228***	0.136***	0.012	0.283***	0.422***	-0.396***	-0.108	-0.291***

Notes: The table illustrates the Spearman's rank correlation (rho) for the aggregated average ratings for the Dependent Variables and the Vignette Variables which describe the investors. The asterisks indicate where the independent vignette variable has a statistically significant correlation with the dependent variable.
***1% significance; *10% significance.

Table 6. Correlation Matrix, Dependent Variables and Advisor Variables

Advisor Variable	**Dependent Variables**			**Advisor Variables**			
	Rec. Port.	Knowledge	Control	Age	Gender	Yrs Exp.	No Clients
Knowledge	0.057*						
Control	0.053	0.654***					
Age	-0.013	-0.065**	-0.054*				
Gender	-0.057*	-0.064**	-0.025	0.123***			
Yrs Exp.	0.038	-0.024	-0.017	0.719***	0.089***		
No Clients	0.002	0.031	-0.010	-0.068**	-0.078***	-0.117***	
Millionaires	0.036	0.019	0.039	-0.170***	-0.078***	0.002**	-0.095***

Notes: This table illustrates the Spearman's rank correlation (rho) for the aggregated average ratings for the Dependent Variables and Advisor Variables as collected in the survey. No Clients = no of clients that advisors look after, Millionaires = the proportion of their clients who are millionaires. The asterisks indicate where the independent advisor variable has a statistically significant correlation with the dependent variable.
***1% significance; **5% significance; *10% significance.

3.3.3 Vignette Heterogeneity

In this section, we investigate how the investor characteristics drive variations in the portfolio recommendations and the knowledge and control judgements across the ten vignettes with particular focus on the first research question. Regressions of the following form are performed:

$$Yij = \alpha + \beta 1Agej + \beta 2Genderj + \beta 3Dependj + \beta 4Experiencej + \beta 5Entrej + \beta 6NWj + \beta 7Incomej + \beta 8Invamtj + \beta 9\text{AdvFE}i + \epsilon ij \quad (1)$$

The dependent variable (Y_{ij}) is the portfolio (1-7) recommended for vignette$_i$ by advisor $_j$, the judgements that advisor $_j$ makes of the investment knowledge of vignette$_i$ (1-10), and the control that vignette$_i$ has over their investments (1-5). The explanatory variables are derived from the information contained within each vignette (see Table 1). They include the age (Age$_i$), an indicator variable taking the value one if the investor is female and zero otherwise (Gender$_i$), an indicator variable taking the value one if the investor has dependents and zero otherwise (Depend$_i$), an indicator variable taking the value one if the client has a high level of prior investment experience and zero otherwise (Experience$_i$), an indicator variable taking a value of one if the investor in an entrepreneur and zero otherwise (Entre$_i$), the investor's net worth in millions US$ (NW$_i$), their annual income in millions GBP (Inc$_i$) and finally the intended investment amount in millions GBP (Invamt$_i$).[12] Robust standard errors clustered by vignette are used in both the OLS and ordered probit regressions in Tables 7 and 8.

[12] Note that although each vignette contains a total of 11 variables, the regression excludes 3 variables. The 'number of years until retirement' variable is excluded because it correlates nearly perfectly and negatively with age (Pearson's r = -0.98). The 'marital status/single' variable is excluded due to nearly all (9) vignettes portraying investors with partners, and with the 'dependents' variable being more important for risk taking. 'Outgoings' is excluded since it only makes use of an average of 2.53% of the net worth of the investors. Including these variables in the regression does not have an effect on the conclusions.

Table 7. Recommended Portfolio: Vignette Variables

Recommended Portfolio: Vignette Variables	(1) OLS	(2) OLS Advisor F.E.	(3) Ord. Probit	(4) Ord. Probit Advisor F.E.
Vignette Age	-0.094***	-0.093***	-0.069***	-0.081***
	(-6.143)	(-5.931)	(-5.996)	(-6.113)
Vignette Gender	-0.059	-0.072**	-0.042	-0.066**
	(-1.560)	(-2.073)	(-1.593)	(-2.556)
Dependents	1.002***	0.972***	0.737***	0.847***
	(3.239)	(3.099)	(3.237)	(3.254)
Investment Experience	0.551***	0.562***	0.397***	0.481***
	(2.985)	(2.976)	(2.994)	(3.169)
Entrepreneur	-0.641**	-0.599**	-0.476**	-0.521**
	(-2.355)	(-2.139)	(-2.414)	(-2.304)
Net Worth	-0.038***	-0.038***	-0.027***	-0.033***
	(-3.203)	(-3.168)	(-3.155)	(-3.302)
Annual Income	-0.000	-0.000	-0.000	-0.000
	(-0.581)	(-0.468)	(-0.639)	(-0.496)
Investment Amount	0.681***	0.670***	0.498***	0.580***
	(3.788)	(3.628)	(3.747)	(3.772)
Observations	1,147	1,147	1,147	1,147
R-squared	0.213	0.440		
Pseudo R-squared			0.064	0.160

Notes: Reports the results of estimating the regression: $Y_{ij} = \alpha + \beta_1 Age_j + \beta_2 Gender_j + \beta_3 Depend_j + \beta_4 Experience_j + \beta_5 Entre_j + \beta_6 NW_j + \beta_7 Invamt_j + \beta_8 Income_j + \epsilon_{ij}$ for the dependent variable 'Recommended Portfolio' with alternative estimation techniques. Column (1) uses OLS. Column (2) contains unreported Advisor fixed effects. Column (3) is estimated using ordered probit and (4) contains Advisor fixed effects. Robust standard errors clustered by vignette are used to compute the t-statistics (z-statistics) reported in parentheses beneath the parameter estimates.
***1% significance; **5% significance; *10% significance.

Table 8. Knowledge and Control Judgements: Vignette Variables

Knowledge and Control Judgements: Vignette Variables	Knowledge Rating (1) OLS Advisor F.E.	Knowledge Rating (2) Ord. Probit Advisor F.E.	Control Rating (3) OLS Advisor F.E.	Control Rating (4) Ord. Probit Advisor F.E.
Vignette Age	0.083*	0.054*	0.031*	0.041*
	(1.877)	(1.909)	(1.606)	(1.745)
Vignette Gender	-0.171**	-0.117**	-0.198***	-0.266***
	(-1.935)	(-2.259)	(-4.216)	(-4.902)
Dependents	-2.140**	-1.448**	-0.874**	-1.161**
	(-2.407)	(-2.492)	(-2.251)	(-2.442)
Investment Experience	2.060***	1.374***	0.719***	0.956***
	(3.901)	(4.166)	(3.061)	(3.300)
Entrepreneur	0.981	0.681	0.444	0.609
	(1.238)	(1.248)	(1.260)	(1.307)
Net Worth	0.024	0.014	0.009	0.010
	(0.704)	(0.611)	(0.558)	(0.533)
Investment Amount	-0.787	-0.511	-0.279	-0.360
	(-1.541)	(-1.545)	(-1.235)	(-1.327)
Annual Income	0.002**	0.001**	0.001	0.001
	(2.110)	(2.078)	(1.557)	(1.576)
Observations	1,147	1,147	1,147	1,147
R-squared	0.532		0.388	
Pseudo R-squared		0.173		0.172

Notes: Reports the results of estimating the regression $Y_{ij} = \alpha + \beta_1 Age_j + \beta_2 Gender_j + \beta_3 Depend_j + \beta_4 Experience_j + \beta_5 Entre_j + \beta_6 NW_j + \beta_7 Income_j + \beta_8 Invamt_j + \beta 9 AdvFEj + \epsilon_{ij}$ for the dependent variables 'Knowledge and Control Ratings' with alternative estimation techniques. Columns (1 and 3) uses OLS and contains unreported advisor fixed effects. Column (2 and 4) are estimated using ordered probit and contains Advisor fixed effects. Robust standard errors clustered by vignette are used to compute the t-statistics (z-statistics) reported in parentheses beneath the parameter estimates.
***1% significance; **5% significance; *10% significance.

In terms of recommended portfolios (Table 7), seven of the eight included vignette characteristics are reasonably consistently statistically significant. Some of these are straightforward to interpret and correspond with finance theory. Older investors, for example, are recommended less risky portfolios. The impact of age on the recommendations is quite large with a ten year increase in age being associated with a 0.94 (columns 1 and 2, Table 7) unit decrease in recommended portfolio. This finding is robust to alternative specifications such as using log of age or indicator dummies capturing 'younger', 'middle-aged' or 'older' investors. Investment experience and higher amounts available to invest also correspond to higher portfolio recommendations. The magnitudes of these effects are economically significant. A vignette that describes an investor with prior investment experience sees 0.551 units increase in their recommended portfolio (column 1, Table 7). An indicator dummy capturing vignettes with low levels of investment experience[13] is not significant when used instead of the high experience indicator, suggesting that advisors are only willing to boost risk levels for investors with higher than average levels of experience, but do not cut risk even for the least experienced. While the amount available to be invested increases portfolio risk recommendations, net worth has a decreasing effect. However, the net worth effect, though statistically significant is economically quite small. Entrepreneurs are recommended on average approximately one-half unit lower risk portfolios and investors with dependents are recommended nearly one unit's riskier portfolios.

Predicated on the gender based t test analysis in study one, we include additional vignette variables in the regression (columns 1 and 3 of Table 7) to analyse variations in the portfolio recommendations made to male and female vignettes and do not note a statistically

[13] The terminology 'high and low investment experience' refers to how the vignettes were designed to portray investors who have and those who do not have prior investment experience.

significant difference. However, when taking unmeasured advisors variables (advisors fixed effect) into account (columns 2 and 4), the coefficient estimates suggest female clients are recommended lower risk portfolios, the economic effect of which is very small around 0.072 units (column 2, Table 7).

Turning to the judgements that advisors make about the knowledge and control exhibited by each vignette, fewer characteristics appear to matter. Investors with previous investment experience are judged to be more knowledgeable and in control to the extent of 2.06 units on the 10-point scale for knowledge and 0.719 units on the 5-point scale for control (columns 1 and 3, Table 8). The presence of dependents has a similarly large reducing effect. Higher annual income contributes to increases in the knowledge rating, but with a small coefficient its economic impact is slight. Older investors are regarded to be both more knowledgeable and in control, with a 10 year increase in age resulting in 0.83 units higher knowledge and 0.31 units higher control ratings (columns 1 and 3, Table 7). The regression results validate those presented in study one whereby female vignettes are judged to be less in control than the same vignette which describes a male millionaire. However, including the additional variables in the regressions demonstrates that women are also judged to have relatively lower levels of knowledge relative to men. Nevertheless, both the economic and statistical significance of this effect is weak with female gendered vignettes receiving control ratings which are one fifth of a unit lower than male gendered vignettes with the effect reducing to one sixth of a unit for knowledge.

3.3.4 Advisor Heterogeneity

The impacts of measured advisor variables in determining portfolio recommendations are modelled next with a particular focus on the second research question. The following regressions are run:

$$Yij = \alpha + \beta 1Agej + \beta 2Genderj + \beta 3Experiencej + \beta 4Millionairesj + \beta 5NoClientsj + \beta 9\text{VignFE}i + \epsilon ij \quad (2)$$

The dependent variables (Y_{ij}) are the same as those considered in regression (1), namely the portfolio recommendation, knowledge and control. Explanatory variables are the age of the advisor (Age_j), the gender of the advisor, taking the value one if female and zero otherwise ($Gender_j$), the number of years of experience as a financial advisor ($Experience_j$), total number of clients each advisor has in their client base ($No\ Clients_j$), and the proportion (%) of millionaire clients that each advisors has in their client base, compared to clients with less than US$1 million in investable assets is given in ($Millionaires_j$), with an indicator value of 1 for millionaires and zero for non-millionaires. To shed more light on the effect of advisor age, in some regressions 'Age' is replaced by two dummy indicator variables for 'Young Advisors' (below 35 years) and 'Old Advisors' (above 55 years). A third dummy, 'middle age' is the reference category and refers to advisors who are between 36 and 54 years old and is not included in the table.

The regression is estimated with OLS, a panel fixed effects model with fixed effects for each vignette, and an ordered probit (both with and without vignette fixed effects) to recognise the ordinal nature of the answer scales. The fixed effects control for the characteristics of each vignette examined above in a parsimonious way with focus on the advisor effects having controlled for vignette effects in an unrestricted way. As before, all standard errors are robust and clustered by vignette.

Table 9. Recommended Portfolio: Advisor Variables

Recommended Portfolio: Advisor Variables	(1) OLS	(2) OLS young old	(3) OLS Vign. F.E.	(4) Ord. Prob F.E.	(5) Ord. Prob young old F.E.
Advisor Age	-0.012***		-0.011***	-0.009***	
	(-2.742)		(-2.718)	(-2.785)	
Young Advisors		0.387***			0.292***
		(3.521)			(3.493)
Old Advisors		0.047			0.042
		(0.472)			(0.603)
Advisor Gender	-0.237	-0.219	-0.238	-0.178*	-0.165
	(-1.569)	(-1.392)	(-1.621)	(-1.673)	(-1.483)
Years' Experience	0.020***	0.019***	0.020***	0.015***	0.014***
	(3.577)	(3.683)	(3.543)	(3.592)	(3.732)
No Clients	-0.001	-0.001	-0.001	-0.001	-0.001
	(-1.576)	(-1.308)	(-1.571)	(-1.516)	(-1.254)
Millionaire Clients	0.002**	0.002**	0.002**	0.001**	0.002**
	(2.386)	(2.697)	(2.333)	(2.064)	(2.351)
Observations	1,147	1,147	1,147	1,147	1,147
R-squared	0.014	0.019	0.234		
Pseudo R-squared				0.071	0.073

Notes: Reports the results of estimating the regression $Y_{ij} = \alpha + \beta_1 Age_j + \beta_2 Gender_j + \beta_3 Experience_j + \beta_4 Millionaires_j + \beta_5 NoClients_j + \epsilon_{ij}$ for the dependent variable 'Recommended Portfolio' with alternative estimation techniques. Column (1) uses simple OLS. Column (2) uses OLS with dummies for respondent age 'young' (below 35 years) and 'old' (above 55 years). Column (3) contains unreported Vignette fixed effects. Column (4) is estimated using ordered probit and contains unreported vignette fixed effects. Dummies for respondent age young' (below 35 years) and 'old' (above 55 years) are added in Column (5). Robust standard errors clustered by vignette are used to compute the t-statistics (z-statistics) reported in parentheses beneath the parameter estimates.
***1% significance; **5% significance; *10% significance.

Table 10. Knowledge and Control Judgements: Advisor Variables

Knowledge and Control Judgements: Advisor Variables	Knowledge (1) OLS Vign. F.E.	Knowledge (2) Ord. Probit Vign. F.E.	Control (3) OLS Vign. F.E.	Control (4) Ord. Prob. Vign. F.E.
Advisor Age	-0.022***		-0.008	
	(-5.237)		(-1.598)	
Young Advisors		-0.172**		-0.093
		(-2.390)		(-1.397)
Old Advisors		-0.185**		-0.271
		(-2.400)		(-1.834)
Advisor Gender	-0.327**	-0.226**	-0.065	-0.097
	(-2.044)	(-2.295)	(-0.862)	(-1.082)
Years' Experience	0.018**	0.002	0.006	0.005
	(2.299)	(0.428)	(1.032)	(0.753)
No Clients	0.001	0.000	-0.000	-0.000
	(1.292)	(0.964)	(-0.031)	(-0.294)
Millionaire Clients	0.003	0.002*	0.002	0.002
	(1.312)	(1.654)	(1.514)	(1.362)
Observations	1,137	1,137	1,137	1,137
R-squared	0.446		0.286	
Pseudo R-squared		0.137		0.121

Notes: Reports the results of estimating the regression $Y_{ij} = \alpha + \beta_1 Age_j + \beta_2 Gender_j + \beta_3 Experience_j + \beta_4 Millionaires_j + \beta_5 NoClients_j + \epsilon_{ij}$ for the dependent variables 'Knowledge and Control' with alternative estimation techniques. Columns (1 and 3) uses simple OLS and contains unreported Vignette fixed effects. Columns (2 and 4) are estimated using ordered probit with dummies for respondent age (young below 35 years) and (old above 55 years) and contains unreported Vignette fixed effects. Robust standard errors clustered by vignette are used to compute the t-statistics (z-statistics) reported in parentheses beneath the parameter estimates. The number of observations reduced to 1,137 since one of the respondents currently does not have a client base and is therefore are not included in the analysis.
***1% significance; **5% significance; *10% significance.

Given that the goodness of fit statistics from the vignette variable models in tables 7 and 8 were all much higher when advisor fixed effects were included and the substantial within vignette variation (Table 4), we expect advisor variables to be important. Three variables are robustly related to portfolio recommendations (Table 9). First, advisors with more millionaire clients in their client base recommend more risky portfolios to the extent of 0.4 units (column 1, Table 9). Second, more experienced advisors make higher risk recommendations. Although small, this effect is significant and an extra twenty years of experience working as a financial advisor increases portfolio recommendations by on average a little over one-quarter of a portfolio unit. Third, older advisors appear to recommend less risky portfolios (columns 1, 3 and 4 of Table 9). Further investigation reveals that the advisor age effect is driven by young advisors (age<35 years) who recommend significantly more risky portfolios (columns 2 and 5). Advisor gender is only significant in the order probit specification which includes advisor fixed effect in which female advisors are seen to give lower risk portfolio recommendations, akin to the results in study one.

Advisor age, gender and experience effect the knowledge judgements that they make. Older advisors attribute lower knowledge by on average one quarter of a unit. There is some evidence that the relationship is hump-shaped with both younger (age<35 years) and older advisors (age>55 years) giving lower knowledge scores than the omitted middle-age category (35-55 years). If modelled as a continuous function, advisor age has a counteracting positive effect. If age is modelled with 'old' and 'young' indicator dummies, the effect of experience disappears. Furthermore, in line with study one, female advisors are seen to make lower knowledge judgements than their male counterparts and on average female advisors rate client knowledge 0.327 units lower than male advisors (column 1, Tabl1 10). None of the observed advisor variables significantly relate to how in control they judge investors to be.

3.3.5 Vignette and Advisor Heterogeneity

This final results section examines how the combination of vignette and advisor fixed effects contribute to explaining the dependent variables. The goodness of fit measures for the regressions in Tables 9 and 10, and particularly those without vignette fixed effects, are very low. However, adding advisor fixed effects to the regressions in Tables 7 and 8 increased the goodness of fit for all three dependent variables. It is apparent that the measured advisor variables, while often significant, only contribute marginally to alterations in the ratings. Therefore, unmeasured advisor variables appear to have a much larger role to play in explaining their portfolio recommendations.

Recognising that portfolio recommendations might be influenced by how knowledgeable and in control investors are judged to be, these are added as explanatory variables. In this specification, the analysis relies on fixed effects rather than variables given about the investors within the vignettes (Table 1), or those that are known about the advisors. A fixed effects method makes it possible to control for unmeasured variables or unobserved heterogeneity (Allison 2009), a method appropriate for this data set where the observed advisor variables, relative to the fixed effects, contribute little to explaining the dependent variables.

Thus, advisor and vignette variables are subsequently pooled in a final specification and the following regression is performed:

$$Recommended\ Portfoliofe = \alpha + \beta 1AKnowledge + \beta 2Control + \beta 3Vignettefe + \beta 4Advisorfe + \epsilon ij \quad (3)$$

In regression (3) the dependent variable is the portfolio recommended for vignette$_{fe}$ by advisor$_{fe.}$. The explanatory variables are the judgements that advisor$_{fe}$ makes of the investment knowledge of vignette$_{fe}$ and the control vignette$_{fe}$ has over their investments, the fixed effects for the ten vignettes (Vignette$_{fe}$) and finally the fixed effects for the advisors (Advisor$_{fe}$).

It is noticeable from the first column in Table 11 that neither the knowledge, nor the control rating in isolation, contribute to explaining portfolio recommendations. This is confirmative to the low correlation between portfolio recommendation and knowledge (*rho* = 0.057) and control (*rho* = 0.053) but a high correlation between knowledge and control (*rho* = 0.654), (Table 6). Adding the fixed effects of the vignettes, advisors or both, columns 2 – 4, substantially increases the strength of the explanation. Higher knowledge and control ratings now raise the riskiness in the recommendations with significance at the 5 and 1% levels.

Table 11. Recommended Portfolio: Knowledge, Control, Vignette and Advisor Fixed Effects

Recommended Portfolio: Combined Variables	(1) Excl. F.E.	(2) Vignette F.E.	(3) Advisor F.E.	(4) Vignette & Advisor F.E.
Knowledge	0.017	0.050**	0.006	0.048**
	(0.31)	(2.205)	(0.092)	(2.224)
Control	0.067	0.118***	0.116*	0.176***
	(1.56)	(2.628)	(1.732)	(2.671)
Observations	1,147	1,147	1,147	1,147
R-squared	0.0038	0.234	0.233	0.463

Notes: This table reports the results of estimating the regression $Recommended\ Portfolio_{fe} = \alpha + \beta_1 AKnowledge + \beta_2 Control + \beta_3 Vignette_{fe} + \beta_4 Advisor_{fe} + \epsilon_{ij}$ *using* OLS with alternative iterations. Column (1) only includes knowledge and control as explanatory variables. Column (2) contains unreported vignette fixed effects. Column (3) contains unreported advisor fixed effects. Column (4) combines contains unreported investor and advisor fixed effects (F.E.). Robust standard errors clustered by vignette are used to compute the t-statistics reported in parentheses beneath the parameter estimates.
***1% significance; **5% significance; *10% significance.

Finally, Table 12 provides an overview of the R squares for both the observed variables and fixed effects for the vignettes and the advisors. The results demonstrate how the fixed effects approach yields similar R squares to the estimation technique in Tables 7 and 8 which included the vignette variables and thus we conclude that vignette variables derive a similar explanatory power as do vignette fixed effects. However, the same it not true for advisor variables, for which the fixed effects approach yields substantially higher R squares than the observed variables. Unobserved advisor characteristics provide almost equal explanation to portfolio recommendations as either investor fixed effects or the observed investor variables, and pooling vignette and advisor fixed effects more than doubles the R squared to 0.45. There is a smaller contribution for the knowledge and control ratings, whereby adding advisor fixed effects increases the R squared by about one third.

Table 12. Overview of Dependent Variable R Squared Results

	Vignette Variables		**Advisor Variables**		**Vignette & Advisor Combined Variables**	
	Fixed Effects	Observed Variables	Fixed Effects	Observed Variables	Fixed Effects	Observed Variables
Recommended Portfolio	0.224	0.213	0.227	0.014	0.450	0.227
Knowledge	0.436	0.395	0.139	0.011	0.574	0.406
Control	0.278	0.248	0.140	0.006	0.419	0.254

Notes: This table presents the R squared for the three dependent variables by vignette and advisor observed variables and fixed effects.

3.4 DISCUSSION

The results demonstrate that advisor make sensible use of investors characteristics when making portfolio recommendations and judgements about investors. Older investors, who have shorter investment time horizons, are deemed to be more knowledgeable but are recommended lower risk portfolios, indicating a common sense judgement and adherence to theoretical assumptions. Advisors were consistent in rating investors with a high level of prior investment experience to be more financially literate, have more control over their investments and have a higher risk tolerance. These judgements appear justified and in line with portfolio theory (List 2011; Morin and Suarez 1983), suitability guidelines (The Financial Services Authority 2011) and previous research which shows that individuals who are financially literate and experienced are more likely to invest in the stock market and have retirements plans (van Rooij, Lusardi, and Alessie 2011).

Consistent with the gender bias reported for this sample in study one, the results show that advisors judge females to have less control over their investments and to be less knowledgeable compared to equivalent male investors, the latter which extends to female advisors who make lower knowledge assumption about the vignettes than their male colleagues. However, in line with (Fourtes, Muradoglu, Ozturkkal 2014) who do not document gender difference in risk taking, and with the exception of the specification which includes advisor fixed effects, gender is not a variable which contributes to differences in portfolio recommendations. Despite judging investors with dependents to be less knowledgeable and in control, advisors recommend that they invest in portfolios with a higher allocation to risky assets than dependent free investors. Advisors may believe that busy parents have less time to devote to their finances, are more reliant on their advice and therefore susceptible to higher risk recommendations that carry higher fees for the advisor (Inderst and Ottaviani 2012).

Conversely advisors may assess that these individuals need adopt higher risk investments to generate increased wealth for their offspring. Advisors judge that investors with larger sums to invest can absorb more risk, but they make lower risk recommendations to investors as their financial net worth increases. Considering the relative wealth of this sample, this is difficult to interpret as incremental rises or falls in net worth, income or outgoings have much smaller impacts than they would for less affluent individuals. Therefore, theoretical assumptions that risk capacity increases with personal wealth (Brown 1990), do not necessarily apply to investors who already have more financial assets than they need. Advisors, it seems, deliberate the overall risk exposure of individuals as they recommend lower risk portfolios to entrepreneurs. Entrepreneurs, who are found to be risk takers (Steward and Roth 2001), often have high levels of income uncertainty. Lower investment risk to diversify from the entrepreneurial risks is therefore appropriate relative to those with stable incomes (Samuelson 1989). Perhaps advisors take such factors into account when making conservative recommendations to entrepreneurs, despite not judging entrepreneurs to have lower financial literacy or control.

However, both the within vignette variation, and the large contribution to the R squared derived from adding advisor fixed effects to the regressions, suggest that advisors differ in their views and that recommendations are predicated on other influences. This uncovers the problem that equivalent millionaires receive different portfolio recommendations and are judged differently depending on who their advisor is. Although the advisor variables measured in this study obtain lower R squares than advisors fixed effects, this suggests that portfolio recommendations have an introspective element with advisor age, experience and the composition of their client base all contributing significantly to portfolio recommendations.

That advisors apply their own characteristics when judging the needs of investors is inconsistent with metrics, regulatory requirements and portfolio theory. Therefore, that portfolio recommendations depend equally on the variables in the vignettes and advisor fixed effects, is probably the most important finding in this study.

Young advisors make the most aggressive portfolio recommendations, whilst advisors above 55 are the most conservative and also make lower judgements about investor knowledge, perhaps reflecting that advisors themselves become more risk averse with age. Furthermore, overconfidence (Glaser, Weber, and Langer 2010), might encourage return chasing behavior (De Bondt 1998) among young advisors who may less sophisticated and have more aggressive stock market return expectations (Kaustia, Lehtoranta, and Puttonen 2017, working paper), as they build up their client base. Thus, it is possible that advisors project their own age related attributes onto the clients that they advise. Experienced advisors recommend portfolios with a higher allocation to risky assets and judge investors to be more financial literate. As expertise is found to be correlated to rational investment behaviour (Feng and Seasholes 2005; List 2011), it is conceivable that advisors with more experience have superior product knowledge than their more junior colleagues and that their clients benefit from better quality advice (Inderst and Ottaviani 2012). Conversely, overconfidence perhaps increases with experience and thus advisors who are more experienced encourage overtrading (Odean 1999).

The existing client base that advisors have informs how they perceive the fictional investors in the vignettes. Advisors with a high proportion of millionaire clients make higher risk recommendations, relative to colleagues with economically less important clients. Advisors who are aware that wealthier investors can absorb more risk (Brown 1990), appear to mirror the assumptions that they make about their ‘usual’ clients onto the vignettes. Since

higher risk investment generally carry higher fees, conflicts of interest cannot be excluded as a possible explanation (Sappington 1991; Starks 1987) as advisors with a high proportion of millionaire clients may be more overconfident than colleagues with less affluent clients.

It is problematic if advisors consider that which they perceive to be suitable for themselves or their usual client to also be appropriate for the vignettes that they observe. Projecting their own biases, e.g., overtrading, return chasing behaviour and under-diversification (Linnaimaa, Melzer, and Previtero 2017), onto their clients might results in recommendations unsuitable for their clients' circumstances. However, due to less information collected about advisors the results have small economic impacts and therefore provide insufficient resolution to understanding what drives advice or generalise widely.

Consistent with that which is found by Foerster et al (2017), adding advisor fixed effects to the specification increases the explanation (R squared) substantially and now contribute equally as investor variables to explaining portfolio recommendations. This is considered in the final analysis which pools observed and fixed effects of both the vignettes and the advisors. The careful construction of the vignettes, which allowed for the inclusion of eleven different variables to describe ten different investors, resulted in comparable explanations (R squared) derived from the vignette variables relative to fixed effects. Advisors made good use of all observable variables and the data were rich enough to capture the highest possible explanation derived from the investors. This illustrates how the vignette methodology is well placed for capturing information that is important for making judgements of the needs of individual investors and determining portfolio suitability, thus validating its robustness for use in future research.

However, the same is not true for advisor variables, and the gap in the R squares from observed and unmeasured variables indicates that there is much more to learn about financial advisors with insufficient detail collected in this study. Despite the professional qualifications required by the FCA, which ensures advisors' proficiency with portfolio construction and their access to investment research and financial modelling tools (Markowitz 2010), advisors disagree about which risky allocation is suitable for the same investor. The judgements that advisors make of investors' knowledge and control are not regularised in the same way, yet investor variables are much more influential than fixed effects, and advisors largely base their judgements on that which they observe within the vignettes. The highest explanation using vignette variables (39.5%) is achieved for the knowledge judgement, suggesting that the information about the prior investment experience contained within the vignettes was more explicit and accessible for advisors than what they could derive to make judgements about the control that investors have over their investments or indeed portfolio suitability. However, the substantial within vignette variation in ratings for all three dependent variables, suggest that both the advice given and the judgements made contain bias. However, it is likely that the portfolio recommendation bias has stronger links to the advisors' unmeasured variables. The lesser contribution of advisors fixed effects to the judgements that advisors make, suggest that bias is more linked to that which they observe about investors. This is, for example, identified by the gender bias in the knowledge and control judgements (study one).

By widening the behavioural scope of previous researchers to investigate how advisors evaluate the investment needs of millionaires, this study a) increases understanding, or R squared (Thaler 2016) to provide further insight into the social interactions between advisors and investors (Daniel and Hirshleifer 2015), and b) demonstrates how little we know about what shapes portfolio recommendations by emphasising the influential power of unmeasured

advisors fixed effects. There is a need for more detailed study of financial advisors. This is important because investors engage advisors to guide them through the investment decision making process with the expectation that the advisor's superior experience and access to information may help improve their investment decisions, yet not suspecting that the advisor's own personal characteristics will also influence the process. This finding adds complexity to potential conflicts of interest within the investment advisory process, placing a spotlight on the need for increased understanding of the interactions between advisors and investors and the motivations of financial advisors. It would appear that investment advice is a more subjective exercise than previously assumed, and perhaps the advisor selection process is as important as the portfolio selection process for investors who engage financial advisors.

The findings challenge existing beliefs, industry practice and the way in which the activities of advisors are monitored and regulated. Financial regulators, who make efforts to understand behavioural biases that disadvantage the choices that consumers make will need to increase their current scope to include the role that advisors' own traits play in biased recommendations.

3.5 CONCLUSION

Using vignettes to describe millionaire investors in the UK, this study examined the social cognitive judgments that a panel of advisors made of the investment knowledge, control and portfolio suitability for ten different fictional millionaires. The methodology permitted a controlled experiment which enabled measurement for how advisors perceived that investors should be guided depending on their personal characteristics included in each vignette as well as where advisors think they should be given their own attributes. Findings indicate that advisors appear to make common sense judgements about investor characteristics by

recommending lower risk portfolios to older investors, and judge investors with experience to be more knowledgeable, in control and have a higher risk tolerance than those without prior investment experience. However, importantly the results also demonstrate that not every advisor recommends the same portfolio to equivalent investors. Instead measured advisor variables contribute to their recommendations with advisor fixed effects providing a higher level of explanation for portfolio recommendations than investor attributes. Thus, this study exposed the fact that we do currently not know enough about financial advisors, but that knowing more is important since portfolio advice appears to be a more subjective exercise than previously thought, subjective depending on who the advisor is. This study therefore uncovers previously unknown sources of bias in the financial advice intermediation process.

Chapter 4, Study 3

Financial Advice, Gender and Wealth: Risk Tolerance, Knowledge and Confidence in Advised and Self-Directed Investors.

ABSTRACT

If financial advice is successful in increasing the financial wealth position for men and women is widely debated in the literature and thus far opinions are divided. However, researchers have not yet considered if the judgements that wealthy individuals make about their own investment needs and the investment decisions that they make are related to whether or not they receive financial advice, nor if there are associated gender based differences. Hence this study explores the self-rated risk tolerance, knowledge, confidence and portfolio risk allocations decisions made by wealthy self-directed and advised investors in the U.K. The results demonstrate that investors who have financial advisors both self-attribute a higher risk tolerance and invest more aggressively than investors who do not receive advice. Furthermore, we demonstrate that gender differences are situational. Although women are more conservative than male investors overall, they consider themselves to be equally knowledgeable and confident as men. Moreover, the risk tolerance for the group of women whose advisors are female, exceeds that of both men and women whose advisors are male. The results challenge the blanket assumption that women are more risk averse than men and show that although financial advice boosts risk tolerance for investors, this not true for female investors. The findings provide insights into the interactions between advisors and investors to identify and explain potential sources of conflicts of interest and gender bias in the wealth management industry, with relevance to financial markets regulators who monitor advisor activities.

JEL Classification; G11, G12, G41.

Keywords: financial advice; investors; risk tolerance; financial advisors; wealth; gender

4.1 INTRODUCTION

A key role for financial advisors is to encourage reluctant individuals to increase their future wealth position by investing more (Gennaioli, Shleifer, and Vishny 2015), but also to improve the investment decisions that the investor would have made in isolation. Understanding how the social interactions (Daniel and Hirshleifer 2015) between investors and advisors impact on individual preferences and the investment choices that they make is therefore essential. Yet, despite how researcher from the social psychology domain show that people vary how they perceive and make sense of themselves depending on who they interact with (Bem 1977; Weiner 2000), the social relationship context remains unexplored in the finance literature. Furthermore, considering the prevalence, particularly among wealthy individuals, to engage advisors to help manage their estates[14], it is problematic that extant literature about financial advice typically does not extend beyond mass affluent investors[15] (e.g., Bhattacharya et al. 2012; Foerster et al. 2017; Hoechle 2017). Extending research to include a wealthier demographic is important because individuals with assets beyond US$100,000 own over 86% of global wealth and subsequently their investment behaviour has substantial economic impact. Their exclusion extends also to the literature about gender differences, which to date has investigated the behaviour of hypothetical investment decisions in laboratory simulations made by individuals who are not investing their own wealth or mass affluent investors (Agnew et al. 2008; Charness and Gneezy 2012).

Researchers document differences in the characteristics between individuals who seek financial advice, i.e., 'advised' investors and those who manage their own portfolios, i.e., 'self-directed' investors. Advised investors are found to be older, less financially literate and more

[14] Studies show that 60% of US households with over US$500,000 in investable assets engage financial advisors (Winchester and Huston 2014), compared to 28% of US households overall (Blackrock 2016).
[15] Mass affluent investors can be defined as having less than US$100,000 in investable assets (Europe Economics 2014).

risk averse compared to self-directed individuals (Bluethgen et al. 2008; Guiso and Japelli 2006; Hackethal et al. 2012). Concerning gender, the literature documents lower financial literacy (Croson and Gneezy 2009), confidence (Barber and Odean 2001) and risk tolerance (Charness and Gneezy 2012) among female relative to male investors. These gender differences extend to the perceptual judgements that women make of themselves, test score results (Agnew et al 2008), and investment behaviour (Eckel and Fullbrunn 2015) whereby women, for example, make more conservative asset allocation decisions in their retirement portfolios (Sundén and Surette 1998). However, to date, researchers have not considered how individual preferences and investment behaviour might relate to whether or not they receive financial advice, or indeed the gender of their advisor.

The present study contributes to the financial advice literature by comparing the judgements of advised and self-directed individuals in the UK who have investable assets between £50,000 and £2.5 million make of their own risk tolerance, knowledge, confidence and the proportional allocations that they make to the risk-free asset, i.e., cash, in their portfolios. We therefore consider both the self-perceptions and actual investment behaviour of male and female investors who are much wealthier than those in previous studies. This is extended to include gender based analysis which explores whether the gender combination in the investor-advisor dyad is linked to variations in self-perceptions. Finally, we analyse the effects of the financial advice treatment to explore if the divergence across the population of advised and self-directed investors relate to having a financial advisor, the gender of that financial advisor or these traits are inherit within the investors. The richness of the data was such that it contained both self-directed and advised investors, thus allowing for analysis of differences in the self-perception of self-managed and advised investors as well as the gender combination of investors and of advisors, expressed in research questions 1, 2 and 3.

We find that, although being female is associated with lower risk tolerance, the wealthy women in this sample believe themselves to be equally knowledgeable and confident about investing as men. Advised investors both perceive themselves to be more risk tolerant and make higher allocations to risky assets in their portfolios than self-directed investors, much of which is likely to be attributable to the financial advice treatment. The investor and advisor gender combination analyses reveal that the risk tolerance, knowledge and confidence of women, when their advisor is female, exceeds that of both men and of female investors who have male advisors. This group of women also holds significantly less cash in their portfolios and therefore exhibit more risk taking investment behaviour. However, the female/female combination, although contributing to increased financial literacy, does not appear to be linked to raising women's risk tolerance. Instead our results suggest that women who engage female advisors are innately more risk tolerant relative to all other groups of investors in this sample.

This study makes important contributions to the literature about financial advice by examining the potential for stereotyped beliefs and unconscious bias in the financial wealth industry as these relate to the gender of both investors and advisors. The present research extends the findings in study one which demonstrate that financial advisors judge female millionaires to have less control over their investments relative to equivalent men, and that female advisors judge investors to be less financially literate than male advisors do and also recommend lower risk portfolios to female investors. Study one, therefore, indicates that these gender stereotypes exist in eye of the financial advisors who observe millionaire men and women and that gender based perceptual judgements might results in biased advice. Whilst study one explores how the investor and advisor gender combination is linked to the social cognitive judgements that advisors make of investors, the present study explores how the

gender combination relates to the cognitive judgements, 'self-perceptions', that wealthy investors make of themselves as well as their investment behaviour.

The findings suggest that more attention should be paid to the interactions between financial advisors and investors to identify and better understand what shapes variations in the self-perceptions and investment behaviour among individual investors. Importantly, our results also challenge the blanket assumption of a lower risk tolerance amongst women relative to men by demonstrating that such differences are not universal but instead also depend on variables other than gender. The results have implications for the wealth management industry and the financial regulator who monitors the activities of financial advisors to protect the interest of consumers.

4.2 THEORETICAL BACKGROUND AND RESEARCH QUESTIONS

4.2.1 Advised and Self-Directed Investors

Although many wealthy investors engage financial advisors (i.e., 'advised' investors) to assist them with investment recommendations, others prefer to manage their own investments (i.e., 'self-directed' investors). In the UK, financial advisors often work for wealth management institutions and their activities are regulated by The Financial Conduct Authority (FCA). Investors who engage financial advisors may do so with the expectation that the advisor will possess expertise, experience and information to help enhance their investment decisions (Feng and Seasholes 2005; List 2011). As experts, advisors will be assumed to make better decisions (Muradoglu 2002) as they impart investment information and recommendations to the investor (Golec 1992; Sappington 1991). These recommendations ultimately contribute to variations in portfolio choice and composition (Rosen and Wu 2004) and are designed to, for example, ensure that individuals have sufficient funds for retirement (Samuelson 1989).

In theory, advisors make investment recommendations which meet their clients' financial goals. Indeed, it is assumed that advisors are rational decision makers and therefore suggest optimised investment portfolios that combine different assets into portfolios aimed at maximising return for a given level of risk (Elton and Gruber 1997), a method which satisfies the financial regulator. Yet, studies which analyse the trading records of investors (e.g., Foerster et al. 2017; Kramer 2012) document that financial advice may be subjectively influenced by factors outside their clients' needs. Despite being better diversified, advised portfolios often have lower returns and higher transaction costs (Von Gaudecker and Martin 2016; Hoechle et al. 2017) presupposing that advisors are conflicted between providing suitable recommendations and seeking to maximise their own economic utility.

A small body of literature on financial advice suggests that self-directed investors may have different characteristics and preferences to those who seek advice. Self-directed investors tend to be male, younger, more confident, and have a higher income relative to advised investors (Karabulut 2010; Kramer 2012; Dorn and Huberman 2005). Likewise, research has found that younger, over-confident men with a high income are more likely to manage their own investments, compared to less financially literate, more risk averse, older and female investors who have a greater likelihood of seeking professional investment advice (Bluethgen et al. 2008; Campbell 2006; Guiso and Japelli 2006; Hackethal et al. 2012; Karabulut 2010; Lusardi and Mitchell 2007). This is consistent with other domains, e.g., business decisions, with researchers showing that female board directors are more likely to seek outside counsel than their male peers (Levi and Zhang 2015).

However, as most studies focus on investors with less than US$50,000 to invest (Dorn and Huberman 2005; Hackethal et al. 2012: Karabulut 2010; Kramer 2012; Mullainathan, Noeth, and Schoar 2012), little is known about potential variations between self-directed and advised investors who are wealthy. Consequently, the first research question in this study explores:

Research question 1: 'Are there variations in the risk tolerance, knowledge and confidence between wealthy self-directed and wealthy advised investors?'

4.2.2 Investor Gender, Investment Attitudes and Behaviour

Unlike age (Morin and Suarez 1983) and the amount of investable assets an individual owns (Brown 1990) gender, whether that of the investors or the financial advisor, is not a characteristic that in isolation contributes to variation in the risk and return profile of investors (Rosen and Wu 2004). Nonetheless, evidence suggests that women are persistently under-invested compared to men and are more likely to hold a smaller allocation to risky assets (Sunden and Surette 1998). These gender differences have been attributed to a variety of different factors, but most imply that their cause lie, at least in part, with the women themselves. For example, women are described as being more risk averse (Charness and Gneezy 2012; Grable 2000), less financially literate (Bucher-Koenen et al. 2017; Campbell 2006; Dwyer, Gilkeson, and List 2002; Lusardi and Mitchell 2007), and less confident when making investment decisions (Barber and Odean 2001, 2002; Croson and Gneezy 2009; Estes and Hosseini 1988; Hira and Loibl 2008). It is therefore widely believed that women both judge themselves to be more risk averse and make more conservative investment choices than men (Eckel and Grossman 2008; Charness and Gneezy 2012). Yet, most extant studies of gender differences focus on hypothetical investment decisions in laboratory simulations, made by

individuals who are not investing their own wealth (e.g., Agnew et al. 2008; Jianakoplos and Bernasek 1998), use student samples or investors with relatively low levels of wealth. Likewise, research that has examined actual investment patterns of male and female investors has generally overlooked whether they are advised by others (e.g., Sunden and Surette 1998), and notably few studies have investigated self-reported investment risk tolerance, knowledge and confidence among male and female investors with over US$50,000 in investable assets. Yet, a growing proportion of the wealthy demographic are women (Fraser 2015), emphasising the importance of exploring if documented gender differences hold for women who are wealthier than those in previous studies. This is explored in the second research question:

Research question 2: 'Do wealthy women perceive themselves to be less risk tolerant, knowledgeable and confident about investing compared to wealthy male investors?'

4.2.3 Investors and Financial Advisors: Gender Combinations

Although the assumption is that financial advisors adhere to rational metrics and provide a neutral perspective for clients making investment decisions, it is possible that, as indicated in study two, stereotypical gender assumptions about client characteristics influence the advice provided, and that these assumptions may vary depending on the gender characteristics of the investor-advisor dyad. With little extant research in the financial advice literature we draw from related literature. For example, studies of workplace mentorship have found that women mentees do better with a male mentor, because female mentors are often less powerful and therefore less able to enhance the career prospects of their mentees (Ragins 1989). Furthermore, female students are more likely to be successful than male students if their supervisor is male (Hilmer and Hilmer 2007). Dennehya and Dasgupta (2017) show that female engineering students with female mentors are more likely to pursue a career in engineering

than those with male mentors. Similar to how women consistently invest less than men Charness and Gneezy 2012, businesses run by women have been found to borrow less than businesses run by men (Wilson et al. 2007). Yet no evidence of bias is found among the loan officers who evaluate applications made by men and women. Instead it is prospective female business borrowers who are deterred from making loan applications because of their own expectation that the application will be turned down (Moro, Wisniewski, and Mantovani 2017). These findings by Moro, Wisniewski, and Mantovani (2017) indicate that there may be a mismatch between how women expect to be perceived by others and how they are actually perceived by others.

Although wealthy investors are more likely to have the choice of selecting which advisor to engage, whereby several wealth management institutions 'pitch' for their business, the financial advisor profession is, nevertheless, male dominated. In the US only 23% of certified advisors are female (Hannon 2014), and only 34 of the 400 top ranked US advisors are women (Raagas De Ramos 2016). Thus, while industry studies have shown that women generally prefer a female advisor (i.e., 55%: Klein Bier 2016), they may have difficulty finding one. With the exception of study one, and despite related literature indicating that the gender combinations in advice situations may be an important, very little consideration has been paid to the gender combination of investors and financial advisors or indeed if it might be relevant for how investors perceive themselves or their investment behaviour. Nor is it known if financial advisors contribute to potential differences in investment attitudes and behaviour among the population of wealthy male and female investors. This is examined in the third research question:

Research question 3: 'Do the gender combinations of investors and advisors relate to variations in the risk tolerance, knowledge and confidence among wealthy male and female investors?'

4.3 DATA AND METHODOLOGY

4.3.1 Participants and Procedure

Participants in this study are 500 wealthy U.K. investors who provide self-ratings as part of an online survey. The survey was commissioned by a wealth management research firm who invited participants to take part in an anonymous survey concerned with attitudes about financial advice. The firm prespecified the required number of respondents and the participants consented to their information being used for research and publication purposes. This allowed for pre-specification that respondents should have a minimum of £50,000 held in investable assets. Distribution was via an online link which provided information guaranteeing confidentiality and anonymity of participants, thus providing an opportunity to research a wealthy demographic of investors that is difficult to access. The researcher was invited to design specific questions which were included in the survey. The survey questions that were included in this study are available in Appendix II.

Respondents were asked to indicate their age and whether they were male or female. To assess their wealth, respondents were asked 'What is the value of your investable assets?'[16], and to choose which of three categories best described the value of their wealth: (1) £50,000 - £249,000, (2) £250,000 - £999,000, and (3) £1 million - £2.5 million. Therefore, the minimum amount that participants own in investable assets is £50,000 and the maximum is £2.5 million,

[16] The measure 'investable assets' in this survey includes investments such as stocks, bonds, mutual funds, retirement portfolio, secondary properties (excluding the value of their main residence). As the precise asset allocation, for example the split between fixed income and stocks in the mutual funds of retirement allocations are not known, cash is a more precise measure to indicate the allocation to risk free portfolio holdings.

a typical range of investable wealth for the surveys conducted by the research firm (see also Appendix III) To obtain an independent proxy measure of risk respondents were asked 'Of your investable assets what is the percentage allocation to cash savings[17]?', with the remaining proportion held in various risky assets, e.g., mutual funds, investment properties and pension. Therefore, although we do not have the exact portfolio asset class breakdown, we are able to evaluate if participants' stated level of risk tolerance corresponds to their allocations to the risk-free asset (Fama 1972) with the balance held in investments which carry higher levels of risk.

Then, to determine whether they are 'advised' or 'self-directed' in respect to financial decision making, respondents were asked to indicate whether or not they receive financial advice or to select: 'I do not receive financial advice'. Investors without advisors are treated as investors who manage their own investments (i.e., 'self-directed'), and those with financial advisors as 'advised'. The survey questions which related to obtaining information about their financial advisors, e.g., the gender of their advisor, were only directed towards advised investors to enable analysis of the gender combinations of investors and advisors. As wealthy investors may receive advice from more than one advisor, respondents with financial advisors were asked 'What is the gender of your main financial advisor?'

Three specific questions were devised by the researcher to investigate the judgements that investors make of their investment risk tolerance, knowledge and confidence and included in the survey. These were designed using Likert scale methodology (Likert 1932), used widely across a wide range of research domains (Clason and Dormody 1994; de Winter and Dodou 2010) and which has a high level of familiarity to survey participants. Respondents were asked to indicate their level of agreement with three statements on a 5-point scale (where 1 = 'strongly

[17] Including current accounts and cash ISAs (ISA is a tax-efficient individual savings account in the UK).

disagree' and 5 = 'strongly agree') about themselves relative to the general population: 'The amount of investment risk I am willing to take is above average' (Risk Tolerance); 'My knowledge about the investment decisions I make is above average' (Knowledge); 'My confidence in the investment decisions I make is above average' (Confidence).

4.4 RESULTS

4.4.1 Respondent Profile and Summary Statistics

The summary in Table 1 shows that 288 men and 212 women completed the online questionnaire. The majority, 316 investors (182 men and 134 women), said they use a financial advisor whilst 184 investors (106 men, 78 women) are self-directed.[18]

Overall, women were slightly younger than male respondents (mean ages 50.16 and 54.39 years respectively), and self-directed investors were slightly older than advised investors (mean ages 53.70 and 51.95 years). Male and female investors were equally likely to receive financial advice (both = 63.2%). Of the 'advised' group, 235 (74.37%) indicated that their main advisor was male, and 81 (25.63%) said their main advisor was female. These figures, as presented in Table 2, are broadly representative of the U.K. financial advisor population as a whole (i.e., 23% female, 77% male: Hannon 2014). Women investors were more likely to have a female advisor (42%) than male investors (14%); a difference that is statistically significant (Chi-square = 16.4 $p < .001$), indicating that choice of advisor is not independent and the preference for male or female advisor is contingent on the gender of investors (Salkind 2007).

[18] Further information about the sample is available in Appendix III.

Table 1. Overview of Male and Female Investors

	Male Investors				Female Investors			
	Advised		Self-directed		Advised		Self-directed	
Assets	N	Mean Age	N	Mean Age	N	Mean Age	N	Mean Age
50k - 249k	66	(56)	61	(64)	51	(53)	45	(58)
250k - 999k	94	(48)	41	(55)	70	(44)	28	(54)
1m - 2.5m	22	(42)	4	(60)	13	(38)	5	(50)
All	182	(51)	106	(60)	134	(46)	78	(56)

Notes: Overview of respondents, split into self-directed and advised investors with the investable assets split into three categories.

Table 2. Male and Female Advised Investors

	Male Investors				Female Investors			
	Male Advisor		Female Advisor		Male Advisor		Female Advisor	
Assets (£)	N	Mean Age	N	Mean Age	N	Mean Age	N	Mean Age
50k - 249k	55	(57.7)	11	(53.8)	37	56	14	(41)
250k - 999k	84	(49.7)	10	(44.2)	35	48	35	(40)
1m - 2.5m	18	(39.1)	4	(50.0)	6	42	7	(33)
All	157	(51.3)	25	(49.4)	78***	53	56***	(40)

Notes: Wealth distribution by investor and advisor gender. Pearson chi^2 (2) = 16.14, p = 0.00 for the likelihood of female investors having a female advisor (N=56) relative to male investors having a female advisor (N=25). Pearson chi^2 (2) = 14.38, p = 0.01 for the likelihood of male investors having a male advisor (N=157) relative to female investors having a male advisor (N=78)

Table 3. Respondent Age Profile.

All Respondents (N = 500)					
	Mean	SD	Median	Min	Max
Age (M)	52.59	16.25	57	18	65

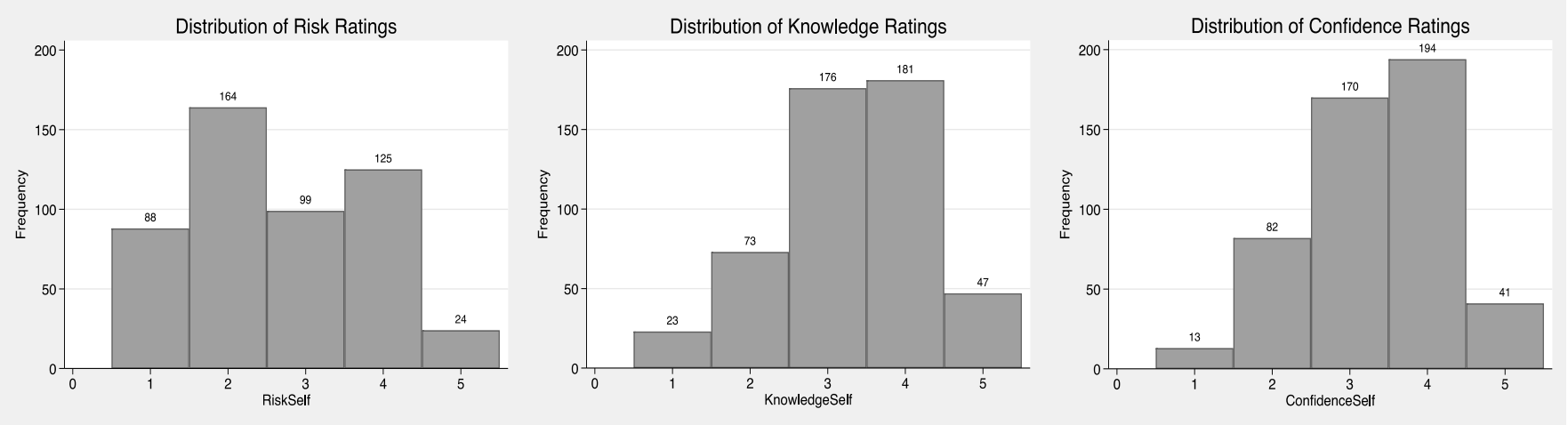
Self-Managed Respondents (N = 184)					
	Mean	SD	Median	Min	Max
Age (M)	58.37	14.19	61	18	68
Male Self-Managed (N = 106)					
Age (M)	60.16	14.25	63	18	70
Female Self-Managed (N = 78)					
Age (M)	55.94	13.84	59	22	64

Advised Respondents (N = 316)					
	Mean	SD	Median	Min	Max
Age (M)	49.23	16.44	18	54	63
Male Advised (N = 182)					
Age (M)	51.02	16.79	57	18	65
Female Advised (N = 134)					
Age (M)	46.79	15.70	48	18	59

Notes: In this table the age details are shown for the full sample of investors, N = 500. The sample is then split by self-managed (left hand side) and advised investors and by investor gender.

The distributions for self-rated risk tolerance, knowledge and confidence provided by the 500 respondents are presented in Figures 1 to 3. These indicate that, regardless of investor gender, there is considerable variation in ratings with each question yielding responses on the full scale from 1 to 5. The correlation matrix in Table 4, estimated using Spearman's rank correlation to account for the ordinal nature of the dependent variables (de Winter, Gosling, and Potter 2016), demonstrates a positive relationship between risk tolerance, knowledge and confidence, with knowledge and confidence strongly positively correlated (Spearman's rho = 0.72). It is also noteworthy that the highest correlation between the dependent and explanatory variables in identified for risk tolerance and the advisor dummy, with having an advisor related to higher self-rated risk tolerance.

Figures 1 to 3. Distribution of Confidence, Knowledge and Risk Tolerance ratings for all respondents.



Notes: Figures 1, 2 & 3 show the distribution of ratings from 1 to 5 for confidence, knowledge and risk tolerance. The frequency of ratings is shown at the top of each bar.

Table 4. Correlation Matrix: Dependent and Explanatory Variables

	Dependent Variables				**Explanatory Variables**		
	Confidence	Knowledge	Risk	Cash	Gender	Advisor	Age
Knowledge	0.72						
Risk	0.499	0.479					
Cash	-0.117	-0.095	-0.268				
Gender	-0.052	-0.04	-0.063	0.057			
Advisor	0.056	0.069	0.265	-0.172	0		
Age	-0.139	-0.194	-0.333	0.123	-0.146	-0.255	
Wealth	0.195	0.176	0.286	-0.256	-0.004	0.194	-0.274

Notes: Spearman's rank correlation (rho) for the aggregated average ratings.

Table 5. Summary of Means

	(1) All Investors		(2) Self-Directed		(2) Advised		(3) Male Advisors		(3) Female Advisors	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Risk										
All	2.67	1.17	2.26	1.04	2.90***	1.17	2.81	1.20	3.17***	1.07
Male	2.73	1.17	2.34	1.04	2.96***	1.18	2.96	1.20	2.92	1.08
Female	2.58	1.16	2.15	1.05	2.83***	1.16	2.50	1.13	3.29***	1.06
Knowledge										
All	3.31	0.99	3.23	0.89	3.36	1.04	3.28	1.04	3.59***	1.01
Male	3.34	0.98	3.27	0.89	3.38	1.03	3.40	1.04	3.24	0.97
Female	3.27	1.00	3.17	0.89	3.34	1.05	3.04	1.00	3.75***	1
Confidence										
All	3.34	0.93	3.27	0.93	3.38	0.94	3.32	0.94	3.54**	0.92
Male	3.38	0.88	3.36	0.89	3.40	0.88	3.41	0.88	3.32	0.9
Female	3.27	1.00	3.14	0.98	3.35	1.01	3.14	1.03	3.64***	0.92
Cash (%)										
All	36.60	1.34	46.04	2.60	31.09	1.40	32.15	1.71	28.04	2.30
Male	34.49	1.67	44.62	3.36	28.59***	1.64	28.11	1.75	31.64	4.61
Female	39.45*	2.20	47.97	4.12	34.49**	2.43	40.28	3.61	26.43***	2.62

Notes: This table summarises the mean ratings for Risk Tolerance, Knowledge and Confidence on the 1 to 5 rating scale, and the means for Cash holdings as % of total portfolio. Observations as follows: Advised men = 182, Self-Directed men = 106, Advised women = 134, Self-Directed women = 78, Men with male advisor = 157, Men with female advisor = 25, Women with male advisor = 78, Women with female advisor 56. The asterisk in column 1 denotes the significance in the difference in cash holdings by male and female investors (vertical). The asterisks in column 2 denote the difference between Self-Managed and Advised Investors (horizontal) and finally the asterisk in column 3 denote the difference between investors who have male and female advisors (horizontal).
***1% significance; **5% significance; *10% significance.

A few key themes emerge from the simple t-test computation of the means and cash holdings as presented in Table 5. First, across the full sample of 500 investors, column 1, we do not reveal a significantly lower risk tolerance among female investors, but women behave more conservatively and hold more cash in their portfolios relative to men. Then in column 2 advised investors rate themselves to be more risk tolerant and hold significantly less cash in their portfolios. In the third column we note that the group of women who have female advisors make higher evaluations of their risk tolerance, knowledge, confidence and allocate significantly less to the risk-free assets in their portfolios compared to women who have male advisors. Notably, the average risk tolerance rating for this group of women is higher compared to any other group of investors, including men.[19]

4.4.2 Statistical Analyses

Conditional multiple linear regression models (Khuri 2013) are used to assess how the explanatory variables contribute to self-rated investment risk tolerance, knowledge and confidence. Initially these take the form of ordinary least squares ('OLS') regressions. Then, to acknowledge both that the answer scales are varied and that the difference between each point on the answer scales can not to be assumed to be equal, data are treated as ordinal. Therefore, ordered probit regressions, a standard model for ordinal data (Salomon, Tandon and Murray 2001) and a robust method for analysing Likert scale data (Sullivan and Artino 2013), are added to ensure robustness. The regressions include robust standard errors to account for any cross-section heteroscedasticity (Wooldridge 1989) and to acknowledge that data are not assumed to be normally distributed (McKean 2004) as illustrated in Figures 1 to 3. The proportion (%) of cash relative to the overall portfolios held by investors is regressed to

[19] Further ANOVA analysis which considers the gender interactions effects of investors and advisors on the four dependent variables is available in Appendix V.

compare investors' stated level of risk tolerance with their allocations to risk free assets (Fama 1972) in their portfolios.

Further conditional tests which control for the advisor selection effects and the differences across the treated group (i.e., investors with financial advisors) and the untreated control group (i.e., self-directed investors) are investigated in more detail using matching techniques. This method statistically addresses the endogeneity inherent in the regressions in an attempt to estimate the causal treatment effect (Caliendo and Kopeinig 2008). Whilst mindful that matching makes substantial underlying assumptions, it's application in this study makes a contribution to the lacuna of studies which identify causality in business-related disciplines (Gassen 2014). The implications of the results are examined in the discussion which follows the results section.

4.4.3 Self-Perception and Cash Allocations: Advised and Self-Directed Investors

Regression analyses are computed to examine the explanatory variables which drive differences in risk, knowledge and confidence ratings across the full sample of respondents with specific focus on research question one and two. Regressions of the following form were performed:

$$Yi = \alpha i + \beta 1 Genderi + \beta 2 Agei + \beta 3 Advisori + \beta 4 Wealthi + \epsilon i \qquad (1)$$

The dependent variables (Y_i) are the self-reported investment Risk tolerance, Knowledge rating and investment Confidence rating as reported by respondents (rating scale = 1 to 5). In the final specification cash, as a proportion (%) of the total amount of investable assets held by participants, replaces risk tolerance as the dependent variable 'Cash'. The explanatory variables are the known investor characteristics, i.e., the investor gender ($Gender_i$), 0 for male and 1 for female and age (Age_i). An indicator variable which takes the value one if

the investor has a financial advisor and zero otherwise ($Advisor_i$). Three dummies are created for the amount of investable assets held by investors, taking the indicator values of 1, 2 and 3. Indicator value 1 is for investable assets between £50,000 - £249,999, 2 for £250,000 - £999,999 and 3 for between £1 million - £2.5 million ($Wealth_i$). In the regression, the two higher wealth categories with a baseline category of £50,000 - £249,999 are included. Both OLS and ordered probit specifications are estimated for robustness for the three ordinal dependent variables. The regressions include robust standard errors.

Whilst ordered probit is a suitable regression technique for Likert scale ordinal data (Sullivan and Artino 2013), there is little difference in the results derived from the OLS and ordered probit methods (Table 6) and interpretation therefore follows the OLS results. The R square results are much greater for risk tolerance than for knowledge and confidence and indicates that measured investor variables explain over 18% of self-rated risk tolerance. A negatively correlated relationship between risk ratings and the allocation to cash in investors' existing portfolios (r = - 0.34), illustrates that investors' risk averse self-ratings are mirrored by larger allocations to cash in their portfolios, a pattern which is evident from the results in Table 6.

Table 6. Risk Tolerance, Knowledge, Confidence and Cash Holdings: All Respondents

Variables	(1) Risk OLS	(2) Risk Ord. prob.	(3) Knowledge OLS	(4) Knowledge Ord. prob.	(5) Confidence OLS	(6) Confidence Ord. prob.	(7) Cash OLS	(8) Cash OLS
Gender	-0.222**	-0.226**	-0.105	-0.119	-0.124	-0.134	5.517**	5.228**
	(-2.279)	(-2.271)	(-1.173)	(-1.210)	(-1.447)	(-1.361)	(2.109)	(2.000)
Advisor	0.397***	0.383***	0.008	0.023	0.009	0.004	-10.439***	-10.42***
	(3.790)	(3.635)	(0.086)	(0.230)	(0.102)	(0.041)	(-3.435)	(-3.420)
Age	-0.018***	-0.018***	-0.010***	-0.012***	-0.005	-0.006*	0.172**	0.162**
	(-5.431)	(-5.177)	(-3.164)	(-3.463)	(-1.566)	(-1.911)	(2.243)	(2.080)
£250K - £999K	0.234**	0.228**	0.126	0.133	0.195**	0.229**	-14.049***	-13.587***
	(2.328)	(2.304)	(1.386)	(1.347)	(2.326)	(2.397)	(-4.927)	(-4.800)
£1M - £2.5M	0.687***	0.700***	0.287	0.352	0.501***	0.623***	-14.838***	-13.645***
	(3.448)	(3.348)	(1.487)	(1.581)	(2.916)	(2.898)	(-3.712)	(-3.41)
Confidence								2.481
								(1.410)
Knowledge								0.172
								(0.110)
Observations	500	500	500	500	500	500	500	500
R-squared	0.182		0.043		0.042		0.136	0.141
Pseudo R-squared		0.0651		0.0191		0.0187		

Notes: This table reports the results of estimating the regression $Y_i = \alpha_i + \beta_1 Gender_s + \beta_2 Age_i + \beta_3 Advisor_i + \beta_4 Wealth_i + \epsilon_1$ with alternative estimation techniques. Columns (1, 3 and 5) use OLS and columns (2, 4 & 6) are estimated using ordered probit (OP). In columns (7) and (8), cash holdings is the dependent variable and in column (8) risk, confidence and knowledge are added as explanatory variables. Robust standard errors are included. The t (z)-statistics are reported in parentheses beneath the parameter estimates.

***1% significance; **5% significance; *10% significance.

Although the simple t-tests (Table 5) did not yield significant differences, the regressions which include additional variables show that being female is associated with lower self-reported risk tolerance to a magnitude of nearly one quarter of a unit. On average, women also allocate 5.5 percentage points more to cash to their investment portfolios than men and therefore make more conservative investment decisions. However, investor gender is not associated with variations in self-perceived knowledge or confidence. Investors who have financial advisors give on average over one third of a unit higher risk ratings, and the advised group of investors also have a higher allocation to risky assets in their portfolio. The economic impact of this is large with advised investors on average allocating over 10 percentage points less to cash. The advisor dummy does not impact self-perceived knowledge or confidence.

Older investors are associated with a higher level of conservatism. For every ten years of ageing the average risk tolerance is lowered by one fifth of a unit[20], and cash allocations increased by 1.7 percentage points. With age investors also indicate feeling less knowledgeable and confident, although these effects are very small. Being a millionaire, and having more than £250,000 in investable wealth, significantly increases investors' risk tolerance at a magnitude of 0.7 units for millionaires, with both categories of investors holding over 14 percentage points less cash in their portfolios. Millionaires are also more confident about investments at a magnitude of half a unit, reducing to one fifth of a unit for investors who have between £250 to 999K in investable assets.

[20] The age-related findings are robust to alternative specifications such as using the logarithm of age, age-squared or using indicator dummies capturing "younger" (below 35 years of age), "middle-age" and "older" (above 55 years of age) investors. These are excluded in the table to make them easier to read.

4.4.4 Financial Advice Treatment

The results in Table 5 confirm that, relative to self-directed investors, those with financial advisors give higher estimations for their investment risk tolerance and hold less cash in their portfolios, and therefore both perceive themselves to have a higher relative risk tolerance and display more risk tolerant investment behaviour. Furthermore, a conditional relationship between certain explanatory variables, i.e., age, wealth and gender, and the dependent variable, i.e., self-perceived risk tolerance is confirmed. Whilst enabling analysis for how these variables contribute to the understanding of the degree of risk tolerance investors consider themselves to have, the regression computation in Table 6 does not infer a statistically derived causal relationship between having a financial advisor, the personal risk tolerance rating or investment behaviour.

This is because the choice to have a financial advisor is unknown, creating a sample selection bias and therefore, without more in-depth analysis, we can only speculate about whether investors who seek advice are less conservative than those who manage their own investments or if financial advisors induce higher risk tolerance amongst them. To address this endogeneity problem and allow inferences to be made about the effect of the 'treatment' of financial advice, the data are analysed using statistical matching techniques (Caliendo and Kopeinig 2008). Whilst mindful that matching makes substantial underlying assumptions, this technique allows us to model the advisor (and gender) choice made by participants and thus infer the financial advice treatment effect to statistically address the endogenous nature of the data and make a contribution to the lacuna of within the advice literature that investigate causal inference (Gassen, 2014). Although such matching techniques do not address the unobserved heterogeneity problem in its entirety, our methodology follows that of other researchers who explore causal effects (Balakrishnan et al. 2014), presented here to supplement the regression

models. The causal interpretation is only valid to the extent that all relevant confounders are observable, observed, and used for matching. Our ability to infer causality of the outcomes, i.e., ratings and cash allocations made by advised and self-directed investors, to further assess if these are attributable to the treatment, (i.e., having an advisor), or to investors' innate preferences (Imbens 2004), is therefore limited to a statistical investigations which uses included available variables. In this analysis, the treatment group is investors with financial advisors, and the untreated control group is self-directed investors. Investors are matched on their observable personal characteristics, i.e., gender, age and wealth, to identify investors who share similar traits but who belong to the two separate groups.

The nearest neighbourhood matching method, conditional upon multiple variables (Abadie and Imbens 2002), is initially applied to classify investors from the treated and control group based on their individual similarities. The analysis specifies that matched investors have the same gender and wealth category and finds the nearest neighbour for the continuous variable age. Therefore, an advised (i.e., treated) 47 year-old man with between £1M - £2.5M to invest is matched with a self-directed man from the control group in the same wealth category who is the closest to being 47 years old. If there is no male control group member who has between £1M - £2.5M to invest, the treatment group subject cannot be adequately matched and is therefore dropped from the analysis. These results are reported as the average treatment effect of the treated (ATET) by comparing investors from the two groups who are as similar as possible.

To recognise that achieving a match for all three variables can be challenging, propensity score matching (Rosenbaum and Rubin 1983) is also used to compute the conditional probability of the average treatment effect (ATE) in logit regressions run on the

full set of data. Whilst including all measured investor variables, this method only requests a match on one of the three variables. Considering that investor age is a continuous variable, a calipher is used to specify the distance (Caliendo and Kopeinig 2008), so that the maximum variance in age for matched investors is 10% (approximately 5 years).[21] In this specification, we ask for an exact gender match, and the closest probabilities of choosing to have an advisor is based on the estimated effects of investor age and wealth category. Therefore, an advised woman who is 50 years old with £250,000 - £999.999 to invest could be matched with a self-directed woman who is between 47.5 to 52.5 years old and who is either from the same, a lower or higher wealth category. As propensity score matching categorises investors based upon a single probability. This added flexibility that can result in different matches to those given by the nearest neighbour technique, but also provides a useful robustness test to validate the nearest-neighbour matching results.

Table 7 summarises the OLS results from Table 6 and presents the nearest neighbour and propensity score matching results across all four dependent variables. The results in the table which find a match for the full set of data without any observations being dropped, show that the two matching techniques produce directionally similar point estimates with significant treatment effects for all four dependent variables. This indicates that the higher self-rated risk tolerance and lower allocations to cash in the portfolios of advised investors can be attributed to the financial advice treatment, rather than these preferences being independent or innate. Therefore, the expected effect of financial advice on individuals is an increased risk tolerance of over half a unit, and a decreased allocation to cash in portfolios of a magnitude of around ten percentage points, depending on which matching estimation method is used. Furthermore,

[21] In another estimation, a bias adjustment (Abadie and Imbens 2011) was added for the continuous variable age which did not yield different results.

despite the advisor dummy not yielding significant differences in the regressions, the matching result suggest that financial advisors are expected to enable investors to feel both more knowledgeable and confident about investing, although with magnitudes of around one fifth to one third of a unit, the economic effects of this is smaller. Indications therefore are that there is a relationship between financial advice and increases in the risk tolerance, financial literacy and confidence for wealthy individual investors.

Table 7. Risk Tolerance, Knowledge, Confidence and Cash Holdings, Matching Results: Advise and Self-Directed Investors

	Risk Tolerance			**Knowledge**			**Confidence**			**Cash Holdings**		
	Coeff.	Z-stat.	P-value.	Coeff.	Z-stat.	P-value.	Coeff.	Z-stat.	P-value.	Coeff.	Z-stat.	P-value.
OLS	0.397	3.790	0.000	0.008	0.090	0.932	0.009	0.100	0.919	-10.439	-3.440	0.001
NNM (ATET)	0.665	4.680	0.000	0.205	1.720	0.086	0.316	2.330	0.020	-11.187	-2.050	0.041
PSM (ATE)	0.579	5.400	0.000	0.237	2.300	0.021	0.192	2.000	0.046	-9.507	-2.610	0.009

Notes: Observations = 500. This table presents the OLS regression results, followed by PSM = Propensity Score Matching average treatment effect (ATE) with a calipher of 0.1 and finally the NNM = nearest neighbour match average treatment effect of the treated (ATET). The T statistics replaces Z-stat for the OLS specification.

4.4.5 Self-Perception and Cash Allocations: Investor and Advisor Gender Combinations

Next self-directed investors are removed from the data to examine whether ratings vary according to the gender combinations of investors and financial advisors, with particular focus on the third research question. Two regression equations estimated in different subsamples split by investor gender are performed:

$$Yi = \alpha i + \beta 1 Malecombinationi + + \beta 2 Agei + \beta 3 Wealthi + \epsilon i \qquad (2a)$$

$$Yi = \alpha i + \beta 1 Femalecombinationi + \beta 2 Agei + \beta 3 Wealthi + \epsilon i \qquad (2b)$$

The first dependent variables (Y_i) follow those in regression (1) with cash holdings added as a fourth dependent variable. The explanatory variables are now adjusted to isolate for the impact of the gender combinations of investors and advisors with dummies created for investors and advisors of the same gender. These take the value of one for male respondents with male advisors and zero otherwise ($Malecombination_i$) in (2a), and a value of one for female respondents with female advisors and zero otherwise ($Femalecombination_i$) in (2b). The explanatory variables of Age and Wealth follow those in regression (1). As before the ordered probit computations did not yield different results and these are therefore removed from the Table 8 to make it easier to read.

Table 8. Risk Tolerance, Knowledge, Confidence and Cash Holdings: Male/Male and Female/Female Investor Advisor Combinations

Variables	(1) Male Risk	(2) Female Risk	(3) Male Knowledge	(4) Female Knowledge	(5) Male Confidence	(6) Female Confidence	(7) Male Cash	(8) Female Cash
Male / Male	0.072		0.195		0.094		-2.107	
	(0.329)		(0.997)		(0.482)		(-0.438)	
Female / Female		0.297*		0.537***		0.403**		-8.561**
		(1.652)		(2.742)		(2.133)		(-2.041)
Age	-0.014**	-0.030***	-0.013	-0.013***	-0.007*	-0.005	-0.104	0.163
	(-2.467)	(-5.532)	(-2.714)***	(-2.290)	(-1.701)	(-0.788)	(-1.244)	(1.011)
£250K - £999K	0.204	0.359*	0.017	0.012	0.214*	0.081	-13.805***	-15.095***
	(1.168)	(1.902)	(0.113)	(0.065)	(1.713)	(0.466)	(-3.561)	(-2.650)
£1M - £2.5M	0.689**	0.824***	0.211	0.026	0.480*	0.494	-14.101***	-10.923*
	(2.157)	(3.380)	(0.742)	(0.069)	(1.931)	(1.664)*	(-2.985)	(-1.765)
Observations	182	134	182	134	182	134	182	134
R-squared	0.090	0.330	0.063	0.145	0.064	0.087		0.135

Notes: This table reports the results of estimating the regression $Y_i = \alpha_i + \beta_1 Malecombination_i + \beta_2 Age_i + \beta_3 Wealth_i + \epsilon_i$ in Columns (1), (3), (5) and (7) and $Y_i = \alpha_i + \beta_1 Femalecombination_i + \beta_2 Age_i + \beta_3 Wealth_i + \epsilon_i$ in Columns (2), (4), (6) and (8) for Confidence, Knowledge, Risk and Cash Holdings. Robust standard errors are included. The t-statistics are reported in parentheses beneath the parameter estimates.
***1% significance; **5% significance; *10% significance

As seen in columns 1, 3, 5 and 7 of Table 8, advisor gender does not contribute to variations in how risk tolerant, knowledgeable or confident the 182 advised male respondents consider themselves to be, nor does advisor gender relate to the proportion of cash that they hold in their portfolios. However, the same is not true for the 134 advised women. There is a net effect of being a woman with a female advisor, with these women self-reporting being more risk tolerant, knowledgeable and confident and hold less cash in their portfolios, relative to women who have male advisors. Economically the effects of the female investor / female advisor dummy are quite large, and the results correspond to the higher means previously identified for this group of women (Table 5). The female combination yields higher ratings at a magnitude of half a unit for knowledge, 0.4 units for confidence, and one third of a unit for risk tolerance. This group of women also holds on average 8.5 percentage points lower proportions of cash in their portfolios.

4.4.6 Financial Advice Treatment: Gender Combinations

As before matching is performed to estimate the likely advisor gender treatment effect. This focuses specifically on female investors who have financial advisors since this is the group for which statistical importance linked to the gender of the financial advisor is noted.[22] The untreated (control) group is female investors with male financial advisors (N = 78) and the treated group is female investors with female financial advisors (N = 56).

[22] Matching was also performed to compare the treatment for male investors with female advisors relative to male investors with male advisors. Results were far from significant.

Table 9. Risk Tolerance, Knowledge, Confidence and Cash Holdings, Matching Results : Advised Female Investors.

	Risk Tolerance			**Knowledge**			**Confidence**			**Cash Holdings**		
	Coeff.	Z-stat.	P-value.	Coeff.	Z-stat.	P-value.	Coeff.	Z-stat.	P-value.	Coeff.	Z-stat.	P-value.
OLS	0.297	1.650	0.101	0.537	2.740	0.007	0.403	2.130	0.035	-8.561	-2.040	0.043
NNM (ATET)	0.127	0.660	0.511	0.415	1.810	0.070	0.286	1.110	0.266	-3.359	-0.780	0.437
PSM (ATE)	0.170	1.110	0.266	0.386	2.020	0.044	0.193	0.970	0.334	-10.303	-2.480	0.013

Notes: This table presents the OLS regression results, followed by PSM = Propensity Score Matching average treatment effect (ATE) with a calipher of 0.1 and finally the NNM = nearest neighbour match average treatment effect of the treated (ATET). The T statistics replaces Z-stat for the OLS specification. N = 134.

Table 10. Correlation Matrix: Risk Tolerance, Knowledge, Confidence and Cash Holdings: Female/Male and Female/Female Combinations

	Female / Female			Female / Male		
	Risk	Knowledge	Confidence	Risk	Knowledge	Confidence
Risk						
Knowledge	0.6648			0.4875		
Confidence	0.7573	0.6772		0.3248	0.699	
Cash	0.1843	0.2068	0.0268	-0.3313	-0.0763	-0.1533

Notes: The table shows the Spearman's rank correlation (rho) for the aggregated average ratings for advised female investors. Total number of female respondents with financial advisors, N = 134 (78 female respondents have male advisors = male / male and 56 female respondents have female advisors = female / female).

The results presented in Table 9 in which both matching estimations keep the full set of observations, are directionally similar across the two matching methods, and unlike that which was identified when comparing self-directed and advised investors, these are non-significant for confidence and risk tolerance or cash holdings. Therefore, we do not identify a treatment effect which relates to the women having a female instead of a male advisor. Instead it seems that, as demonstrated in Table 8, women who engage female advisor are both more confident and risk tolerant than women who engage male advisors. Nonetheless we note that the propensity measure indicates that the female / female combination may render less conservative investment decisions made by women but in the nearest neighbour measure this result is far from significant. Considering the directionally concordant relationship between personal risk ratings and percentage cash allocations in the regressions (Tables 6 and 7), interpretation follows that of the more precise nearest neighbour matching specification.

However, a statistically derived treatment effect is confirmed for investment knowledge. It seems that having a female advisor is likely to be associated with higher levels of financial literacy at a magnitude of over one third of a unit. Knowledge also saw the largest incremental increase in ratings computed in the regression, Table 8, with women with same gender advisors making over half a unit's higher knowledge ratings on average. Mindful of these results, we compare how the correlations between the dependent variables vary for the female / female combination relative to women with male advisors in Table 10. We note a higher correlation between both confidence and knowledge relative to risk tolerance (*rho* = 0.757 and *rho* = 0.665) for the female / female combination than for the female / male combination (*rho* = 0.325 and rho = 0.488). Furthermore, the correlation between risk and cash holdings is positive for the latter but negative for women with male advisors, results which suggest that the group of women with female advisors may have different preferences compared to women who have male advisors.

4.5 DISCUSSION

Our findings that advised investors are both less conservative and invest more aggressively than self-directed investors appear to contradict those by previous researchers who document higher levels of conservatism among advised investors (Bluethgen et al. 2008; Hackethal et al. 2012). However, further investigations suggest that such conclusions are too simplistic as we show that individuals, through being subjected to financial advice, are likely to increase their self-perceived capacity for taking investment risk and also to behave in a less conservative manner. Furthermore, it seems likely that advisors boost their clients' financial literacy and confidence about investing. These are important findings that suggests that, despite advised portfolios not necessarily producing net returns that are in excess of self-directed portfolios (Von Gaudecker and Martin 2016; Hoechle et al. 2017), risk averse individuals who manage their own portfolios may not allocate sufficient funds to risky assets to secure their financial future. Therefore, the advisor's role to encourage risk averse investors to invest more (Gennaioli, Shleifer, and Vishny 2015) seems to be working for this sample of wealthy investors.

That advisors contribute to investors feeling more confident and knowledgeable about investments is in line with researchers who demonstrate a correlation between financial literacy and financial advice (Von Gaudecker 2015), but contradicts others who show that highly confident investors are less likely to seek advice (Kramer 2016). Advised investors, it seems, gain the opportunity for a higher return than that possible had they maintained more of their wealth in risk free assets, possibly achieved by advisors containing their clients' stress (Statman 2002), thereby reducing their perception of uncertainty which increases their likelihood to follow the advice (Bhattacharya et al. 2012). Conversely, overconfident advisors (Glaser, Weber, and Langer 2010) may be recommending high risk portfolios with high turnover and

lower risk adjusted returns (Bergstresser, Chalmers, and Tufano 2009), recommendations which yield high commission income for the advisor, but which may be unsuitable (Inderst and Ottaviani 2012) for their clients.

Overall, the risk taking behaviour of both men and women appears consistent with the judgements that they make of their stated levels of conservatism, and risk tolerance ratings are directionally concordant with the proportions of cash that they allocate to their investment portfolios. This validates the research design since investors 'mean what they say' by demonstrating behaviourally that which they indicated in the survey (Bertrand and Mullainathan 2004).

We reveal greater complexity in relation to the previously held assumptions about lower risk tolerance, knowledge and confidence among female relative to male investors. Although lower self-rated risk tolerance is replicated among women when comparing the full sample of participants, reflected in women allocating more cash to their portfolios than men, women consider themselves to be equally knowledgeable and confident about investing. These results speak to a substantial body of research which demonstrates that men are more likely to take risks than women in a wide range of activities (Bymes et al. 1999), with female conservative behaviour more pronounced in traditionally masculine domains (Bymes et al. 1999; Beyer and Bowden 1997). Despite the continued increase in wealth owned by women (Fraser 2015), the prevalence of female entrepreneurs and women in senior positions, financial investing remains a traditionally male domain with quantitative, rather than an intuitive, skills based criteria. It is therefore a field in which men are expected to more confident, have superior knowledge and a higher risk tolerance (Gustafson 1998) than women. In our study, wealthy women seem to live up to their stereotype expectation of being more conservative than men and to allocate a lower proportion of their wealth to risky assets. However, since we find that the wealthier groups of

investors, i.e., those with more than £250K in investable assets and those who are millionaires, are significantly more confident than the least affluent group, our results may indicate that confidence is a situational trait (Saccardo, Pietrasz and Gneezy 2017), linked also to the ownership of financial assets rather than simply the gender of the investor. The results of previous studies are therefore not necessarily generalisable to this wealthier set of individuals who may not have the same concerns about securing their financial future and who may feel confident simply because they are prosperous.

That the investors and financial advisors gender combination could be important for how investors perceive themselves and the investment decisions that they make has previously been overlooked in the finance literature. Researchers have instead focused on differences in preferences among women without considering how this may be linked to financial advice or indeed the gender of such advisor, a gap addressed in this study.

Perhaps the most revealing finding presented here is that the gender combination of investors and advisors is likely to bear relevance for female, but not male, investors. Our data provide evidence that the group of women who have female advisors have a higher risk tolerance, feel more financially literate and confident as well as make more aggressive investment decisions relative to all other groups, including men. However, on investigating the treatment effect, only the increased level of financial literacy is likely to be attributable to the female advisor gender. These results might imply that female advisors dedicate more time and effort into educating women than do their male colleagues. This speaks to a body of research that finds that advisors are more skilled in providing advice to highly financially literate individuals, and that those who are less knowledgeable shy away from seeking advice (Debbich 2015), and financial advice therefore is not a substitute for investment knowledge (Reyers

2015). Furthermore, as increased financial literacy is shown to reduce biased financial advice behaviour (Allgood and Walstad 2016) and the gender gap in the allocation to risky assets (Almenberg and Dreber 2015; Hibbert, Lawrence, and Prakash 2013), financial advice might be of particular importance to underinvested women. Yet, without investigating the effects of the investor – advisors gender combinations, previous studies do not examine the relative success in boosting financial literacy by male relative to female advisors. However, with the indications that female, relative to male, advisors make lower estimations of the financial literacy of equivalent investors (study one), it could be that this judgement bias renders female advisor more likely to spend time educating their female clients with the net results of raising the financial literacy among their female clients.

The results further indicate a preference for same gender advisors. Overall, 42% of the participating women engage female advisors whereas 86% of men have male advisors. With only 23% of the advisors in the marketplace who are female (Hannon 2014), women who engage female advisors have probably dedicated effort into their selection process. Therefore, this group of women may be more competitive and risk tolerant than women who engage male advisors or women in general (Saccardo, Pietrasz and Gneezy 2017). This supports the non-treatment effects identified for the confidence, risk tolerance ratings and investment decisions made by this group of women. This also presupposes that female advisors, perhaps because they work in a male dominated domain, are perceived to be less biased by female investors. Less conservative women may engage female advisors on the premise that their advisors will dedicate sufficient time into understanding their needs instead of directing them towards easy to sell lower risk investments (Wang 1994). It is possible that female advisors are attracting a new generation of wealthy women who do not behave according to their conservative stereotype and who choose to work with advisors who they believe are less likely to perceive

them through a gender biased filter. However, their expectations could be misjudged as female advisors are seen to be more likely than their male colleagues to attribute lower knowledge to female millionaires, and indications that women also receive lower risk portfolio recommendations if their advisor is female (studies one and two). Perhaps an assumption that their clients will behave according to their gender norms, (Hilton and Hippel 1996), predisposes advisors to observe stereotypical behaviour (Bussey and Bandura 1999) among their female clients. However, although advisors maintain their bias evident in their perceptual judgements (Deutsch 2007), the group of wealthy women who seek female advisors may have shifted their gender stereotypical behaviour, causing a mismatch between how they are perceived by advisors and how they perceive themselves. Female advisors therefore, might be underestimating the risk tolerance of female investors, both relative to their male colleagues (study one) and relative to wealthy women's actual risk taking preferences.

4.5.1 Theoretical Implications

The present study contributes to the small body of literature about financial advising by examining the interactions between financial advisors and wealthy investors (Hirshleifer 2015) and introduces findings about an understudied wealthy male and female demographic of investors who owns half of the wealth in the UK (Credit Suisse 2016). Unlike previous researchers who have explored differences in the characteristics between self-directed and advised investors, this study expands extant literature by investigating both the self-perception and investment behaviour of the two groups. Furthermore, without having information about the advisor selection preferences of investors, statistical matching techniques enabled analysis of the possible relationship between financial advice and investor self-perceptions. This study also extends the gender based analysis in study one by exploring how investor self-perception relates both to having a financial advisors and to the gender of that advisor. Importantly, the

results evidence that the blanket assumption of lower risk tolerance among female relative to male investors is too simplistic and does not hold across all groups of women.

4.5.2 Practical Implications

This paper highlights the need for institutions and regulators to place greater emphasis on understanding the impacts that they relationship between financial advisors and investors have on the investment behaviour of individuals and how they feel about themselves. This can contribute to insights into the potential conflicts of interest which may form part of increased levels of risk tolerance among advised investors. Such consideration need to include advisor gender to gain awareness of how this may impact on the fair treatment of individuals. The impact of a potential mismatch between how the advisors understands their clients' investment needs and the actual needs of the clients can severely impact the final wealth position of individuals. Institutions, who struggle to attract female clients, need to be aware that women prefer same gender advisors, and that a higher proportion of female (27%) relative to male (15%) millionaires do not engage financial advisors. To attract more female clients, particularly those who are wealthy, it seems that institutions need to increase their focus on addressing the current underrepresentation of female financial advisors.

4.5.3 Limitations and Future Research Directions

Although the sample consists of 500 wealthy investors in the U.K., a sample selection bias (Berk 1983) arises from the data collection method through distributing the survey to a subset of the investor population, i.e., wealthy investors who opt to take part in industry surveys. However, because an important aim of the research is to increase extant knowledge about wealthy investors, a demographic that is difficult to gain access to, such a method was useful and the study has high external validity as a result. More information about the

characteristics of the financial advisors would have been useful to deepen the analysis of the interaction effects that arise in the relationship between wealth investors and advisors.

As the results demonstrate a likely treatment effect from financial advice, future emphasis on investigating the advisor selection process is well placed to provide more thorough information about what makes investors seek out a certain advisor. The imperative finding that there might be differences in how investors perceive themselves depending on the gender of their advisor is a ripe area for future research. It is, furthermore, difficult to draw generalised conclusion based on the gender differences and similarities identified in this study. Considering that previous researchers have demonstrated a higher risk tolerance for men and women who adopt roles stereotypically associated with men (Lemaster and Strough 2014), it would have been beneficial to obtain information about the education level and employment type of investors to gain more insight.

It would be meaningful for future researchers to continue to examine the role that perceptions and judgements play for investment decision making which involve relationships between financial advisor and investors. Researchers might want to consider all three relational dimensions, i.e., 'How investors perceive themselves', 'How advisors judge the needs of investors' and 'How investors feel understood by their advisor'. A perceptual mismatch could lead to investment advice and portfolios that are based on incorrect assumptions and thus impact on the amount of wealth people have upon their retirement.

4.6 CONCLUSION

By examining the self-perception of advised and self-directed investors for an under researched wealthy demographic of investors, this paper contributes to the sparse literature

about financial advising and wealthy investors and provides new insight into the interactions between investors and advisors. The results show that, although investors who seek financial advice are more conservative than those who manage their own investments, the interaction with the advisors is likely to enable investors to become more risk tolerant and reduce the cash allocations in their portfolios. Findings presented also demonstrate that, although wealthy women exhibit lower risk tolerance overall, they are equally confident and knowledgeable about investments as men. Furthermore, the self-stated risk tolerance of the group of women who have female financial advisors surpasses that of women whose advisors are male and that of male investors. This group of women also make less conservative investment decisions. The results challenge the assumption of a lower risk tolerance amongst women and highlight the importance to increase the focus on the relational interaction between investors and advisors.

Chapter 5

Discussion and Conclusions

5.1 DISCUSSION

The three studies in this thesis entitled "Wealthy Investors and Financial Advisors: Perceptual Variations, Portfolio Recommendations and Gender Differences" considered social cognitive judgements in the interactions between financial advisors and wealthy individual investors. Concepts from social psychology and attribution theory were used to illustrate that there might be differences in how advisors perceive investors because of both their own gender and that of the investors (study one). This was extended to investigate investor self-perceptions and how this relates to their own gender, and also to the gender of their advisors (study three). A further extension to study one considered how the investor variables in addition to gender, as well as the personal characteristics of financial advisors, contribute to the social cognitive judgements that advisors make of investors. The vignette methodology, appropriated from the social psychology literature, administered in studies one and two provided a useful means to access information about the social cognitive judgements that advisors make of investors and extended the presence and relevance of psychology in the finance literature.

5.1.1 Social Cognition and Financial Advice

Few disagree that individuals are better off if they invest an appropriate proportion of their wealth in optimised portfolios which generate the highest return for their acceptable level of risk (Markowitz 2010; Merton 1972). Nonetheless individual investors both misjudge their own needs and make subjective perceptual decision about available investment options (Von Gaudecker 2015) to the detriment of investment returns. More recently, researchers have demonstrated that professional financial advisors also provide ill-judged recommendations to investors (Inderst and Ottaviani 2012), and do not correct the biased decisions made by

investors (Mullainathan, Noeth, and Schoar 2012) and therefore portfolios remain suboptimal. However, with the exception of the investigative work commenced in this thesis, researchers have not yet explored the role that social perceptions have for how both investment decisions and recommendations are made.

There are affinities between behavioural finance and social psychology. Theorists from both fields are concerned with how people allow biases to interfere with their judgements, decision making and behaviour. Behavioural finance theorists demonstrate how individuals, when faced with risky decisions, deviate from ideal, i.e., rational and optimised investment decision making (Tversky and Khaneman 1986). Social psychology theorists show how people make sense of the behaviour of others by making causal explanations as attributions for their behaviour (Harvey et al. 2014). Investors make perceptual errors when evaluating investment decisions and people in general, when observing others, make attributional errors (Jones and Nisbett 1972). The resultant effects are the potential for biased investment decisions and biased judgement of the behaviour of others. Biased decision making is an important consideration because investors are worse off as a result of investing in suboptimal portfolios with poor risk return profiles (Barberis and Thaler 2003). Biased perception is important because it can contribute to stereotyping and biased evaluation (Wyatt and Silvester 2015) and alters behaviour towards others.

However, behavioural finance researchers have not yet considered the role that social cognitive judgements have for investment advice and decision making. Social perceptions are important as not all investment decisions are made in isolation, but rather through discussions with financial advisors who impart investment information and recommendations whereby an agency type relationship is formed between advisors and investors (Sappington 1991). By

linking social psychology to literature about financial advice, this thesis discussed how the attributions that are created within the investor - advisor relationship are important for a) the inferences that advisors make of investors' needs, and b) the perceptual judgements that investors make of themselves. The research demonstrates that such cognitive judgements relate to personal characteristics and group differences such as gender.

Therefore, akin to how the literature about financial decision making behaviour has benefitted from an increased understanding of the psychology of investing (Nofsinger 2005), contributed by behavioural finance researchers, the financial advice literature will benefit from further insight into human judgement and decision making behaviour insofar as this relates to the interactions between investors and advisors. Therefore the work commenced in this thesis has high relevance to this literature and ultimately contributes to enhancing our current understanding and thus increased the R squared as suggested by Thaler (2016).

5.1.2 Study One: "Millionaire Investors: Financial Advisors, Attribution Theory and Gender Differences"

A review of the literature resulted in finding persistently reported lower knowledge, confidence and risk tolerance among female relative to male investors. The review also illustrated that undergraduate students judge fellow female students to be less risk tolerant than they do male students (Daruvala 2007), and that brokers with clients with US$25,000 to invest both allocate less time and recommend lower risk investments to female than male clients (Wang 1994). This was coupled with how attribution theorists find that observers make different judgements, depending on the gender of those that they observe, and tend to judge men to have more control or confidence over their actions than do women (Weiner et al. 1971).

Hence the study hypothesised that: 'Financial advisors will rate female millionaire investors to be less knowledgeable about investments than male millionaire investors' (hypothesis 1), 'Financial advisors will perceive female millionaire investors to have less control over their investments than male millionaire investors' (hypothesis 2) and, 'Financial advisors will allocate lower risk portfolios to female millionaire investors relative to male millionaire investors' (hypothesis 3).

Hypotheses 1 and 3 were rejected, since financial advisors were found to make equal judgements of the knowledge and risk suitability of male and female millionaires. In contrast, they judged women to have less control over their investments relative to equivalent men with significance at the 1% level in support of hypothesis 2. That advisors attribute lower levels of control to female investors at the same time as they recommend that they invest in equally risky investments might be problematic. These advisors might be conflicted by a belief that female investors are more dependent on them and therefore more likely to follow their recommendations. Given that perspective, in their quest to increase their fee income, these advisors may be inclined to make higher risk recommendations. However, the results might also suggest that advisors understand this increased dependence as trust and therefore feel more confident in making recommendations that they believe are suitable for investors. After all, the literature demonstrates how women are underinvested relative to men (Sundén and Surette 1998) and might therefore benefit from an allocation to higher risk investments to better their future return potential.

Controlling for the gender of the advisors provided indications that female advisors attribute less knowledge to female millionaire than their male advisor colleagues (significant at the 5% level) and that female advisors are more likely to provide lower risk

recommendations to female millionaires, while their male colleagues keep their recommendations consistent regardless of investor gender (significant at the 10% level).

These results suggest that perhaps more meaningful findings are derived by controlling not only for the gender of the investor but also that of the advisor. However, since the sample contained a relatively small number of female respondents, 27 compared to 102 male, the female advisor / female investor ratings only had 114 observations, so it was difficult to generalise based on these findings. It is possible that, if the sample had been larger, these perceptual differences identified when controlling for both the gender of the investor and advisor would have been more marked. Despite these limitations, the results suggest that the perceptual judgements that advisors make of millionaire investors are the lowest for the female advisor / female investor combination, making the investors – advisor gender combination an important deliberation for future researchers.

5.1.3 Study Two: "Variations in Investment Advice Provision: A Study of Financial Advisors and Millionaire Investors"

This study extended the analyses in study one. This was possible since the vignettes contained a range of variables to describe the millionaire investors at the same time as the survey collected personal data about the financial advisors. Thus, the methodology enabled analyses of data which controlled for variables, including gender so that the effects of both investor and advisor variables could be isolated. The study explored two research questions: 1) 'How do the personal characteristics of millionaire investors relate to the evaluative judgements that financial advisors make of the investment knowledge, control and risk tolerance of millionaire investors?' and 2) 'How do the personal characteristics of financial advisors relate to the evaluative judgements that they make of the investment knowledge, control and risk tolerance of millionaire investors?'

The findings emphasise the fact that advisors on the whole make reasonable judgements and take into account the holistic view of the variables included to describe the investors in the vignettes when making their recommendations. Notwithstanding this, it was immediately evident from the within-vignette variation in ratings that not every advisor made the same perceptual judgement about identical investors. The analyses which followed showed that the personal characteristics of the advisors are related to their portfolio recommendations. Advisors it seems, inform their judgements not only on their clients, but also on bias which may result from unconscious cognitive processing. Importantly the study also revealed that unmeasured advisor variables, i.e., fixed effects, were as impactful as investor variables in influencing portfolio recommendations.

The careful selection of the vignette variables meant that advisors found nearly all necessary information about the investors needed to make an informed recommendation and the fixed effects approach only slightly increased the R squared. The same is not true for advisor variables. The information collected about advisors in the survey was insufficient to derive an explanation for the ratings. However unmeasured advisor variables, i.e., fixed effects, are seen to make a substantial contribution to the R squared for knowledge, control and recommended portfolio, with their recommended allocation to risky assets the most striking result. Advisor fixed effects contribute equally to the portfolios that advisors recommend to a given investor as do the personal characteristics, i.e., investment needs, of that individual. These results are important as they challenge current beliefs that advisors make recommendations that are suitable for their clients based on the conclusions they draw from what they observe about their clients. However, with such a low explanation derived from advisor variables, (i.e., age, gender, years' experience and existing client base) the research design did not adequately answer what it is, in addition to investor characteristics, that advisors

draw from when making their recommendations. These results combined with those of Foerster et al. (2017) and Linnaimaa, Melzer, and Previtero (2017) demonstrate that advisors inform their recommendations on their personal attributes (study two), as well as the risk allocations and trading patterns in their personally held portfolios (Foerster et al. 2017; Linnaimaa, Melzer, and Previtero 2017). Yet, since fixed effects were important contributors in all three studies, there is a great deal more to learn about financial advisors and what motivates their recommendations.

5.1.4 Study Three: "Financial Advice, Gender and Wealth: Risk Tolerance, Knowledge and Confidence in Advised and Self-Directed Investors"

Study three shifted the focus from the social cognitive judgements that advisors make of investors to consider how investors perceive themselves and is conditional upon the gender combination of investor and advisor. The literature review, which preceded study one, resulted in determining the three dependent variables: knowledge, confidence, and risk tolerance, for which previous researchers have consistently reported lower self-rating by women relative to men. However, as extant literature has concerned laboratory studies, studies which include student samples or investors usually with less than US$50,000 to invest (e.g., Agnew et al. 2008; Grable 2000; Jianakoplos and Bernasek 1998; Sunden and Surette 1998), this study tested if such findings hold for men and women who are substantially wealthier.

To acknowledge that, this study investigated self, rather than social judgements made by others. It used confidence instead of control, the former being a more familiar measure for respondents as well as one which is more commonly used in the finance literature (e.g. Barber and Odean 2001). Then, to avoid making the assumption that investors are familiar with portfolio construction and asset allocation, the survey measured self-perceived risk tolerance

by asking investors to rate their risk tolerance on a five point scale. Knowledge, which was seen to be the most straightforward measure in the previous study and which derived the highest R squared, was used to measure financial literacy. This study extended the findings from study one which indicated that the investor – advisor gender combination might be important for social cognition. The richness of the data was such that it contained both self-directed and advised investors, thus allowing for analysis of differences in the self-perception of self-managed and advised investors as well as the gender combination of investors and of advisors.

The study explored three research questions: 1) 'Are there variations in the risk tolerance, knowledge and confidence between wealthy self-directed and wealthy advised investors and are such differences attributable to the financial advice treatment?', 2) 'Do wealthy women perceive themselves to be less risk tolerant, knowledgeable and confident about investing compared to wealthy male investors?' and, 3) 'Are there variations in the risk tolerance, knowledge and confidence between wealthy male and female advised investors and are such differences attributable to the investor-advisors gender combinations?'

The findings across the whole sample demonstrated that female investors think that they are equally as knowledgeable and confident as their male peers, but that they perceive themselves as having lower risk tolerance, as demonstrated by the fact that women hold 5.5 percentage points more cash in their portfolios than men. These results also challenge the blanket assumption of lower financial literacy among women (Boisclair, Lusardi and Michaud 2017) and the links made between a high level of knowledge and increased attention to retirement planning and stock market participation with gaps in financial literacy among women being used to explain their lower risk tolerance (Montford and Goldsmith 2016). Instead this study demonstrated a much higher correlation between self-perceived investment

knowledge and confidence (*rho* = 0.72) than between knowledge and risk tolerance (*rho* = 0.479), suggesting that investors who are knowledgeable feel much more confident about their ability to make investment decision.

However, neither knowledge nor confidence appeared to be influenced by receiving financial advice. Advised investors in this sample have a higher risk tolerance than those who self-manage. A tolerance that is indicated to be situational, rather than innate, as the matching analysis suggests a likelihood that it is the financial advice 'treatment' that pushes an otherwise more conservative advised-investor to exceed the risk tolerance of their self-directed peers. Advised investors are also seen to decrease portfolio cash allocations with advised investors holding 10 percentage point less in cash then self-directed investors. This is good news for advisors who increase their fee income. It might also be positive for investors who are encouraged to invest in more sophisticated assets which carry greater risk but also have the potential to generate higher returns. Notwithstanding this, advisors might be taking advantage of their position and encourage increased risk taking to better their own economic utility (Inderst and Ottaviani 2012).

Controlling for both investor and advisor gender did not generate any variations in male ratings, but advisor gender seemed to be meaningful for female investors. In this sample women reported higher knowledge, confidence and risk tolerance if the gender of their advisor is female. Women's self-perception, in the female advised category, exceeded that of men but not so if their advisors was male, with significance at the 1% level. Subsequent matching analysis indicate the likelihood that advisor gender does not contribute to higher self-rate confidence or risk tolerance but that having a female advisor raises the financial literacy level for their female clients. The higher risk tolerance for the female / female combination is mirrored by these women holding 8.5 percentage points less cash in their portfolios and a

higher correlation between financial literacy and risk tolerance (*rho* = 0.665) relative to women with male advisors (*rho* = 0.488).

5.1.5 Investment Advice Process: Perceptual Influences

The findings in this thesis demonstrate that financial advice is influenced by socially formed perceptions. These perceptual influences in the investment advice process are influenced by 1) The observed personal characteristics of investors, 2) the observed personal characteristics of advisors, 3) the unobserved personal characteristics of investors, and 4) the unobserved personal characteristics of advisors.

That fixed effects are much larger for advisor characteristics than investor characteristics is not surprising since there is an established process which evaluates the suitability of investment recommendations against the personal characteristics of investors as recorded in investment questionnaires (Rosen and Wu 2004) which record such characteristics. However, the investor variables observed in study three generated relatively low R squares, which suggests that unmeasured investor attributes may be more important contributors as to how individual investors understand their own confidence, knowledge and risk tolerance than those that were collected in study.

On the contrary, that advisor characteristics matter for portfolio recommendations and indeed for investors' self-perception is a novel finding, but the high contribution derived from advisor fixed effects suggest that there is much more to learn about financial advisors. The journey to discover which personal characteristics they draw from when making cognitive judgements about investors has commenced with the research presented in this thesis. As it is likely that advisors themselves are unaware of how they form these perceptions, future

researchers and institutions alike will need to continue this work to gain a holistic view of how investment advice is shaped.

5.1.6 Gender and Perceptual Mismatches

The gender bias identified in study one may be a result of ingrained beliefs that women have less control over their actions in traditionally male dominated arenas. The results from both studies one and three further suggest that there might be a perceptual mismatch between how female investors judge their own investment confidence, knowledge and risk tolerance and how this is judged by female advisors. Study three demonstrates that female investors who have female advisors are more confident, knowledgeable and risk tolerant, both relative to women with male advisors and to the male investors in the sample. These women might select female advisors as they expect to feel more understood and experience less biased judgements. Yet, as seen in studies one and two, female advisors are likely to attribute the lowest knowledge, control and risk tolerance to female investors. Indications, therefore, may be that female investors incorrectly expect that female advisors will exhibit less biased judgements than male advisors, since their own preferences are not what are stereotypically expected from women. The result is a mismatch in self and social perception.

Perceptual mismatches are described by attribution theorists as a disagreement between the explanations that observers make of the behaviour of others and the explanation that people make of their own behaviour (Malle 2006). It can be that the judgements that both investors make of themselves, and the judgements that advisors make of them, are influenced by stereotypes, i.e., beliefs about certain groups (Sherman et al. 2013), including the group they belong to. Since stereotypes reflect the attributes of both the observed and the observer (Campbell 1967), people become predisposed to expect to witness stereotypical behaviour

(Hilton and Hippel 1996), a predisposition which strengthens the stereotype (Bussey and Bandura 1999) and the stereotypical behaviour of the actor. Stereotype expectations and behaviour become deep-rooted reactions that occur without people's awareness with mental processing stemming from the unconscious mind (Nisbett and Wilson 1977).

Generalised ideas about that which is male behaviour and that which is female become a gender stereotype (Deaux 1987), developed through persistent attributions of, for instance, expectations of women to exhibit nurturing and conservative traits and men to have more aggressive traits. Stereotypical behaviour is demonstrated by how women are more conservative than men, differences which are more pronounced in traditionally masculine and quantitative domains (Beyer and Bowden 1997; Bymes et al. 1999). Due to their long existence, gender stereotypes are not easily shifted, but researchers find that explicit reverse messaging (Greenwald et al. 2002), i.e., portraying women as strong and powerful (Blair, Ma, and Lenton 2001), finds its way into the unconscious mind (Epstein 1994) to challenge previously held stereotypical assumptions.

The findings presented in this thesis lend support to the view that gender differences are both fluid and subjectively perceived, and are thus created and maintained within social interactions, rather than being innate personality traits. This postulates that the cognitive expectations that maintain gender based perceptual judgements can be altered (Deutsch 2007), to reverse that which is expected to be male and female behaviour. The perceptual mismatches identified within the female / female gender combination of advisors and investors (studies one and three), could be indicative of how some wealthy women have shifted their gender stereotypical behaviour. However female advisors appear to be holding on to gender stereotypes, thus contributing to biased perception of female investors. If as, according to Blair

and Banaji (1996), socially constructed gender based stereotypes can be reduced if those involved in the social interaction have self-interests in their reduction, then both female investors and financial advisors stand to gain. Female investors would gain by increasing their risk tolerance, as investing in assets which carry higher risk would increase their potential for future growth. Financial advisors would benefit from increasing their risk tolerance expectations as higher risk investment products generally carry higher fees than those for low risk investments.

The findings in this thesis challenge the blanket assumption that women have a lower willingness to take financial risk relative to men, expressed in more conservative choices in lottery experiments (Dohmen et al. 2011; Agnew et el. 2008) and in retirement portfolios (Sunden and Surette 1998). Instead, the findings indicate that this might more true for women who observe female investors. This follows the findings by Nelson (2015), who following a review of 35 articles which document gender based differences in risk tolerance, concluded that increased focus on the interpretation of the data reduces the gender gap in risk tolerance. It seems that academic researchers, akin to advisors, expect to find conservatism among women.

Male advisors however do not exhibit the same gender biased perceptions. They agree with their female colleagues that women have less control over their investments, but do not judge women to have lower financial literacy and nor do they recommend lower risk portfolios to female millionaires. Similarly, there are no innate differences between the preferences of male investors who seek male or female advisors (study three) and advisor gender does not influence their confidence, knowledge and risk tolerance. Furthermore, there is an absence of a perceptual mismatch between the self-perceptions (study three) and the observed judgements

(study one). This is in line with attribution theorists who find that observers tend to judge men to have more control or confidence over their actions and abilities (Silvester and Koczwara 2012; Weiner et al. 1971). Therefore, these findings indicate that traits such as confidence, knowledge and risk tolerance are more stable among male relative to female investors in their interactions with others. However, having an advisor is shown to increase the risk tolerance for both male and female investors. It is possible that acting through agents enables investors to retain a favourable view of their decision making (Hamman, Loewenstein, and Weber 2010) as they partially abolish the responsibility for their actions by delegating to financial advisors.

5.1.7 Introspective Traits and Perceptual Judgements

Study two illustrates that advisors allow other noise, i.e., themselves, to interfere with their recommendations, findings which suggest that advisors do not make objective and perhaps not accurate judgements of investor needs. Rather, these advisors also draw on introspective attributes (Pronin 2007), which the unaware advisor might not be conscious of.

It is already problematic that advisors vary their investment recommendations depending on their own age, gender and the composition of their client base. Further complication is added by the prominence of unmeasured and perhaps unknown attributes that are evident in the high R squared derived from advisor fixed effects. Thus, advisors may not be aware that they are making biased perceptions, nor do we understand enough about how these biases are formed. These findings suggest that, in order to understand how advisors provide advice, information of the measurable characteristics and perhaps also unconscious factors need to be derived and analysed. Unconscious bias ought to be considered both with regards to how it relates to the attributes of the observed, and also how it is influenced by the introspective attributes of financial advisors. The findings presented in study two of this thesis make an original contribution to the finance research literature and future researchers are

encouraged to increase the extent to which unconscious biases are recognised (Ross 2014) and leveraged in situations when investors rely on financial advice.

However, not all investment advice involves human interaction. The financial advice industry is experiencing a growth in robo advisors (Tertilt and Scholz 2017). Robo advisors are algorithms that estimate suitable investments and make investment advice more accessible and potentially less biased. Computers with their distinct advantage of the absence of social interaction to influence perceptions, have been found to make better judgements of people's personalities than human observers (Youyou, Kosinski, and Stillwell 2015). Robo advisors can be more transparent than human financial advisors (Tedesco 2015) and may exhibit less bias through the removal of emotions which may contribute to judgements (Fisch, Laboure, and Turner 2017). Nonetheless robo advisors are only as good as their programming and therefore dependent on that being unbiased. The organisations who create the robo advisors wish to increase product sales and therefore agency conflicts may persist as fixed effects and hence contribute to biased 'robo' recommendations. Furthermore, robots are unlikely to be able to represent the full market of available investment products and are, therefore, not independent. Regardless of how advice is obtained, investors may need to be wary that recommendations might be biased.

5.1.8 Theoretical Implications

This thesis makes both methodological and theoretical contributions. The vignette methodology introduced to finance research in studies one and two was useful to elicit the judgements (Schoenberg and Ravdal 2000) that advisors make of their millionaire clients and the portfolios that they recommend them to invest in. The methodology allowed for isolation of the impacts of the characteristics of both the investors in the vignettes, and for the effects of the financial advisors without the inference of other noise factors. It also enabled the creation

of identical female and male investors by switching the gender (Schein, 1976, 1996). Controlling for gender in this way made it possible to measure if advisors made different attributions for equivalent male and female investors. Thus, this methodology enabled innovative analysis of the relationship between the portfolios that advisors recommend to millionaires and the personal characteristics of not only the investors, but also the advisors.

Study one introduces attribution theory from social psychology to the finance field to study social cognition, an area previously overlooked in finance. Attribution theory informs us that people form attributions, i.e., make causal explanations, for the behaviour of others whom they observe (Harvey et al. 2014; Heider 1958; Weiner 1985; Wong and Weiner 1981). The social perceptions that advisors make of millionaire investors are elicited through how the advisors interpret the wealthy investors in the vignettes. The results underpin previous findings in attribution theory where both male and female observers perceive female millionaire investors to have less control over their investments. Thus, attribution theory can help to inform and expand existing finance theory by showing that social perception matters when financial advisors judge the needs of millionaire investors, potentially influencing the investment advice provided and ultimately how wealth is invested.

Study two demonstrates how advisors, when faced with portraits of investors, partially rely on rational portfolio theory, but also that their recommendations are filtered through a behavioural bias which suggest the possibility that advisors project their own preferences onto investors. Such findings challenge the previously held assumptions that portfolio recommendations, in situations where investors rely in information and recommendations from professional financial advisors, are based on a risk and return analysis of the investors. This important contribution to literature has implications for future financial advice researchers.

Researchers will need to consider the influence that not only investor characteristics have on risk and return analysis, but also how advisor attributes contribute to portfolio selection.

The third study contributes to the literature by evidencing that gender differences in risk tolerance are situational rather than universal, i.e., are not persistently present for all women. Wealthy women are equally confident and knowledgeable as men, with a small lower risk tolerance visible only when age is included in computations. The analysis of the gender combination of investors and advisors is unique and important as it highlights different combinations of biases related to the gender of both advisors and investors. That women who have female advisors are more confident, knowledgeable and risk tolerant to investment risk adds a new perspective to the literature about gender differences in the finance literature. Lastly the study contributes to the literature about financial advice by demonstrating that wealthy investors who seek advice are less risk tolerant than those who self-manage. The results from propensity score matching further indicate the likelihood that it is the interaction with the financial advisors that augments their risk tolerance so as to exceed that of self-directed investors.

Furthermore, all three studies are of wealthy and millionaire investors and their advisors and thus introduce a new wealthier demographic to the literature about financial advice. As millionaires own 24% of the household wealth in the UK (Credit Suisse 2016), rising to over half of the country's wealth when households with over £100,000 in financial assets are included, the investment decisions made by and investment advice provided to this demographic have powerful economic and societal consequences.

5.1.9 Practical Implications

The research in this thesis has implications for the wealth management institutions, financial services regulators and investors who seek to engage financial advisors.

The studies present independent accounts about the investment advice provision to wealthy and millionaire investors. It is encouraging that, as presented in study two, advisors apply portfolio theory and metrics and thus seem to make appropriate use of investment questionnaires to establish a risk return profile against which they evaluate suitable portfolio recommendations which fit with investors' needs and characteristics. It is also reassuring that investors, when evaluating their own risk tolerance and determining their allocations to risk free assets, make more conservative judgements and investments decisions as their holding period decreases, i.e., they become older, and that investors who are wealthier take more risk (study three). Notwithstanding this, there are four key points for the industry to consider.

(1) Stakeholders need to increase how well they understand financial advisors. In their role, advisors have the opportunity to influence how wealth is invested. The wealthier their clients, the more impactful their influence is in economic terms. That advisors allow their own characteristics and fixed effect to influence their advice (study two) is an important finding. The industry today places its sole focus on clients' needs, with its assumptions built on the premise that advisors follow metrics and apply portfolio theory to the decisions that they make for investors. It is imperative that the regulator reflects on the fact that advisors seem to consider how they would invest if they were the client portrayed in the vignette. This is because the consequence is that an identical investor receives different portfolio recommendations depending on who their advisor is. Understanding and mapping advisors' characteristics and intrinsic motivations against the advice they provide would be a useful exercise for institutions.

Such findings can feed into an improvement of the current investment questionnaires and the investment suitability process.

(2) The results from study three address the underrepresentation of female financial advisors with the key message that institutions need to invest in strategies to recruit more women. The study provides evidence that women, particularly young millionaires, have a strong preference for female advisors. Over 50% of women millionaires engage female advisors, but with only 23% of advisors who are female, institutions need to make it easier for women to find them. The economic benefits of employing more female advisors may be vast as women hold 8.5 percentage points less in cash if their advisor is female than male. This implies that the profitability for accounts with female client / female advisor gender combination may be greater than female client / male advisor accounts.

(3) Internal training needs to address the, possibly misunderstood, gender specific stereotypes. It seems that wealthy, successful women have moved on from previously held assumptions that they are less confident, have lower financial literacy and have an overall lower risk tolerance relative to men. There are within-gender variations evident by how certain groups of women in this sample, i.e., those with female advisors, make higher self-ratings than men. However, if the findings in study one hold, female advisors have not yet shifted their gender specific biased assumptions and apply more bias than their male colleagues. This mismatch needs to be addressed and presents development opportunities. Institutions need to encourage female advisors to increase their awareness of unconscious bias so that they do not expect female investors to live up to outdated stereotypes and address potential deficiencies in the confidence of female advisors.

(4) Male advisors are seen to be applying less biased judgements than their female colleagues and make equally risky portfolio recommendations to equivalent female and male millionaires. However, women appear to have a preference for female advisors (study three) and those who seek male advisors have a lower risk tolerance, exhibited through larger cash holdings in their portfolios. Seemingly despite their willingness to encourage higher risk investments, male advisors do not manage to increase women's risk tolerance. This might suggest that women do not trust male advisors as much as they do female. Thus, the development opportunity for male advisors may lie in an increased understanding of how they can become more approachable to female investors and addressing why it is that women might find it more difficult to follow their advice. Female investors also need to address their gender related bias and gain confidence in male advisors.

5.1.10 Limitations and Future Research Directions

There are several interesting areas for future research and a few noteworthy limitations of the three studies presented in this thesis.

The successful application of vignette methodology to elicit judgements and portfolio recommendations to millionaire investors in studies one and two argues in favour of its replication in future studies. Finance researchers can use the vignette methodology to investigate the judgements that advisors make of investors of other investor demographics, e.g., those who are less affluent, from other geographical and cultural locations, and how these relate to the advice they give. This application could enable analysis of whether millionaires are judged differently and receive different portfolio recommendations than those who are less prosperous. Afterall, the wealthy do not have the same financial concerns as less financially fortunate individuals who seek to secure their retirement. Furthermore, its application is not

limited to investment advice but is also pertinent to other areas in finance. For example, they can be used to investigate how loan officers who approve credit applications for businesses (Wilson et al. 2007) evaluate the creditworthiness of business owners.

It was useful to have ten vignettes to describe investors, but it was both difficult to source a sufficient number of financial advisors and to succeed in having them complete the whole questionnaire. It is evident by the number of observations tailing off from 129 for the first vignette to 109 for the last vignette, that not all respondents rated all the vignettes. As one of the advisors who was part of the pilot process commented: "It took me 15 minutes to complete the survey and that is a long time for a busy banker." Another challenge was to construct the vignettes to portray realistic examples of millionaires in a way which also included sufficient information for advisors to make judgements of their investment needs and to derive a suitable risk recommendation. This was greatly helped by the portfolio construction team at a major UK bank who validated the information contained in the vignettes as well as the useful feedback from the advisors involved in the pilot process. The analysis in study two confirms that the included variables provided as much explanation as vignette fixed effects, emphasising the importance and success of the careful construction of the vignettes.

The three dependent variables; control, knowledge and risk tolerance were derived from surveying the literature about gender differences which consistently reported lower confidence, financial literacy and risk tolerance among female, relative to male investors. Financial literacy appeared accessible to advisors and was straightforward to portray by including previous investment experience in the vignettes. As study one drew on attribution theory where control is an important measure for gender differences for those who observe men and women in social situations, control was used instead of confidence. However, the control measure may have

been more difficult for advisor to assess than confidence which is a more familiar measure. Subsequently the measure used in the third study to measure self-perceptions was changed to confidence.

Several ways to provide a measure for advisors to judge the appropriate allocation to risky assets were evaluated. Since portfolio construction is at the heart of the advisory process, and this is something that advisors are familiar with through qualifications and the existence of a benchmark portfolio for the wealth management industry in the UK, this measure was selected. This did not provide any difficulties for advisors, but it is important to acknowledge that asset classes may have a different risk meaning depending on who the observer is.

A limitation to the design is that not enough information was collected about the financial advisors. Future researchers will benefit from collecting more detailed information about advisors' personal characteristics and other information, e.g., advisor's own risk tolerance and factors about their intrinsic motivation to increase the explanatory power.

The findings that not every advisor recommends equal portfolios to the same investor provides ripe territory for future research to explore how known and unknown advisor attributes contribute to social cognitive judgements in the investment advisory process. Social cognitive judgements may be influenced by a range of factors, internal or external to both the investors and advisor, something which to date has received little attention from researchers. Therefore, future researchers can focus on revealing what is behind the advisor fixed effects. For example, links to agency conflicts caused by mismatches between the advisor's and the investor's own self-interests are important since conflicted advisors may recommend riskier portfolios that attract higher advisor incentives.

Although the survey methodology in the third study is not novel to finance, the access to such a wealthy demographic of investors is difficult and possibly therefore previously overlooked in the literature. Since the survey was commissioned by a wealth management research firm, the author did not have full control of the survey content and distribution. This aspect limited the types of questions that could be included and the composition of the questions. Yet, this limitation was outweighed by access to a large and representative sample of wealthy UK investors, to provide important contributions to what is known about how the rich perceive themselves in situations of investment advice.

However, it would have been beneficial to have more information about the investors, e.g., profession, education, source of wealth, to increase the scope of the analyses. Information about the how the investors selected their advisors and how systematic this process might be. Such information would have been interesting, contributing to the causality analyses and enhanced the ability to generalise based on the findings. The complexity which arises from how wealthy investors might engage several dedicated financial advisors is furthermore not considered in this study. Other studies might examine this as well as the depth and length of the relationship between the advisor and the investor.

By focusing on social cognition and financial advice to wealthy investors, this research does not address areas of wealth inequality or specific investment strategies such as tax avoidance schemes and offshore investments. Clearly the rich are fortunate and own a disproportionate amount global wealth with socioeconomic consequences. Nor does it consider geographical differences, culture, race or religion. Furthermore, the thesis currently does not discuss issues of ethics and integrity surrounding the financial advice, and focuses solely on

behavioural and psychological aspects of financial advice, all which are interesting and ripe areas for future research.

These studies pave the way for future research into how the relationship between financial advisors and investors contributes to how investment decisions are made. Future research which analyses how much investors trust their advisors and what determines how well they follow the advice they receive is well placed. Mismatches between self-perception and social perception (Weiner 2000) may cause biased judgements both on behalf of advisors and investors and lead to unsuitable portfolio recommendations and investment decisions. A future influential study would consider all four possibilities for social and self-perception that can occur in interactions between investors and advisors and which can influence portfolio recommendations. 1) Advisor perception of the investor, 2) Investor self-perception 3), Investor perception of the advisor and 4) Advisor self-perception. Within this, the least known area is how advisors rely on their own attributes when making judgements of others. Some of these may be correlational and more research is needed which explores the causality. This is because perceptual mismatches could lead to investment advice and portfolios that are based on incorrect assumptions and are therefore unsuitable investment advice.

5.2 CONCLUSION

The three studies in this thesis explored the social cognitive judgements that financial advisors make of the investment knowledge, control and risk tolerance of millionaire investors and how wealthy individual investors perceive their own knowledge, confidence and risk tolerance and how this relates to financial advice. Using vignette methodology studies one and two demonstrate that advisors may make different perceptual judgements about millionaire investors, depending on both the gender of the investor and that of advisors. Furthermore, the findings suggest that advisors inform their portfolio recommendations not only on the needs of

the investors, but also on their own personal characteristics as measured in the survey, as well as other unknown factors, fixed effects. This research demonstrates that we do not know enough about how financial advisors apply themselves to the portfolio recommendations that they make, but that understanding more is important. Furthermore, the research challenges the blanket assumption of a lower risk tolerance amongst women. The results demonstrate a risk tolerance that exceeds that of men for the group of women who have female advisors. The findings have implications for academic research, the industry and the financial regulator. Through increasing the understanding of how social cognition is formed in the interaction between advisors and investors, advisors may give better informed advice and investors might benefit from increased diversification and higher portfolio returns.

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APPENDICES

Appendix I. The Vignette based Questionnaire

This is the vignette questionnaire used in studies one and two. The questionnaire was administered online with a link sent to respondents via email.

Investment Advice Questionnaire

Thank you for completing this questionnaire. The first part requires some information about you to help us analyse the data. The second part consists of 10 short client scenarios, with information about potential (fictional) clients. Following each scenario, you are shown the asset allocation of 7 different investment portfolios and we ask which portfolio you would recommend. There are no right or wrong answers: we are just looking for your opinion. By completing this anonymous questionnaire you agree that we can use this information as part of a PhD research study, which may be published.

1. How old are you?
Age

2. What is your gender?
Male
Female

3. What is your current role?
Private Banker
Relationship Manager
Investment Advisor
Investment Counsellor
Independent Financial Advisor
Other role (please specify below)

4. For how many years have you been providing investment advice?
Number of years

5. Approximately how many clients do you have?
Number of clients

6. Approximately what proportion of your current client base has investable assets of (or £ equivalent):
% of clients with more than $30m
% of clients with between $1m and $30m
% of clients with between $100,000 and $1m
% of client with less than $100,000

The 10 vignettes then followed. After each vignette respondents were asked three questions. The gender in the vignettes was changed according to the methodology described in studies one and two. See Table 1, study one.

Vignette 1
Seven years ago, following a successful banking career Adam, 45, set up a hedge fund together

with his business partner Carol. The business has had its ups and downs, but they are now making healthy profits. Adam managed to draw a salary of £125,000 last year, but spends at least £230,000 per year. He dates regularly but isn't interested in settling down or having children. Adam knows exactly what he wants to invest in and argues over the fees you are charging. You believe he is worth about £8 million and may consider investing up to £3 million. He intends to retire at 50 to pursue his interest in vintage cars.

Vignette 2
Stella, 42, worked for a very successful internet business, which paid bonuses of £3 million over a 5 year period. She is now spending about £100,000 per year enjoying life and wants to continue doing so. She has come to see you as her boyfriend recommends that she invests at least half of her money to make sure she doesn't outlive her savings. She used to dabble in stocks in the past and has a corporate pension portfolio worth about £500,000. She expresses an interest in leveraged investments but also says she doesn't want to take too much risk. Stella and her boyfriend may consider a family but are undecided.

Vignette 3
Edward, 74, has portfolios with 3 private banks. You have heard that these are worth about £5 million each. He is complaining of poor returns and thinks his advisors have taken too much risk with his investments. He asks a lot of questions about the differences between discretionary, advisory and execution only investing and says he may consider moving one of his portfolios to you. His money was made through multiple entrepreneurial ventures in a range of industries. He never married and doesn't have any children. His lifestyle appears humble relative to his wealth and he claims he only spent £50,000 last year.

Vignette 4
Susan, a 36-year old IT consultant, has done well in the London property boom. She has generated liquid wealth of £800,000 in addition to a property portfolio worth £1.8 million net of mortgages. The portfolio generates about £105,000 bringing her total yearly income to £180,000. Together with her long-term partner she is expecting a baby in 3 months. It is her dream to resign from her boring job in 5 years to look after her family. Her partner has got bond and stock investments, but Susan has always focused on property. However she realises that she ought to diversify and is prepared to commit an initial £500,000. Susan loves to travel and may buy a property abroad in the future.

Vignette 5
Patrick, 25, comes from a wealthy family. After inheriting £35 million from his father he set up his own charity to support children's education in Africa. He is passionate about the cause and would like to continue building his charity. His wife, who is a trainee accountant, helps with the charity operations alongside her day job. They married recently and despite family pressure they do not yet have any children. They spend at least £300,000 per year, which includes donations to the charity. Patrick has never focused on his own investments, but realises he ought to. He has recently started to educate himself about different asset classes, which he asks you about during the meeting. You suggest he starts by investing £1 million, with the view of increasing to £3 million over the next 2 years.

Vignette 6
Paula, 51, is recently divorced with 2 teenage children who she'd like to see through private school and university. Both Paula and her ex work and earn around £300,000 per year, of which they have been able to save about £100,000 annually. Paula has existing investments with

another private bank, business you are keen to win. Her £800,000 portfolio consists of equities, bonds and hedge funds. In the past she has also invested in structured products. Particularly considering the change in her circumstances, Paula thinks she will have to work until she is at least 65.

Vignette 7
Kevin, 47, struck gold when he wrote his first book. Originally from a working class background, his lifestyle concept book enjoyed incredible success. His father was a market trader and his mother a homemaker. Kevin has been married twice and has 3 children. He is now dating a younger woman who is encouraging him to think more carefully about his finances. He tells you that he has £2 million in cash, which he would like to invest. In addition, he has 10 buy to let properties, which provide an income of £90,000, fully covering his yearly expenses. He does not intend to work again and would like to give each of his children one of the apartments by the time he is 55.

Vignette 8
Anna, 59, is the CEO of a FTSE250 company. You are aware that she has about £1.5 million exposure to the company stock through incentive schemes. She is paid £580,000 including bonuses per year, of which she only spends half. It is very hard to get time in her diary, but she is polite and forthcoming when you meet. She has expressed an interest in bonds and asks you what alternative investments are. She confesses to having panic-sold her portfolio and lost a lot of money during the credit crisis. Anna would like to hedge her single stock exposure and invest an initial £1 million of her £2.5 million savings. She is married, and her twins will be graduating from University this year. Her husband would like her to retire at 62 so that they can move to the Caribbean.

Vignette 9
Peter, 60, sold an agriculture products business for £10 million last year bringing his total wealth to £40 million. The business was originally started by Peter's father. Peter is married for the second time and has 2 adult children from his first marriage. He has relationships with 2 other private banks but is not forthcoming about his existing portfolios. You have heard from others that he likes fixed income investments. Peter seems unsure about his future plans but suggests wanting to invest at least £5 million to fund his yearly spending of £100,000.

Vignette 10
Catherine, a 38 year-old commodity broker, lives with her partner. She lived in Hong Kong for a few years as an expatriate and has generated wealth of about £5 million. Catherine currently earns about £800,000 per year but spends £700,000. Due to a busy working life she has not had any time to focus on her investment portfolio, but understands that she needs to invest at least 1/3 of her wealth to secure her future and be able to pay for a potential future family. During your first meeting she interviews you extensively about your bank's investment offering. She says she would like to retire at 45 to start her own entrepreneurial venture, which she is confident she will find investors for.

After each vignette, three questions followed. Following the first questions, respondents were shown the 7 portfolios as per the methodology in studies one (Table 2) and two (Table 3).

1. Which portfolio would you recommend to this client?
Portfolio 1
Portfolio 2

Portfolio 3
Portfolio 4
Portfolio 5
Portfolio 6
Portfolio 7
Portfolio 8
Portfolio 9
Portfolio 10

2. Relative to the average investor, how much control do you think this client is likely to have over their investments?
A lot more than the average investor
More than the average investor
About the same as the average investor
Less than the average investor
A lot less than the average investor

3. On a scale from 1 – 10 how knowledgeable would you rate this client to be about investments?

Not at all
Knowledgeable (1)

Extremely
Knowledgeable (10)

Appendix II. Survey Questions used in study three.

This study was commission by a wealth management research firm to which the researcher added questions. The questions detailed below are the ones included in the analysis for study three.

1. Are you?
Male
Female

2. How old are you?

3. What is the value of your investable assets?
Please include investments such as stocks, bonds, mutual funds, and mature pension investments, investment or secondary properties, but do not include the value of your main residence.

1. £50,000 - £249,000
2. £250,000 - £999,000
3. £1 million - £2.5 million

4. Of your investable assets (i.e. excluding the value of your main residence) please approximate how this is spread across the categories below:

1. Investments in stocks, bonds and mutual funds (outside of a pension)
2. Invested in a pension
3. Cash savings (current accounts and cash ISAs)
4. Additional property

5. Which of the following do you use / go to for financial advice?

1. Wealth Manager
2. Private Bank
3. Professional Financial Adviser
4. Accountant
5. Friends and Family
6. Other (please specify)
7. I do not receive financial advice EXCLUSIVE

6. What is the gender of your main adviser?
Male
Female

Three statements to measure investment confidence, knowledge and risk tolerance were included as follows.

Compared to the general population:

7. My confidence in the investment decisions I make is above average.

1. Strongly disagree

2. Disagree
3. Neither agree nor disagree
4. Agree
5. Strongly agree

8. My knowledge about the investment decisions I make is above average.

1. Strongly disagree
2. Disagree
3. Neither agree nor disagree
4. Agree
5. Strongly agree

9. The amount of investment risk I am willing to take is above average.

1. Strongly disagree
2. Disagree
3. Neither agree nor disagree
4. Agree
5. Strongly agree

Appendix III. Description of the Samples

The author has nearly twenty years of private banking experience having worked across many strands of wealth and investment management in London, UK. Working in institutions such as Coutts & Co, Standard Chartered Private Bank and Morgan Stanley, the roles have included managing the investment portfolios of and providing financial advice to wealthy individual investors in the UK and overseas. At the same time the author is a psychotherapist specialising in relationship therapy and therefore has a strong interest in the impact of the social interactions between people.

During her work in the industry, Ylva noticed that advisors appeared to be treating male and female investors differently and that institutions both struggled to attract wealthy female clients and to convert their cash into investments. This inspired her interest to investigate the interrelationships between financial advisors and wealthy male and female investors to which she brings both her finance and psychology backgrounds. Through her contact network Ylva was able to negotiate data sources for the studies included in this thesis.

Data for Studies One and Two. Financial Advisor Sample

The vignette questionnaire sample forms part of the data for studies 1 and 2. The online questionnaire was distributed randomly to over 400 professional financial advisors, whose responses were recorded anonymously. Consent was also sought from respondents to use their anonymised data as part of an academic study about investment advice provision that would be published. Participants are all advisors whose clients are mainly millionaires who reside in the UK. First, a major UK private bank agreed to disseminate the questionnaire to all investment advisors in their UK offices who were working with millionaire UK clients.

Participants were invited to take part in the research by a senior director, and reassured that all information would be treated in confidence such that respondents would be anonymous to the researchers and their employer. A pre-requirement of the institution was not to be named in any publications or material relating to the study. This generated a total of 51 respondents (47 male and 4 female, mean age 37.9 years and mean experience 9.0 years), Table 3 Sample A, Column 1. As this institution employs approximately 200 advisors with this specific mandate, the sample represented about 25% of the population.

Secondly, a snowball sampling methodology was utilised to secure respondents from approximately ten additional financial institutions. This involved emailing financial advisors who were known to the researchers and working with millionaire clients. These individuals were invited both to complete the questionnaire and to distribute the online questionnaire to other colleagues in similar roles. Again, all information was provided anonymously. This methodology generated 79 respondents (56 male and 23 female, mean age 44.2 years and mean experience 14.3 years), Table 3 Sample B, Column 1. The names of the institutions did not form part of the data collection and advisors were assured that the names of the institutions where they work would not be disclosed. This was to ensure their anonymity and to allow advisors to respond on behalf of themselves rather than their employer. The advisors did not receive an incentive for participating in the study, instead they took the opportunity to contribute to research in the area. Data were collected between July 2015 and February 2016.

Despite slight differences between the two samples, a decision was taken to treat them as a single data set for the purposes of analysis, also given the small sample size of a split group analysis method (as described in section 2.3.3 of study one, chapter two). Although 151 respondents began the survey, respondents who had not rated more than one vignette were

excluded and therefore a total of 129 respondents were included in the analysis. This yielded 1147 observations in total (64 respondents completed survey A and 65 completed survey B). The gender demographics of the respondents (i.e., 79.1% male) is very similar to that of the financial advisor population as a whole, i.e., only 23% of certified advisors are female (Hannon 2014).

The full set of demographic details about this sample of financial advisor are presented in Tables 1, 2 and 3. In the first table we present all participating advisors. Table 2 presents the advisors by gender. In these two tables we show the proportions of clients that the advisors have in their existing (real life) client book, split into 4 categories of investable wealth owned by clients, i.e., above US$30 million, between US$1 million and US$29.99 million, between US$100,000 and US$999,000 and below US$100,000. Since 51 of the respondents came from one institution (as described in Study one, pages 32 and 33), Table 3 finally describes the two subsamples (A and B) in detail. On this table we also show the proportion of millionaire clients by samples A and B and advisor gender.

Table 1. Descriptives for Vignette Questionnaire Respondents: All Respondents N = 129.

	All Financial Advisors N = 129				
	Mean	SD	Median	Min	Max
Age	41.74	8.83	41	25	67
Years' Experience	12.78	8.01	12	0	40
No Clients	70.98	94.80	50	0	650
Investable Assets:					
Above $30M (%)	22.96	30.70	10	0	100
$1 - 29.99M (%)	54.49	33.68	60	0	100
$100K - 999K (%)	13.80	21.28	5	0	85
Below $100K (%)	4.18	14.83	0	0	100

Notes: Table 1 summarised the full sample of financial advisors who participated in the vignette questionnaire. The table shows their age, how many years' experience they have in providing investment advice, the number of clients in their existing client base and their investable assets, expressed as the proportion (%) of clients whose wealth fits in each of the four categories specified.

Table 2. Descriptives for Vignette Questionnaire Respondents: Split by Male (N = 102) and Female (N = 27) Respondents.

	Male Advisors N = 102					**Female Advisors N = 27**				
	Mean	SD	Median	Min	Max	Mean	SD	Median	Min	Max
Age	41.14	8.75	41	25	67	44.00	8.76	43	30	62
Years' Experience	12.42	8.07	11	0	40	14.15	7.67	15	0	31
No Clients	77.52	103.94	50	0	650	46.48	37.96	33	0	150
Investable Assets:										
Above $30M (%)	24.11	31.25	10	0	100	18.63	28.16	10	0	100
$1 - 29.99M (%)	55.26	33.01	60	0	100	51.56	36.01	70	0	100
$100K - 999K (%)	12.91	19.49	1	0	80	17.15	26.78	5	0	85
Below $100K (%)	2.91	10.89	0	0	70	8.96	23.99	0	0	100

Notes: Table 2 splits the sample of financial advisors who participated in the vignette questionnaire by advisor gender. As in table 1, this table shows their age, how many years' experience they have in providing investment advice, the number of clients in their existing client base and their investable assets, expressed as the proportion (%) of clients whose wealth fits in each of the four categories specified.

Table 3. Descriptives for Respondents by Sample A (N = 51) and B (N = 78).

Sample A (N = 51)

Sample A All	Mean	SD	Median	Min	Max
Age (M)	37.86	8.06	36	32	59
Experience (M Years)	9.00	6.90	9	5	33
Clients (M)	77.86	84.86	60	0	417
Millionaire clients (%)	87.59	18.78	95	80	100
Sample A Male (N=47)					
Age (M)	38.15	8.28	36	25	59
Experience (M Years)	10.70	7.01	10	0	33
Clients (M)	78.65	88.36	58	0	417
Millionaire clients (%)	86.85	19.35	95	0	100
Sample A Female (N=4)					
Age (M)	35.75	4.20	36	30	41
Experience (M Years)	7.50	4.56	6	4	15
Clients (M)	68.75	12.60	70	50	85
Millionaire clients (%)	96.25	3.81	98	90	100

Sample B (N = 78)

Sample A All	Mean	SD	Median	Min	Max
Age (M)	44.21	8.43	43	27	67
Experience (M Years)	14.31	8.32	15	0	40
Clients (M)	66.56	100.45	40	0	650
Millionaire clients (%)	70.82	36.98	91	0	100
Sample A Male (N=55)					
Age (M)	43.69	8.33	42	27	67
Experience (M Years)	13.89	8.61	13	0	40
Clients (M)	76.98	115.44	40	0	650
Millionaire clients (%)	72.98	36.05	95	0	100
Sample A Female (N=23)					
Age (M)	45.43	8.55	45	30	62
Experience (M Years)	15.30	7.52	20	0	31
Clients (M)	42.61	39.55	20	0	150
Millionaire clients (%)	65.65	38.72	90	0	100

Notes: The full sample of participating financial advisors split by Sample A and Sample B and advisor gender and the proportion of millionaire clients in the advisor's client base. Sample A was obtained from one institution and sample B was collected using snowball sampling methodology.

Data for Study Three. Wealthy Investor Sample

The data for study 3 were collected from wealthy individual investors in the UK. This was made possible through negotiation with a benchmark and research specialist, Compeer[23], that conducts research for the wealth management industry in the UK. The firm commissioned a general survey about wealth management in the UK and the researcher was invited to design specific questions concerned with attitudes about financial advice which were included in the survey. The firm prespecified the required number of respondents and the survey was closed to further respondents when the target (N = 500) respondents were reached. In order to participate, respondents had to have a minimum of £50,000 held in investable assets and none of the respondents had investable asset of more than £2.5 million, a typical range of investable wealth for the surveys conducted by Compeer. Respondents consented to their information being used for research and publication purposes. Distribution was via an online link which provided information guaranteeing confidentiality and anonymity of participants, thus providing an opportunity to research a wealthy demographic of investors that is difficult to access. Participants were incentivised by collecting points that could be used to purchase products or give as charity donations. Data were collected during November 2016. The full sample of investors is presented in Tables 4 – 7. Initially, Tables 4 and 5 provides the full details about the age statistics of the investors, as a full sample in Table 4. This is repeated for the sample of advised investors in Table 5 which also shows the gender combination of investors and advisors. The investable wealth owned by the respondents was recorded by respondents selecting a wealth category shown as £50,000-£249,000, £250,000 to £999,000 or £1 million – 2.5 million. As such we do not possess the exact amount of wealth under their ownership, and we are therefore unable to compute meaningful median statistics. However, the

[23] www.compeer.co.uk

investable wealth categories together with investor ages are presented in tables 6 and 7 split by self-managed and advised (Table 5) and with further analysis of the advised sample by gender in Table 7.

Table 4. Age statistics for the Wealthy Investor Sample: Split by Self-Managed (N = 184) and Advised (N = 316) Respondents.

All Respondents (N = 500)					
	Mean	SD	Median	Min	Max
Age (M)	52.59	16.25	57	18	65

Self-Managed Respondents (N = 184)					
	Mean	SD	Median	Min	Max
Age (M)	58.37	14.19	61	18	68
Male Self-Managed (N = 106)					
Age (M)	60.16	14.25	63	18	70
Female Self-Managed (N = 78)					
Age (M)	55.94	13.84	59	22	64

Advised Respondents (N = 316)					
	Mean	SD	Median	Min	Max
Age (M)	49.23	16.44	18	54	63
Male Advised (N = 182)					
Age (M)	51.02	16.79	57	18	65
Female Advised (N = 134)					
Age (M)	46.79	15.70	48	18	59

Notes: In this table the age details are shown for the full sample of investors, N = 500. The sample is then split by self-managed (left hand side) and advised investors and by investor gender.

Table 5. Age statistics for Advised Investors (N = 316), Split by Investor and Advisor Gender.

Male Advised Respondents (N = 182)						**Female Advised Respondents (N = 134)**					
	Mean	SD	Median	Min	Max		Mean	SD	Median	Min	Max
Male Advisor (N=157)						*Male Advisor (N=78)*					
Age (M)	51.29	16.95	58	18	66	Age (M)	52.19	14.22	56	18	63
Female Advisor (N=25)						*Female Advisor (N=56)*					
Age (M)	49.36	15.98	55	18	63	Age (M)	39.27	14.63	34	19	50

Notes: In this table the age details are shown for advised investors, N = 316. The sample is then split by self-managed (left hand side) and advised investors and by investor gender.

Table 6. Investable Wealth Categories split by Self-Managed and Advised Respondents.

All Respondents (N = 500)			**Male Respondents**		**Female Respondents**	
	N	Mean Age	N	Mean Age	N	Mean Age
50k - 249k	223	58	127	60	96	55
250k - 999k	233	49	135	51	98	47
1m - 2.5m	44	44	26	44	18	41
All	500	53	288	54	212	50
Self-Managed Respondents (N =184)			**Male Self-Managed**		**Female Self-Managed**	
	N	Mean Age	N	Mean Age	N	Mean Age
50k - 249k	106	61	61	64	45	58
250k - 999k	69	55	41	55	28	54
1m - 2.5m	9	54	4	60	5	50
All	184	58	106	60	78	56
Advised Respondents (N = 316)			**Male Advised**		**Female Advised**	
	N	Mean Age	N	Mean Age	N	Mean Age
50k - 249k	117	55	66	56	51	53
250k - 999k	164	47	94	48	70	44
1m - 2.5m	35	40	22	42	13	38
All	316	49	182	51	134	46

Notes: This table breaks down the investable wealth categories and the ages of the full sample as well as separated by Self-Manged and Advised investors and their gender.

Table 7. Investable Wealth Categories for Advised Investors, Split by Investor and Advisor Gender.

Male Advised Respondents (N = 182)			**Female Advised Respondents (N = 134)**		
	N	Mean Age		N	Mean Age
Male Advisor (N=157)			*Male Advisor (N=78)*		
50k - 249k	55	57.7	50k - 249k	37	56
250k - 999k	84	49.7	250k - 999k	35	48
1m - 2.5m	18	39.1	1m - 2.5m	6	42
All	157	51.3	All	78	53
Female Advisor (N=25)			*Female Advisor (N=56)*		
			Age (M)		
50k - 249k	11	53.8	50k - 249k	14	41
250k - 999k	10	44.2	250k - 999k	35	40
1m - 2.5m	4	50	1m - 2.5m	7	33
All	25	49.4	All	56	40

Notes: This table breaks down the investable wealth categories and the ages for advised investors (N = 316). The sample is then split by self-managed (left hand side) and advised investors and by investor gender.

Appendix IV. Median Tests

In this Appendix we present the median tests to complement the t test analysis of differences in means in Study one, pages 34 – 41. Knowledge, Control and Recommended Portfolio ratings are analysed by number of observations which are above the median and the number of observations below the median. The P value and the Pearson chi² denote significance in the final two columns of each of the three tables. First, we present the overall rating made by all advisors split by the gender of the investors in the vignettes in Table 8. Tables 9 and 10 presents the ratings for male and female vignettes by advisor gender.

Table 8. All Respondents (Advisors), by Vignette Gender

	Male Vignettes		Female Vignettes			
Dep. Variable	Above Median (N)	Below Median (N)	Above Median (N)	Below Median (N)	P value	Pearson chi²
Knowledge	211	361	208	367	0.802	0.0631
Control	231	341	195	380	0.023*	5.144
Rec. Portfolio	226	346	214	361	0.425	0.6377
Observations (N)	572	572	575	575		

Notes: This table shows the Knowledge, Control and Recommended Portfolio ratings number of observations above the median and the number of observations below the median for all respondents by vignette gender. ** Significant at 5% level.

Table 9. Male Vignettes by Respondent (Advisor) Gender

	Male Advisors		Female Advisors			
Dep. Variable	Above Median (N)	Below Median (N)	Above Median (N)	Below Median (N)	P value	Pearson chi²
Knowledge	174	284	37	77	0.273	1.2012
Control	185	273	46	68	0.993	0.0001
Rec. Portfolio	185	273	41	73	0.387	0.7489
Observations (N)	458	458	114	114		

Notes: This table shows the Knowledge, Control and Recommended Portfolio ratings number of observations above the median and the number of observations below the median for male vignettes by advisor gender.

Table 10. Female Vignettes by Respondent (Advisor) Gender

	Male Advisors		Female Advisors			
Dep. Variable	Above Median (N)	Below Median (N)	Above Median (N)	Below Median (N)	P value	Pearson chi²
Knowledge	173	288	35	79	0.174	1.8441
Control	158	303	37	77	0.714	0.1347
Rec. Portfolio	180	218	34	80	0.068*	3.3259
Observations (N)	461	461	114	114		

Notes: This table shows the Knowledge, Control and Recommended Portfolio ratings number of observations above the median and the number of observations below the median for female vignettes by advisor gender. * Significant at 10% level

Appedix V. ANOVA Table

This ANOVA analysis presented in Table 10 complements the t tests in study three, Table 4, page 120 and shows the interaction between the gender interactions effects of investors and advisors on the four dependent variables. Similar to the t tests, the results illustrate that investor and advisor female gender is associated with differnce in risk tolerance and cash holdings. Advisor gender is associated with significant differences in the knowledge and confidence ratings. P values are shown in the final column (Prob F).

Table 10. ANOVA: Full Sample of Advised Investors (N = 316)

Dependent Variables	SS	df	F	Prob F
Risk Tolerance				
Advisor Gender	11.27	1.00	8.37***	0.00
Respondent Gender	4.54	1.00	3.37*	0.07
R-squared	0.0289			
Knowledge				
Advisor Gender	7.18	1.00	6.78***	0.01
Respondent Gender	1.47	1.00	1.39	0.24
R-squared	0.02			
Confidence				
Advisor Gender	3.86	1.00	4.44**	0.04
Respondent Gender	1.00	1.00	1.15	0.29
R-squared	0.015			
Cash Holdings				
Advisor Gender	2602.11		4.26**	0.04
Respondent Gender	4269.38		6.99***	0.01
R-squared	0.027			

Notes: The table shows the interaction effects for the independent variables: investor and advisor gender on the dependent variables: self-rated Risk Tolerance, Knowledge and Confidence and Cash Holdings for advised investors (N = 316). ***1% significance; **5% significance; *10% significance.

Appedix VI. Gender effects accounting for fixed effects across vignettes

In this Appendix we present OLS regressions, which consider stable differences across the 10 vignettes, to test the robustness of the t test analysis of differences in means in Chapter two, Study one, pages 34 – 41. The regressions take the following forms:

$$Yj = \alpha + \beta * genderj + \sum \gamma i * vi + \varepsilon j \quad (1)$$

And;

$$Yj = \alpha + \beta 1 * genderj + \beta 2 * genderi + \sum \gamma i * vi + \varepsilon j \quad (2)$$

Where Y signifies the three dependent variables: Recommended Portfolio, Knowledge and Control for Vignette *j*; β is the gender coefficient; $gender_j$ takes the value of 0 for male vignettes and 1 for female vignettes; $gender_i$ (equation 2) takes the value of 0 for male advisors and 1 for female advisors; v_i are 9 dummies for 10 vignettes *i* with vignette 1 as the baseline vignette; and γ_i are coefficients for the vignette dummies.

Following Equation 1, the first row in Table 11 shows the variable 'vignette gender' with the vignette fixed effects as they vary from vignette 1 in the subsequent rows. In line with the t test analysis presented in Study one, pages 34-41, the results demonstrate that vignette gender alone does not explain portfolio recommendations (Column 1, Row 1 of Table 11). However female vignette gender contributes to lower knowledge and control ratings, with signifance at the 10% and 1% levels respectively. Table 12 repeats the analysis in Table 12, this time also including Advisor gender in the second row (equation 2). The results demonstrate that female advisor gender is related to less risky portfolio recommendations and lower knowledge ratings with significance at the 5% and 1% levels respectively. We therefore conclude that the t test analysis and the conclusions drawn in Study one are robust to alterntive specifications.

Table 11. OLS Regression Vignette Gender and Vignette Fixed Effects

Vignette Gender & Fixed Effects	(1) Recommended Portfolio	(2) Knowledge	(3) Control
Gender	-0.058	-0.166*	-0.193***
	(-0.703)	(-1.700)	(-3.762)
Vignette 2	-0.110	-3.317***	-1.327***
	(-0.645)	(-17.006)	(-12.797)
Vignette 3	-1.236***	-3.083***	-1.195***
	(-7.094)	(-14.448)	(-9.818)
Vignette 4	0.427**	-3.983***	-1.624***
	(2.293)	(-19.733)	(-14.405)
Vignette 5	0.664***	-4.229***	-1.617***
	(3.492)	(-19.607)	(-13.571)
Vignette 6	0.259	-1.975***	-1.011***
	(1.448)	(-10.235)	(-9.221)
Vignette 7	0.232	-4.720***	-1.886***
	(1.302)	(-22.332)	(-16.358)
Vignette 8	-1.362***	-2.275***	-1.037***
	(-7.303)	(-9.880)	(-7.605)
Vignette 9	-1.024***	-2.445***	-0.978***
	(-5.557)	(-12.357)	(-9.024)
Vignette 10	0.830***	-0.688***	-0.487***
	(4.808)	(-3.353)	(-3.732)
Observations	1,147	1,147	1,147
R-squared	0.224	0.438	0.287

Notes: Robust standard errors clustered by vignette are used to compute the t-statistics reported in parentheses beneath the parameter estimates.
***1% significance; **5% significance; *10% significance.

Table 12. OLS Regression Vignette, Advisor Gender and Vignette Fixed Effects

Vignette & Advisor Gender & Vignette Fixed Effects	(1) Recommended Portfolio	(2) Knowledge	(3) Control
Gender	-0.058	-0.167*	-0.193***
	(-0.707)	(-1.710)	(-3.765)
Advisor Gender	-0.226**	-0.380***	-0.082
	(-2.077)	(-2.890)	(-1.192)
Vignette 2	-0.113	-3.323***	-1.328***
	(-0.666)	(-17.146)	(-12.860)
Vignette 3	-1.240***	-3.089***	-1.196***
	(-7.061)	(-14.519)	(-9.861)
Vignette 4	0.423**	-3.990***	-1.625***
	(2.280)	(-19.698)	(-14.453)
Vignette 5	0.661***	-4.234***	-1.618***
	(3.504)	(-19.881)	(-13.663)
Vignette 6	0.257	-1.979***	-1.012***
	(1.439)	(-10.275)	(-9.261)
Vignette 7	0.231	-4.723***	-1.887***
	(1.289)	(-22.350)	(-16.415)
Vignette 8	-1.364***	-2.278***	-1.038***
	(-7.299)	(-9.872)	(-7.602)
Vignette 9	-1.026***	-2.448***	-0.979***
	(-5.556)	(-12.550)	(-9.055)
Vignette 10	0.829***	-0.691***	-0.487***
	(4.799)	(-3.345)	(-3.736)
Observations	1,147	1,147	1,147
R-squared	0.227	0.442	0.288

Notes: Robust standard errors clustered by vignette are used to compute the t-statistics reported in parentheses beneath the parameter estimates.
***1% significance; **5% significance; *10% significance