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Individual Judgment and Trust Formation: An Experimental Investigation of Online Financial Advice.

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Abstract

Using an online incentivized discrete choice experiment, we study how well individuals judge financial advice and whether factors other than advice quality influence their evaluations. We find evidence that some individuals rely on extraneous signals to judge advice quality and observe some persistency in adviser choice over time. Our results also explain how some advisers can maintain trustworthy reputations despite giving bad advice. Finally, we explore whether individuals learn throughout the experiment. Our findings have several public policy implications that are discussed in the conclusion.

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"Do-it-yourself" finance is the term Ryan et al. (2010) use to describe the increased responsibility United States consumers face in financial decision-making. They highlight how new products in credit, mortgages, and investments force consumers to make difficult choices on their own. The many options available are hard to navigate, especially for those with little financial experience and knowledge. This was never clearer than during the global financial crisis when U.S. homeowners found themselves in mortgage contracts that were inappropriate for their situations and too difficult for them to understand.[1] Today, the U.S. faces another crisis with student loan debt on the rise. This debt is saddling a young and financially inexperienced generation with liabilities that will require thoughtful financial planning to pay down.

Notably, the U.S. is not alone with these issues. They are of global concern. There are many other countries where citizens are faced with making complicated financial decisions throughout their lives. Simply comparing retirement income systems around the globe provides an example of international scope. Over the past two decades, a number of countries' governments have begun shifting some of the decision-making for retirement savings to their citizens, including the United Kingdom, Germany, Chile, Sweden, Australia, New Zealand, Singapore and the U.S. The implications of these choices, as well as those related to the financial areas mentioned earlier, are serious for individuals. These trends are concerning when assessed alongside evidence that individuals frequently make serious financial mistakes across a multitude of contexts (Campbell et al. 2011).

This raises the obvious question: What can be done to help individuals make sound financial choices in light of their growing financial autonomy? Academics are actively seeking the solutions to this question. Approaches including financial education, regulation, communication methods, retirement plan design and behavioral interventions are being tested (for example, Benartzi and Thaler 2004, Carroll et al. 2009, Choi et al. 2004, Hershfield et al. 2011, Lusardi et al. 2008, Goldstein et al. 2008, Madrian and Shea 2001).[2] Another possible solution that has received relatively less academic attention is

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[1] See, for example, the role of numeracy skills in explaining foreclosures and default in Gerardi et al. (2010).

[2] Public policy makers also recognize the issues. As a result, in the U.K., the government enacted the Financial Services Act 2012 and gave the Financial Conduct Authority (FCA) the responsibility of helping regulate firms and financial advisers (http://www.fca.org.uk). In the U.S., the government has established the Consumer Financial Protection Board (CFPB) whose mission is to help consumers make better

the use of financial advisers. This paper contributes to this literature by testing how well individuals evaluate the advice that advisers offer and by exploring how characteristics of the adviser, the decision-maker and the context might influence their decisions.

Under an ideal scenario, a qualified financial adviser would provide her client with sound financial advice aligned with the client's best interests. In this case, a client who is susceptible to behavioral biases, has limited cognition, or simply lacks the time to make an informed decision could avoid common mistakes by following the advisers' recommendations. Unfortunately, research suggests that in theory and practice, advisers do not always provide the best advice to their clients (Australian Securities and Investment Commission 2012, Mullainathan et al.2012). A variety of reasons may be contributing to this result, including insufficient adviser training or conflicts of interest arising from remuneration structures (Inderst and Ottaviani 2012b). To date, most literature examining the use of advisers has focused on potential agency issues, the quality of the advice given and its impact on investors' portfolios and decisions.[3]

This paper examines the use of financial advisers from a very different angle. It contributes to the literature by providing insights into how well individuals themselves evaluate the quality of the advice they receive and whether their evaluations of the adviser's characteristics, such as trustworthiness and professionalism, can be influenced by factors other than the overall advice quality. Our interest in trust is motivated by prior research that suggests that trust is an important determinant of adviser use (Lachance and Tang 2012). While trustworthiness clearly is a valuable and necessary attribute for a financial adviser to possess, problems arise when and if the client's perception of the adviser's trustworthiness is faulty, leading to a relationship with a low quality or a poorly motivated adviser. In addition to this, we also seek to understand the extent to which individuals might continue to trust and view an adviser favorably even after being given bad advice. Finally, we are curious about how factors such as financial literacy and numeracy influence judgments and learning (Bucher-Koenen and Koenen 2012). Taken

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decisions as they are considering a myriad of consumer financial products. In Australia the Future of Financial Advice reforms (FoFA) commenced in 2013 (Shorten, 2011). The aim is to address conflicts of interest that have threatened the quality of financial advice (Parliament of Australia, 2012).

[3] See Mitchell and Smetters (2013) for a collection of recent research into financial advice on retirement topics.

together, the answers to each of these questions have important implications for public policy design, consumer financial regulation and financial education efforts.

In order to test our research questions, we designed and implemented an incentivized online choice experiment. We favored this experimental approach over other methods because it overcame several challenging research hurdles we faced when considering ways to address our questions. In particular, investigations of persistency and learning necessitate uniformity of advice topics, advisers and the environmental conditions surrounding the provision of advice. To develop the experimental stimuli in the online experiment, we filmed professional actors playing financial advisers. A production company filmed each actor delivering scripted advice on four financial topics. Multiple clips were filmed so that each actor provided both correct advice and incorrect advice on each topic. Topics were purposefully selected to represent very basic financial decisions that ordinary consumers often confront, including paying down debt, consolidating retirement accounts, choosing a low-fee index fund and diversifying a stock portfolio. In the online experiment, each respondent viewed videos of two of the four possible 'financial advisers' who provided different quality advice on each of four topics. For each advice topic, respondents were asked to nominate the advice they would follow. The advisers differed by age, gender and whether they had a professional certification. By administering the advice online, we eliminated variance between respondents in delivery of the advice. The approach also permitted us to control the two advisers shown to each respondent, the order of advice topics, the quality of advice given by each adviser for each topic and the attributes of advisers giving advice. This was critical to ensuring a well-designed experiment. Our respondents included over 1,200 Australians drawn from a nationally representative panel.[4]

The results from our study provide interesting new insights into how individuals judge financial advisers. First, as we expected, most individuals did well, separating good advice from bad advice on these generic topics. However, what was unexpected was that respondents found it significantly more difficult to discern the quality of advice for some topics compared with others. For the more difficult topics (stock diversification and index

[4] Choice experiments have been shown to be consistently predictive of 'real' decisions (Louviere et al. 2000).

fund management fees), individuals struggled to choose correct advice more than expected. Second, we found individuals used extraneous signals to judge the quality of advice, for example, preferring younger advisers. They were also more likely to choose advisers with certifications. The survey respondents' characteristics also mattered. Individuals who were older, more numerate and had made good decisions in the past in areas addressed by the advice also were more likely to choose well. Moreover, individuals showed some persistence, or stickiness, to a particular adviser.[5]

Most interestingly, we found that the ***same*** adviser who gives ***an equal number*** of correct and incorrect advice recommendations overall is viewed very differently, in terms of personal attributes such as trustworthiness, professionalism and other qualities, depending on whether the first advice is given on an 'easy' topic or a 'hard' topic, and whether this first advice is good or bad. This can be explained using a variation of a simple Bayesian updating model with ambiguous information (Fryer et al. 2013). Put simply, if an adviser gives correct advice on an 'easy' topic, the respondent can judge the quality easily, allowing them to form a firm opinion of the adviser. If this ***same*** adviser then follows with advice on a topic the respondent considers 'hard,' judging the advice quality is difficult. Because the respondent can't tell if this new advice is correct or incorrect, they interpret it in line with their prior view on whether the adviser is good or bad. As a result, a pre-existing good opinion of the adviser will be reinforced by 'ambiguous' advice on a hard topic regardless of whether the advice is really correct or not, as will a pre-existing bad opinion. In our experimental results, we found evidence consistent with this model: advisers who can establish their trustworthiness early on an easy topic are still trusted after giving wrong advice on hard topics, and vice versa. Thus, our experiment provides an explanation as to how some advisers can maintain good reputations despite giving bad advice.

Taken together, these findings suggest that individuals need help choosing advisers because they can easily be led to trust bad advisers in certain instances. As a result, our findings have important policy implications regarding adviser certification practices and regulation, discussed in full in the concluding section.

[5] This is consistent with findings related to other financial decisions. For example, retirement research shows that individuals rarely change their initial allocations once they are set (Madrian and Shea, 2001; Agnew et al. 2003; Ameriks and Zeldes 2004)

This paper is laid out as followed. In section 1, we will discuss the current financial advice literature, which addresses agency problems, the quality of the advice given and how individuals choose financial advice. The second section will outline the research design of our online experiment. We discuss our results in section 3 and then provide our conclusions and public policy implications in the final section.

1. Literature Background

1.1 Benefits and Dangers of Financial Advice

As mentioned in the introduction, there is overwhelming evidence suggesting that individuals frequently make poor financial decisions. Campbell et al. (2011) highlight many of these mistakes and argue that regulation can play a role in improving outcomes. They suggest several reasons for the errors, including low levels of financial literacy documented around the world (Lusardi and Mitchell 2011), issues of trust in markets and financial products (Christellis et al. 2010), behavioral biases (Benartzi and Thaler 2004) and limited cognition (Lusardi and Mitchell 2006). While an opportunity to learn from personal experiences could improve decision-making over time, several obstacles make this process difficult in financial contexts. For example, the infrequency with which many consequential decisions, such as choosing a mortgage or retirement account investing, are made, and delays in their outcomes can hinder learning, as can noisy outcomes resulting from large random shocks.

In light of observed low literacy and obstacles to learning, delegating difficult decisions to financial advisers is one possible solution. Hackethal et al. (2012) point out that, in theory, the use of financial advisers can ameliorate the negative effects of differing levels of financial literacy. They suggest that by spreading costs across clients, advisers can provide clients benefits of economies of scale in information acquisition, and clients also may benefit from the advisers' possibly superior financial practices. Therefore, based on this theory, less financially sophisticated clients could benefit by delegating financial decisions to financial advisers. Unfortunately, however, Hackethal and Inderst (2012) report that financial advice can be used to exploit a consumer's lack of financial literacy and inexperience.

Furthermore, Inderst and Ottaviani (2009) use a theoretical model to show the potential for agency problems, particularly in situations where advisers not only must prospect new customers but also provide product advice. Their model suggests that steep incentives can sway advisers to inflate the perceived quality of the product they are selling and even recommend inappropriate products. Inderst and Ottaviani (2012a) use a different model to show how the biased or unbiased nature of the advice can be affected by whether or not consumers are wary of the adviser's incentives. Their model explains why contingent commissions can lead to better or biased advice depending on client skepticism of advisers. They also show how unintended welfare consequences can result from commonly adopted policies designed to improve advice, such as mandatory disclosures and caps on commissions.

From an empirical standpoint, the literature provides evidence of both benefits and dangers of the advice market. On the negative side, Bergstresser, Chalmers and Tufano (2009) found that broker-sold funds underperform those sold through direct channels on a risk-adjusted basis, even before netting out distribution charges.[6] They also found that the broker-sold segment did not eliminate the common behavioral practice of return chasing. In fact, the broker-sold segment exhibited as much return-chasing behavior as the direct-sold segment. Similar results support these findings from a separate analysis of retirement portfolios in the Oregon University System (Chalmers and Reuter 2013). Chalmers and Reuter (2013) found that, on average, broker clients' portfolios underperform self-directed retirement portfolios, with a large part of the underperformance related to brokerage fees. Broker portfolios also are invested in funds with higher than average past returns and higher risk exposure. Unfortunately for clients, the authors found that they would have earned significantly higher annual after-fee returns had they simply defaulted into an appropriate target date fund. The authors also found that those seeking help from brokers were younger, less highly educated and less highly paid.

These latter findings also are consistent with international evidence. For example, Hackethal et al. (2012) found that involvement with financial advisers lowers portfolio

[6] Bergstresser et al.(2009) define direct-sold funds as those marketed by the fund directly to the consumer. Broker-sold funds can be sold by a bank, a captive channel or a non-captive third-party broker. The authors provide a wirehouse or a brokerage firm that sells its own funds as examples of captive channel.

returns, worsens risk-return profiles and increases account turnover, using two unique German datasets. They also found some advisers encourage excessive trading, and while unsophisticated clients can be manipulated, experienced clients who do not monitor their advisers also can be manipulated.

Mullainathan et al. (2012) assessed the quality of advice in a different way by conducting an audit of whether financial advisers reinforce or undo the behavioral biases and misconceptions of their clients. They found that advisers fail to de-bias their clients, and reinforce activity aligned with their personal interests, such as returns-chasing portfolios. Advisers also push products not in their client's interest, such as actively managed funds with higher fees. Similarly, in Australia, the corporate, markets and financial services regulator (the Australian Securities and Investments Commission, or ASIC), undertook a shadow shopping exercise related to retirement advice (Australian Securities and Investment Commission 2012). They evaluated the quality of advice given to a small sample of Australians seeking retirement advice. They found only 3% of the advice could be considered good quality while the majority of the advice (58%) was adequate and the remaining advice was poor. Despite these low evaluations, most participants (86%) ranked the quality of the advice they received as high. In addition, 81% trusted the advice they received from their adviser 'a lot.'[7] This suggests that people can have difficulty objectively assessing the quality of advice given. Taken together, these studies support an agency conflict story and suggest that individuals may be naive.

However, not all news is bad news. On the positive side, Bhattacharya et al. (2012) analyzed the effect of unbiased computer generated advice for a random sample of 8,000 German brokerage clients. Unlike Chalmers and Reuter (2013), they found those seeking advice tended to be male, older, richer, more financially sophisticated and had a longer relationship with the bank. One explanation for these findings could be how the advice was generated, namely via an unbiased optimization program, and the transparency in the remuneration. While papers discussed earlier found less educated people seeking advice, the more sophisticated group might have better appreciated the unbiased and disinterested nature of the advice. Agnew (2009) also found male, higher

[7] It is noted that the regulator's (ASIC) interpretation of quality advice includes adviser compliance with process.

salaried individuals preferred online-advice generated from a third party computer optimization program in the U.S. Given that Holden (2013) found individuals with higher assets and Collins (2010, 2012) found individuals with higher incomes and education use advice, more research is needed to determine what characteristics of advice (for example, delivery method, cost, financial topic) and context (complete financial plan or advice on a specific topic) underlie such divergent demographic findings.[8]

While the advice was unbiased in the German study cited above, it is important to note that less than 5% of customers contacted used the advice in the study and even fewer eventually acted on it. One possible explanation is that the more sophisticated clientele used the advice as a simple check on their portfolio strategy. However, the authors found that those who followed the advice saw an improvement in their portfolio's efficiency. While this study suggests that unbiased sound advice can improve performance, it highlights that mere availability of sound advice does not produce demand for advice. This is supported by similar findings from a choice experiment conducted by Hung and Yoong (2013).

In summary, the available research suggests that while many individuals are likely to need help with financial decisions, the current system in many countries does not guarantee they will receive high quality advice nor that they will be able to evaluate the quality of the advice on their own.

1.2 How Do People Choose Advisers and Use Advice?

The use of financial advisers varies by country. For example in the U.S., Bogdan et al. (2011) found that half of all mutual fund shareholders surveyed in 2011 have an ongoing relationship with a financial adviser.[9] In Europe, Chater et al. (2010) reported that 58% of individuals' stock purchases were influenced by an adviser in a survey of

[8] There is some work in this area already. For example, Robb, Babiarz and Woodyard (2012) use a nationally representative data sample from FINRA to study how different personal factors relate to the use of different types of financial advice.

[9] These results are consistent with many other U.S. studies. For example, Sabelhaus, Bogdan, and Holden (2008) found 55 percent of retiring DC account-owning households use an adviser, either one they found on their own (42 percent) or one provided by their employer (13 percent). Regarding more broader issues, Collins (2010) founds 57% of respondents from the 2009 FINRA National Financial Capability Study received some sort of advice in the prior 5 years advice on one of more of these topics, debt, savings, mortgages, insurance and tax planning.

6,000 consumers across eight EU countries. In Australia, far fewer report using financial advice, with the regulator (ASIC) reporting that around 20% of Australians used a financial adviser in 2010 and the average age of a client was over 50 years (Australian Securities and Investment Commission 2012). A more recent industry survey reports that between 30% and 40% of people have used a financial adviser in the five years to 2013 (IBISWorld 2013). Most have used an adviser for occasional, rather than ongoing advice. This usage is broadly confirmed in the survey that we discuss in this paper, where 25% of respondents reported that they had 'paid for professional financial advice in the past.'[10]

Citizens in many countries use financial advisers, but research suggests that not all individuals apply the advice in the same way(s). Holden (2013) identified three types of relationships in her study of U.S. investors. She called them delegators (consumers following an adviser's exact recommendations), collaborators (consumers working with their advisers on a solution), and investors (consumers taking the lead in decisions). Overall she found that higher income individuals were more likely to have an adviser, but reported that, contingent on using an adviser, lower income and lower educated people were more likely to be delegators. Similarily, Hackethal et al. (2010) found that less-educated German customers more consistently relied on investment advice than others. Unfortunately, in this case, it resulted in more "churning" in their portfolios.

Which advisers individuals choose to work with and why they work with them depend on many factors. Survey results from Holden (2013) suggest that individuals choose to work with advisers because they have expertise in an area that the consumer doesn't have. Additional research suggests that personal qualities of advisers matter; for example, clients taking financial advice must decide if an adviser is trustworthy and competent before acting on the advice. Georgarakos and Inderst (2011) showed that clients with limited financial capability were more likely to follow advice if they trust their adviser, but trust depends on many factors, including the client's capability, the accuracy and quality of information provided, and a belief that the

[10] In Australia, most citizens accumulate savings in superannuation funds, which are similar to a U.S. 401(k) plan. The important distinction is that the employer is required to contribute to the plan. The percentage of salary is increasing to 12 percent over the next few years. Some respondents may have used financial advice services offered by superannuation providers at no additional charge. As superannuation savings becomes a larger portion of Australian's retirement savings, the need for financial advice will increase.

adviser and client's incentives are aligned (Yaniv and Kleinberger 2000, Sniezek and Van Swol 2001).

Even so, it appears that the trust of most clients is easily won. Analyses of administrative data (Hackethal et al. 2011) and experimental field studies (Mullainathan et al. 2012; Australian Securities and Investment Commission 2012) show clients often trust advisers who give poor quality and/or self-interested advice. Indeed, Mullainathan et al. (2012) reported that a large majority of auditors said they would go back with their own money to the advisers they met during the research, even though they often were given biased advice. Likewise over 80% of 'shadow shoppers' in the Australian Investments and Securities Commission (ASIC) study said they trusted their adviser, whereas ASIC reviewers rated less than 5% of the advice given as 'good.' The ASIC (2012) report blames the complexity of financial decisions for some of the lack of discernment of clients. Mullainathan et al. (2012) recorded another influence, namely, a tendency for advisers to confirm the opinions of clients at the start:

> *We find some suggestive evidence of 'catering', i.e. advisers showed support early on for the client's existing strategies, most likely to establish credibility and not alienate a potential client. The "initial reaction" to a client's strategy varied significantly from the later recommended course of action.* (Mullainathan et al. 2012 p. 4)

These findings are consistent with a large body of organizational behavior literature that does not focus solely on financial decisions, but examines decisions in many different contexts. Bonaccio and Dalal (2006) thoroughly reviewed this literature, highlighting studies suggesting that clients were less likely to discount advice from individuals perceived as experts or that they found trustworthy. Clients also preferred advice from people whose goals are thought to be more aligned with their own goals.

2. Research Approach

To answer our research questions we designed and implemented an incentivized online choice experiment embedded in a larger survey. The survey had four parts preceded by two screening questions (age and gender) to help us draw a representative sample. The first part measured general financial knowledge and numeracy skills. The financial literacy questions included the standard 'Big Three' questions to test knowledge of inflation, interest rates and diversification (Lusardi and Mitchell 2011); frequently used numeracy questions (Lipkus et al. 2001), and questions to elicit knowledge and understanding of the four advice topics that were related to the choice experiment. The wording of these questions is outlined later in the paper. This part concluded with questions about knowledge of financial products and experience (and attitudes towards) financial advisers.

The second survey component was a choice experiment, discussed in detail in the next section. Following the experiment, respondents were asked to rate the advisers assigned to them on several characteristics and personality traits: trustworthiness; competence; attractiveness; understanding; professionalism; financial expertise; genuineness; and persuasiveness. The choice experiment was incentivized, with one entry in a prize draw for $A50 for each correct advice chosen.[11]

In the third component respondents were asked to answer questions about demographics (e.g., marital status, household size and number of dependents, education, labor market status, income, gross assets and debts/liabilities) and personal characteristics, including personality traits and risk attitudes. Several of the risk questions were adopted from the Finametrica risk tolerance questionnaire.[12]

The final component of the survey was a debriefing where respondents were reminded that the experimental task involved extremely simplified versions of actual financial situations, and they should get advice from a professional financial adviser when making personal financial decisions. The debriefing provided clear explanations of

[11] The $A50 dollar prize is actually $A50 worth of reward points from PureProfile, the web panel provider used to conduct the online experimental survey. This monetary amount is in line with standard amounts in incentivized experiments.

[12] Finametrica's 25 question risk profiling questionnaire was developed in Australia and is used around the world by financial advisers, including in the U.S., Canada and Europe.

the correct advice for the four advice topics. The survey concluded with four questions to test understanding of the debriefing and invited open-ended feedback on the whole survey. The feedback was overwhelmingly positive.

We ensured incentive compatibility in the choice task and debriefing by offering money prizes (Camerer and Hogarth 1999). Specifically, respondents were offered an incentive to choose the best advice in each topic, and another incentive to choose correct answers during the debriefing at the end of the survey (The incentive in each case was one entry in a $50 draw for each correct answer).[13] We paid the panel provider $12.75 per completed survey, and the provider in turn paid respondents a proportion of that amount that we are not allowed to disclose. We also included two sets of questions designed to measure whether respondents were paying attention to the survey. These instructional manipulation checks (IMCs) ask questions that look similar to others in the survey, but can be answered correctly only by people who read the detailed instructions.[14] Oppenheimer et al. (2009) showed that using IMCs to detect inattentive participants improved the reliability of analysis from surveys, and later we show that they also have explanatory power in our work.

2.1 Design of the Discrete Choice Experiment

This section describes the design of the choice experiment and associated choice task(s). For each respondent, the experimental task started with a short introduction video where a narrator described the setting and task. We pretested narrators from several

[13] The incentive read: "If you choose the best advice, you will be eligible to enter a prize draw for a bonus $50 Pureprofile reward points. The chances of winning the draw increases with the number of times you choose the best advice." After the respondent had chosen their preferred advice on each of the topics, they saw a screen that reported the number of questions they had answered correctly and the number of entries they had in the prize draw as a result: "You have answered X of the previous questions correctly and are eligible for X entries into the draw for a bonus $50 Pureprofile reward points." Just before the debriefing, respondents read "In the debriefing that follows on the next screen, we will explain important elements of the survey you just completed. It is important that you read this thoroughly as some of the advice you have just seen could be considered 'bad' advice. After that, we will ask four questions about the debriefing. If you answer the questions correctly, you will be eligible to enter another prize draw for a bonus $50 Pureprofile reward points. Your chance of winning the draw increases the more questions you answer correctly."

[14] The IMCs were shown in a screen comprised of two questions from earlier in the survey, followed by the question, 'Have you seen these questions previously in this survey?' One IMC was placed before the choice experiment and one after.

actors and chose the one perceived to be the most unbiased and trustworthy.[15] In the introduction video, the narrator welcomes people to the study, explains the task and associated questions and makes some important statements necessary for IRB approval. Regarding the task and associated questions, she stated:

> *Over the next few minutes, you will hear recommendations from two different financial advisers relating to four financial scenarios, some of which you may have already experienced. For each scenario, we will ask you which advice you would be most likely to follow if you were in this situation. Following that, we have a few questions for you to complete in an online survey.*

After the introduction, the survey went to a new web page where respondents read about the incentives to answer correctly (described earlier in this paper).

Next respondents moved to a new webpage where the narrator returned in a new video to introduce a hypothetical scenario based on one of the four financial topics. This introduction was followed by a pair of videos in which two different financial advisers gave different financial advice on the topic, i.e., one adviser gave correct advice and the other gave incorrect advice. Figure 1 is a screen shot of the advisers side-by-side that illustrates this.[16] Respondents first viewed the video from the adviser on the left and then moved on to watch the advice from the other adviser. After viewing both videos, respondents could watch the videos again (as many times as they wished). When a respondent was ready, they chose the advice they would most likely follow. Once a respondent selected the advice and confirmed this decision, the narrator returned to introduce a new financial topic. Following this introduction, the same two advisers again provided different advice and the respondent chose one before proceeding. This process continued until all four financial topics were presented. Thus, each respondent received four pairs of advice. Importantly, the two advisers were the same across the four advice

[15] We pretested the key aspects of the experimental design including the actors playing the narrator and the financial advisers, the adviser names, the advice topics and the adviser credentials – see Appendix A. The pretesting for the narrator is explained in section A.4.

[16] To view one example of just the experimental task, go to http://survey.confirmit.com/wix5/p2552279525.aspx. To step through the entire survey, go to http://survey.confirmit.com/wix/p2484258468.aspx

topics for each respondent and in each case one adviser provides a correct recommendation, while the other provides an incorrect recommendation.

The sequencing and features of the financial advice videos were designed using principles from statistical experiments, or specifically what are known as discrete choice experiments (DCEs). In particular, the videos systematically varied adviser factors - the adviser's gender (2 options: male or female) and age (2 options: young or old), certification (2 options: presented or not) - the order of the advice topics (4 options: first, second, third, or fourth) and the quality of the advice (2 options: correct or incorrect). Correct and incorrect advice hereafter is termed "good" and "bad."[17] The statistical objective of the DCE is to provide reliable (efficient) estimates of the effects of the four factors on the choices.

The experiment used a within- and between-subjects design. As noted, the advice viewed by any one respondent is provided by the same two advisers; hence, variation in adviser factors (age, gender, certification) is a between-subject manipulation. To keep the total number of factor level combinations varied across the whole DCE to a minimum, each factor was varied over two levels, resulting in 2^3=8 hypothetical advisers. We wanted to have two different advisers in each video pair, which would lead to 8*8=64 possible between-subject treatment groups. To minimize these between-subject treatment groups we used a foldover design in which we created the 2^3 complete factorial of possible advisers and pair each of them with their "mirror image" (that is, the exact opposite level, so that a younger woman adviser was matched with an older male adviser). This produced pairs of advisers who were orthogonal in the differences in factor levels. The resulting design is optimally efficient under the assumption that a conditional multinomial logit choice model underlies the respondent choices (Street et al. 2005, Street and Burgess 2007). This design approach produced eight between-subject treatment groups.

We recruited a production studio and professional actors to produce the videos; they were chosen to represent the required variation in the factor levels. Extensive pretests and manipulation check tests were used to ensure the chosen actors indeed were

[17] DCEs were developed by Louviere and Woodworth (1983), and Louviere et al. (2000) discuss them in the context of choice modeling more generally.

seen as varying only as expected on the factors (and not based on other characteristics or personality traits). Section A.4 in Appendix A outlines the process for pretesting the actors and the pretest survey results. This pretesting process produced four actors (plus a narrator) to represent age and gender combinations (younger male, younger female, older male and older female); certification was varied in the videos by placing a certification next to their names or not in the videos. Names of advisers also were pretested (see section A.3) to insure that they were approximately equally "liked" and trusted; that is, prior literature suggests that advisers' names affects individuals' perception of their advisers, and we needed to control for this.[18] The four names chosen were Michael Adams (younger male), Claire Harris (younger female), David Forbes (older male) and Elizabeth Turner (older female). Figure 2 shows the four advisers.

While filming the videos, we took care to have the actors deliver each piece of advice in a consistent tone and with natural but generally similar gestures and expressions. In addition, we provided wardrobes so that advisers were similarly dressed, make up and jewelry were essentially the same for each actor, and the director positioned each actor the same way in a generic office used for each video shoot. Videos were re-filmed until actors delivered each piece of advice with precisely the same wording. Filming the eight videos of each of the four advisers and the five introductions took approximately 9 hours.

Further variation in the DCE relates to between-subject manipulation of a) topic sequence and b) order in which good and bad advice is given by each adviser. Variation in these orders is essential to test hypotheses about formation of persistent respondent preferences for advisers. The foldover design used to create the between-subjects manipulations ensures variation in quality of advice. We also maximized variation in adviser attributes by ensuring that both financial advisers gave advice on the same topic in each pair. Thus, we combined the between-subject treatment groups (8) with a design to vary the orders of topics (4 levels) and good and bad advice (2 levels). This led to 2^4=16 possible sequences (orders) of good and bad advice. If we combine these 16

[18] Kumar (2012) show that US mutual fund managers with 'foreign sounding names' have lower fund flows that managers with typical American names and this effect persists in an experimental setting where skill differences do not exist. Consequently we pre-tested a range of names to ensure that they were consistent with people's pre-conceptions of names of financial advisers.

possible order combinations with the eight between-subjects pairs, there are 128 possible combinations. While feasible, this would have been a quite complex survey programming problem; so we reduced the number of treatment groups to eight (8) by recognizing that there are 2^4 possible combinations of good and bad advice. We reduced the orders of advice to eight by using a fractional factorial design to create 8 of the 16 possible orders, as shown in Table 1.

We also wanted to reduce the number of orders for the advice topics. There are 4*3*2=24 possible sequences, again too many for programming purposes and we also would have needed a much larger sample. So, we used a Latin Square design approach to create four sequences where each topic appears in each order position, as shown in Table 2.

Despite the reductions, the total number of treatment groups in the DCE is 8*8*4=256. We randomly assigned approximately 5 respondents to each of the 256 resulting groups, and obtained a total sample of 1,274 respondents such that almost every one of the 256 groups had 5 observations.

Finally, to summarize the design strategy, consider an example task that combines the third row in Table 1 with the first column in Table 2 and let the first adviser be a younger male with a professional certification. The foldover design method leads to the second adviser being an older female with no professional certification displayed. The first pair of advice relates to paying back existing debt; the first adviser gives bad advice while the second adviser gives good advice. The second pair of advice relates to index fund fees; the first adviser gives good advice while the second adviser gives bad advice. The third pair of advice relates to diversification; the first adviser again gives bad advice while the second adviser gives good advice. Finally, the last topic relates to consolidation of superannuation assets; the first adviser gives good advice while the second gives bad advice. Table 3 sets out the scripts for the good and bad advice for each topic. The remaining sections provide more detail about how the financial topics were chosen, the content of the advice and the motivation for the adviser factors. Screen shots from the survey are available in Appendix B.

2.2 Selection and Advice Content of the Financial Topics

The experimental design described in the previous section focuses on four financial advice topics. In this section, we provide motivation for the financial topics used in the experiment and describe the recommendations our advisers gave for each topic. When selecting the financial topics for the experiment, we tried to identify financial issues commonly faced by individuals around the world. We also wanted topics that were straightforward to understand when explained but also associated with common mistakes. Equally importantly, we ensured each topic had only one correct answer. Given that sound financial advice depends on an individual's specific situation and characteristics, this third criterion proved challenging to meet.[19]

After pretesting, we selected four topics: paying down debt, consolidating retirement accounts, choosing a low-fee index fund and diversifying a stock portfolio. The pre-testing was conducted using an online panel to canvass understanding of the advice topics and confirm that people could indeed discern good and bad advice on these topics.[20] Consolidating retirement accounts, choosing a low-fee index fund and diversifying a stock portfolio are relevant issues in Australia, where most individuals have defined contribution retirement accounts that require participants to make portfolio decisions and choose between products with varying fees. Mistakes with credit card debt also concern regulators in Australia and several other economies (Agarwal et al. 2013, Bagnall et al. 2011). Finally, the topics also are of importance in the U.S. For example, the Department of Labor in their final rule related to investment advice to participants in individual account plans listed payment of inefficiently high investment fees and inadequate diversification as two of five distinct errors people make in their retirement accounts in the U.S. (Federal Register, 2011). Three of our four topics, consolidating retirement accounts, choosing a low-fee index fund and diversifying a stock portfolio, address these two mistakes. The rising level of student debt in the U.S. also suggests that our fourth topic is of relevance.

[19] For example, based on Bodie et al. (1992), two individuals of the same age but with different levels of human capital risk should be advised to hold very different levels of equity risk in their financial portfolios.
[20] We pre-tested five advice topics and results indicated that all were suitable for the experiment (see section A.1). However, the fifth topic on voluntary contributions to retirement accounts was omitted as only four topics were required under our experimental design.

Now to take a closer look at the motivation for each topic, we turn first to the issue of choosing a low-fee index fund. For this topic, our focus was the widely researched issue of why, despite similar compositions, index funds often have a wide range of fees (Hortacsu and Syverson 2004). In theory this should not be the case because index funds are essentially commodities when they do not offer any non-portfolio services, and are based on the same stock index (Elton et al. 2004). The marketplace reality should compel investors to focus on expenses when comparing funds, but in practice they do not. For example, Choi et al. (2010) used an experimental approach to show the extent to which individuals neglect this important selection criterion. In many cases their subjects made incorrect decisions using past returns, not fees. Their subject pool consisted of participants with better than average financial knowledge, so the observed investment behavior is of even more concern.

Our second topic, diversification, was also based on prior research. Numerous financial literacy studies have found that individuals often do not understand that a single stock is more risky than a diversified fund (Agnew et al. 2013; Lusardi and Mitchell 2011). In fact, a question related to this issue is one of the "Big Three" financial literacy questions often employed in academic studies around the world. Highlighting the challenge of this question, the percentage of surveyed respondents who did not know the answer to this particular 'Big Three' diversification question correctly in the U.S., Germany, the Netherlands and Australia was 34%, 32%, 33%, and 37% respectively (Lusardi 2013, Agnew et al. 2013).

Debt is another issue confronting many consumers. Based on the 2012 National findings from the FINRA Financial Capability survey, three out of five U.S. credit holders engage in an activity that can result in interest or fees. In addition, over half have carried a balance and were charged interest in the past (FINRA, 2013). Disregard for debt also is an issue in Australia (Social Research Centre and ANZ 2011).

Our final topic is related to consolidation of retirement accounts, an important issue in Australia because employer contributions to retirement accounts are mandatory. As a result, it is common for employees in industries that feature part-time employment, such as hospitality and retail, to have multiple accounts. This is problematic, as participants pay administrative fees and redundant insurance premiums for each account.

Even worse, many of these accounts have small amounts and become 'lost' accounts' when account holders leave firms (and so the pension fund).[21] Small accounts less than $2,000 are transferred to the Australian Tax Office (ATO), but there remain an estimated $16.8 billion dollars in lost larger balances spread among 3.4 million accounts. Lost accounts are not limited to Australia. In the U.S. missing 401(k)s are called 'zombie accounts' (Petcher 2013). Regardless of the country, it is important for consumers to be aware of fees they pay and know that they will pay redundant fees for holding multiple accounts.

For each financial advice topic, we composed scripts to ensure each actor delivered the good and bad advice in exactly the same way. In addition, they spoke exactly the same words at the beginning of each piece of advice for each topic regardless of whether they gave good or bad advice for that topic. Minimal changes were made between the good and bad advice and only the last few sentences particular to the recommendation were altered for each adviser. Table 3 provides the advice scripts. The first column includes the advice topic and the narrator's introduction. The scripts for good and bad advice for each topic are in the second column; the underlined portions are the recommendation sections of the advice that differ depending on the quality of the advice.

2.3 Selection of Adviser Attributes

As mentioned earlier, advisers in our experiment differed across three attributes (age, gender, certification). We chose age as an attribute because research suggests individuals may be more responsive to advice from people who are older and have more life experiences (Feng and MacGeorge 2006). Gender was selected because a review of the financial adviser marketing literature in Australia revealed women were frequently portrayed as an adviser in advertisements. Finally, the adviser certifications attribute was motivated by research suggesting individuals are less likely to discount advice from perceived experts or people with experience (Feng and MacGeorge 2006, Harvey and Fischer 1997, Nadler et al. 2003). Indeed, if a certification accurately signals an adviser's

[21] An account becomes 'lost' when the contact details for the account holder are missing and the account has been inactive.

expertise and trustworthiness, then it can be a tool to help individuals choose an adviser. However, our pretest research in Australia (see Appendix A, section A.2) showed that individuals often had difficulty discerning real from fake certifications, suggesting that certifications could be used to mislead.

This is a particular problem in the U.S., where it is difficult for consumers to tell one certification from another, and the fact that financial advisers can use over 100 certifications as titles is a large contributor to the problem. Recognizing the confusing environment, the Financial Industry Regulatory Authority (FINRA) provides consumers a tool for looking up more information about each designation, such as the issuing organization, the requirements for continuing education, the option to file complaints and methods for confirming the credential.[22] A quick use of the website reveals that qualifications can vary dramatically across these dimensions. In addition, there are substantial differences in how rigorous requirements to earn a credential are to meet. Further complicating matters in the U.S. is that financial planners can serve as both broker-dealers and investment advisers to the same client. These two job functions carry substantial differences in required standard of care as explained in Bromberg and Cackly (2012).

To explain briefly, broker-dealers need only adhere to a 'suitability standard' when making investment recommendations. This standard does not require broker-dealers to serve the client's best interests or reveal any conflicts of interest they have with products they sell to clients. Conversely, investment advisers must uphold a 'fiduciary standard of care,' which *does* require them to act in the client's best interest, recommend suitable products or disclose any conflicts of interest. While these two standards of care are very different, research suggests that consumers generally are unaware of the important distinction between the two (Hung and Yoong 2013, Hung et al. 2008, Infogroup 2010). Motivated by the Dodd-Frank Act, there is current debate about moving to one standard of care for all (Schoeff 2013, Cornfield 2013).

Finally, consumers in the U.S. also must be aware that even the most well respected designation in the U.S. (certified financial planner), does not guarantee a good

[22] Website:
http://www.finra.org/Investors/ToolsCalculators/ProfessionalDesignations/DesignationsLookup/

adviser. A recent investigative report by the Wall Street Journal reveals that the granting organization has only 6 reviewers, equating to less than one reviewer for every 11,000 certified financial planners, and is slow to move (Zweig, October 4, 2013). While this certification and the advisers who have earned it are well regarded, their granting organization's ability to monitor its financial planners is clearly limited by the number of reviewers. In addition, the Wall Street Journal reported that, of the major firms reviewed, between 8% to 11% of their advisers misrepresented their fee structures on websites as 'fee only,' which is more appealing to consumers (Zweig, September 9, 2013). Finally, the regulatory environment is confusing for all types of advisers overall leading to poor oversight (Bromberg and Cackly 2012, Laby 2012).

In Australia, recent legislation provides more clarity than in the U.S. to terms used by people providing financial advice. A new law restricts the use of the terms 'financial adviser' and 'financial planner' to persons with an Australian Financial Services License. However, under current laws/regulations the bar to obtain a license is not particularly high. This legislation complements the government's new Future of Financial Advice (FoFA) reforms that became effective this past July 2013 (after our experiment was run). The FoFA reforms aim to 'tackle the conflicts of interest that have threatened the quality of financial advice provided to Australian investors by financial advisers' (Parliament of the Commonwealth of Australia 2012). [23]

In light of legislation and recent debate about financial adviser certifications and advisers' responsibilities in different countries, our results related to certifications should be of interest to regulators and could have significant public policy implications depending on our findings.

3. Results

3.1 Sample

The sample was selected from the Pureprofile online panel that has over 600,000 Australian members. We screened respondents (recruited with an initial email invitation from the panel provider) to match the population age distribution and ensure equal

[23] There are three main components to the FoFA reforms. The first is a prospective ban on conflicted remuneration, including commissions, volume payments, soft dollar amounts over $300 and asset fees on geared products. The second is an introduction of an adviser-charging regime, which will require annual fee disclosure and client 'opt-in' every 2 years. The third is an introduction of a statutory fiduciary for financial advisers, requiring them to act in the best interests of their clients (Bateman and Kingston 2012).

proportions of men and women.[24] In total, 1274 respondents over 18 years completed the video survey. Summary statistics for the sample and the 2011 Census of the Australian population are in Table 4. The survey sample matches the population well except for a larger proportion of university (college) graduates and a smaller proportion of people over the age of 75.

Apart from demographics, respondents answered a large set of questions about numeracy, financial literacy, financial product knowledge, conscientiousness, impulsiveness, risk preferences, specific past experience with the advice topics and attitudes towards financial advisers. To understand the impact of different aspects of financial literacy, knowledge and numeracy, we constructed indices to summarize their key features. We also constructed indices for risk tolerance, conscientiousness and impulsiveness to determine if they had an impact on respondents' choices. Table 5 defines each measure and Table 6 reports summary statistics from the sample.

At the aggregate level, respondents chose good over bad advice 83% of the time. Like the pre-test, respondents found debt repayment was the easiest topic, and they chose good advice more than 90% of the time. Choosing an index fund manager on the basis of fees was considerably more difficult, as was deciding on the best stock diversification strategy.

Differences between advisers are small. Advice offered by the young female adviser was chosen most often, and the older male's advice was chosen least often.[25] This seems at odds with common stereotypes of financial advisers as middle-aged men, but fits with patterns we saw in ads for financial planning services, that often featured young women. On the other hand, advice delivered while showing the 'Certified Financial Planner' label along with the adviser's name was chosen slightly more often.

Next we estimate the conditional effects of adviser, topic and respondent characteristics using logit estimation. In the subsection to follow, we focus only on choices from the first sequence of advice topics because (as we later show) later choices are influenced by opinions formed about a particular adviser at the first step, and by the

[24] People who had participated in the pre-testing were excluded.
[25] This statistics ignores the quality of the advice. However, it is important to note that all advisers gave equal number of good and bad recommendations.

topic sequence. One way to see the first choice set estimates is as predicting the sign and size of relevant factors in an initial 'meeting' between a client and adviser.

3.2 Determinants of Good Advice Choices

Table 7 reports marginal effects from the estimation of a logit model of correct choices in the first choice set offered to respondents. The estimated model is:

$$P(y = 1|x, \beta) = \Lambda(x' \beta) \quad (1)$$

where y is a binary indicator for choosing good advice, x is a vector of advice, adviser and respondent characteristics including all interactions between each adviser characteristic (gender, age, and certification) and advice topics and respondent characteristics, β is a vector of coefficients and Λ is the cumulative density of the logistic distribution.

We estimate this (and later) equations using inbuilt STATA routines (with robust standard errors). The reported marginal effects were computed by averaging individual marginal effects over all members of the sample, with standard errors calculated by the delta method. For a discrete explanatory variable, the average marginal probability effect of x_l is:

$$\widehat{AMPE}_l = \frac{1}{n}\sum_{i=1}^{N}\left[\Lambda\left(x' \beta + \Delta x_l \beta_l\right) - \Lambda(x' \beta)\right] \quad (2)$$

Characteristics of both advisers and respondents significantly influence the probability of choosing good from bad advice in the first round, but the largest effects are due to the topics themselves (Table 7). In these estimates, the reference category for topic is debt repayment, so the negative marginal effects show that correct advice is significantly less likely to be chosen on remaining topics. This is especially true for diversification and index fund fees, where topic switching accounts for a decrease of 22% and 34% in the probability of choosing good advice.

People go to financial advisers for help with problems they can't, or don't wish, to manage on their own; and since many cannot discern good from bad on relatively simple

financial questions, it is likely they will use other information available in an advice setting to help make judgments. Estimates in Table 7 show how respondents use potentially irrelevant information like adviser age to choose good from bad advice, and the competency of the respondents themselves also influenced their ability to choose well.

As in the aggregate data, adviser age was more influential than gender, with respondents tending to discount good advice from older advisers and preferring females less strongly.[26] Respondents also discounted advice from advisers not identified as a 'certified financial planner.' This is a key result: a good adviser who fails to display a qualification, when competing with advisers who do, is at a significant disadvantage.

Older, numerate, experienced and attentive respondents were significantly more likely to choose good advice. Respondents attending to the survey details (Passed IMC 1) were 10% more likely to choose good advice, and those with a past history of acting wisely on the topics in the advice experiment were 14% more likely to choose well. More numerate were 6% more likely to choose good advice, whereas overall, financial literacy, product knowledge, conscientiousness and impulsiveness all had the expected sign and economically significant sizes, but were not statistically significant. Among the interesting significant interactions not reported separately here, we observed that people with high financial literacy were less influenced by the order of the videos, and people with high conscientiousness preferred the younger advisers less.

Advice relationships usually last longer than a single meeting on a single topic. The next set of results look at how people move between the two advisers they viewed as they saw more topics.

3.3 Persistency

Now we consider the extent to which respondents chose the same adviser in their second, third and fourth choices, conditioning on the advice quality and topic and characteristics of the adviser and respondent. This is particularly important in the light of the 'mystery shopping' research of Australian Securities and Investment Commission (2012) and Mullainathan et al. (2011), who both showed a large majority of the participating 'client'

[26] The result for females was economically but not statistically significant.

auditors evaluated advisers highly and would return for more help despite the poor advice they received.

Table 8 reports the results for logit models similar to (1) but different in two key ways. First, the dependent variable is now a binary indicator taking the value of one when the adviser on the left was chosen by the respondent regardless of whether that adviser gave good or bad advice. The adviser on the left is also the first adviser to present video advice to the respondent during each scenario in the experiment. Because of the experimental design, this 'left' adviser in each of the four choice sets was always the same person. Second, the adviser characteristics are those of the left adviser in each treatment (the other adviser viewed is always a "mirror'), but we add an extra covariate (effectively a lagged dependent variable) that is a binary indicator for whether this adviser was chosen in the previous video scenario. A significant, positive marginal effect for this variable indicates that respondents tended to stick to their previously chosen adviser. We also controlled for the quality of advice offered by the left adviser in the set with the indicator 'Wrong advice.' All adviser attributes (female, age, not certified, good advice indicator) were interacted with all respondent characteristics, and 'chosen previously' was interacted with all other explanatory variables.

Respondents persisted in choosing an adviser as they viewed the video advice pairs. If a respondent had chosen the left adviser in the previous set they were about 6% more likely to choose them in the next, an effect that increased in size over the four choices. Significant marginal effects of specific adviser characteristics (e.g., gender, age and certification) only mattered in the first scenario pair as they didn't change in later choices and were effectively embedded in the lagged dependent variable. In other words, it would be surprising if, for example, age became important in the second choice if it was unimportant in the first. Once a respondent began to show a preference for a younger, certified adviser, they tended to stick with them.

Unsurprisingly, people avoided wrong advice more often than not, as shown by the large and significant marginal effect of the bad advice indicator. The significant negative marginal effect of the fee topic is harder to explain. One possibility is that since respondents found this topic particularly difficult to decide whether the advice was good

or bad, they tended to follow the last recommendation they heard; i.e., they followed the adviser on the right's advice much more than they did for the other (easier) topics.[27]

Several respondent characteristics were important in predicting persistence. In Table 8 bolded marginal effects include impacts of significant interactions between a covariate and an indicator for the adviser being chosen in the previous topic. These estimated interaction coefficients are not reported separately as there were a large number of them, but some details were interesting and so worth noting. In several equations, the interaction between high financial literacy and an indicator for the lagged choice is significant and negative, suggesting that more literate respondents had less persistence. However, female respondents were significantly more likely to choose the same adviser again, and female *advisers* were more likely to be chosen again. Conscientious people tended to stick to one adviser more (positive interaction effect), as did those who had chosen well when faced with similar real-life decisions in the past, although the latter effect is marginally significant and small. Coefficients on the interaction between the indicator for respondents attentive to the survey (passed IMC1) and the indicator for previously chosen were significant and negative at the third choice set, though the sign was reversed for IMC2.

Summing up, even in this highly stylized setting, respondents showed a conditional tendency to stick to one adviser or the other, and the size of the marginal effect was economically meaningful at around 6%. There is some evidence that women in the sample were more prone to persistence but more financially literate people were less so. So, it follows that first impressions matter. This is the aspect of advice that we consider in more detail in the next section.

3.4 Evaluation of Adviser Characteristics

Clients taking financial advice must decide if advisers are sufficiently trustworthy, professional, and competent to follow. However, as noted in the literature review, field studies show most clients are all too willing to trust advisers, despite being given a poor quality advice 'product.' Two possibly interrelated explanations are the complexity of

[27] Very few respondents looked over the videos more than once so the second advice was almost always the last advice seen.

some financial problems (Australian Securities and Investments Commission 2012), and a tendency for some advisers to 'cater' to clients' prior opinions (Mullainathan et al. 2012).

In a recent theoretical study, Fryer et al. (2013) show both complexity and catering are likely to lead to higher trust among clients of financial advisers. In a general setting, they proposed rational (Bayesian) agents who receive a series of signals about two possible states of nature. Some signals are ambiguous and need to be interpreted by the agents and others are unambiguous. The key difference between their set up and a standard approach is that they require agents to update their priors over the state as each signal arrives, rather than waiting for the whole stream of signals to complete. (Fryer et al. (2013) call this 'limited memory', where agents cannot recall the whole sequence of information.) They demonstrate how agents who begin with different priors will end up with polarized views of the true state despite receiving the same stream of signals.

It is reasonable to assume that at the time they met advisers, most auditors and shadow shoppers in the field studies cited earlier held prior expectations that the adviser's professionalism and qualifications would make good advice likely. However, advisers' 'catering' to clients, by initially supporting their existing strategies or views, functions as a 'clear' signal, reinforcing that prior. If advisers follow up with biased advice on complex topics (i.e., with ambiguous signals), clients would still update their prior in favor of the adviser. The end result is a very different financial strategy from that confirmed by the adviser initially, along with clients who are more convinced than ever the adviser is trustworthy. This outcome is noted by Mullainathan et al. (2012), who observed that the final strategies recommended to their auditors differed a lot from those the advisers confirmed at the start of a meeting.

Key aspects of the Fryer et al. (2013) theory fit features of our experiment. First, during the experiment, as respondents hear advice on each topic they first form, then update, a prior over which of the two advisers they see can be trusted, is competent, and should be followed. Second, the choice experiment structure forces updating of priors as each topic is presented, because respondents must make an explicit choice in each of the four video pairs and cannot be equivocal. Third, 'signal quality' varies from topic to topic. Many respondents made more mistakes on choice of index fund (fees) and stock

selection (diversification) than on account consolidation and debt discharge. In other words, many respondents got 'clear signals' on the easy topics of consolidation and debt, but 'ambiguous signals' on fees and diversification. Finally, after they made a sequence of four choices, respondents were asked to compare the two advisers they viewed on several characteristics, including trustworthiness. This gave us information about respondents' posterior distributions over the 'type' of each adviser they had seen.

In this subsection, we show respondents exhibited some similarity with predictions of Fryer et al. (2013). If the first signal respondents got was good (bad) advice that confirmed (contradicted) their pre-existing views on an easy topic, the favorable (unfavorable) opinion of the adviser that resulted was not changed by bad (good) advice on a hard topic. Further, for the same number of good/bad and clear/ambiguous signals, we found that sequence matters. Respondents who received a clear, bad signal first rate advisers worse than respondents who get a clear, good signal first, even though they otherwise get similar information.

3.4.1 Estimation set up

Recall that after making four choices, respondents compare the two advisers they saw on trustworthiness, competence, attractiveness, understanding, professionalism, genuineness and persuasiveness. Respondents could rate either adviser as highest on each characteristic or the same on both. As a result, we have a pair of ratings for each respondent for each adviser characteristic: (1,0), (1,1) or (0,1) where 1 indicates either agreement with the statement that the left or right adviser MOST displays this characteristic, or that both advisers are the same.

To expose the effect of clear and ambiguous signals on adviser quality, and their relationship with good (G) and bad (B) advice, we separate topics into hard or ambiguous (index fund fees and stock diversification) and easy or clear (debt repayment and account consolidation). The experimental design limited sequences of good and bad advice to GGGG, GGBB, GBGB and GBBG (and their opposites). We focus on interactions of these 'quality' sequences with two 'clarity' sequences of hard (H) and easy (E) topics: EHHE and HEEH.

The first advice clarity sequence (EHHE) should give a clear signal to most respondents on adviser type in the first video pair, which, conditioning on other attributes, will lead to a revised prior over which adviser is more trustworthy and competent. According to Fryer et al. (2013), if an ambiguous (H) signal is received next, respondents who form a positive prior in the first choice set will update that prior by treating the ambiguous signal as good advice, and those who have formed a negative prior will do the reverse.

This effect is clearly seen in Figure 3. The dependent variable in the logit model underlying each panel is a binary variable where one indicates that the respondent rated the adviser as MOST displaying the characteristic (trustworthy, competent, attractive, professional) or at least as good as the other adviser, and a zero indicates they were worse. [28] We regressed these ratings on adviser attributes (female, older and not certified), the 'quality' sequence viewed by the respondent (BG combination) and the interaction between the quality sequence and an indicator variable equal to one when the respondent clarity sequence was HEEH and zero for EHHE.

Each panel of the figure shows the predictive marginal effects on adviser ratings of each quality sequence (BG combination) in the experiment, conditioning on two 'clarity' sequences. The pale boxes graph the 95% confidence interval around the predictive margins of the quality sequence shown on the horizontal axis, when the clarity sequence was EHHE, and the dark box graphs the same for the clarity sequence HEEH. Dashed outlines highlight two significantly different marginal effects based on a chi-square test of equality.

Advisers who gave a clear good signal in the first pair followed by bad advice on two ambiguous topics (GBBG/EHHE) were likely to be rated as just as trustworthy, competent and professional as advisers who gave only good advice (GGGG/EHHE). By contrast, if an adviser began with bad advice on an easy topic (BGGB/EHHE), respondents rated them less trustworthy than all advisers, apart from those giving only bad advice, despite having given good advice half the time. Comparing effects in the

[28] We show the results for four of the seven characteristics tested in the survey. The full set of marginal effects are set out in the Appendix C.

dashed boxes shows how bad advice on ambiguous topics was penalized much less than bad advice on easy topics.

In general, trustworthiness, professionalism and competence were rated higher for advisers whose first advice was the easy-good combination than for advisers who began with the easy-bad combination regardless of the rest of the sequence. This can be seen by comparing the height of the four pale boxes on the left hand side of the graphs with the consistently higher four boxes on the right hand side. The exception was attractiveness ratings. In most respects the clarity and quality sequence was irrelevant to attractiveness ratings, although advisers delivering only bad advice were rated much less attractive than those giving at least some good advice. Clients were suspicious of advisers who contradicted their prejudices of what good advice should be, but are easily convinced to trust advisers who only gave bad advice on difficult topics, especially if they confirmed the client's views initially. As both Mullainathan et al. (2012) and ASIC (2012) surmise, the interaction between catering and complexity is indeed a key to understanding the tendency of clients to return to advisers who offer poor advice.

3.5 Learning

An obvious way to make clients less vulnerable to 'catering' is to increase their financial knowledge. The more people know, the more likely they are to detect a poor quality adviser in a consultation. Our respondents had two opportunities to learn more about the four topics: the video experiment itself and the debriefing. They also had a monetary incentive to learn in both parts of the survey, as they received more draws in the lottery prizes for more correct answers.

By tracking each person's knowledge at each stage, we see the transition from pre-testing to debriefing and can gauge how the probability of correct or incorrect responses on these topics changes at each stage. The three points of testing on each topic makes a two-stage Markov chain that we model as follows.

At stage one we estimate the probability that each respondent chooses the correct answer to the pre-experiment survey question. [29] We estimate logit models for each of the four topics

$$P\left(z_{i,j,1}=1\middle|x_i,\gamma_{j,1}\right)=\Lambda(x_i'\gamma_{j,1}) \tag{3}$$

where $z_{i,j,t}$ is a binary indicator taking the value one when respondent *i* chooses the correct answer to a question on topic *j* at stage *t=1,2,3* (preliminary questions, experiment, debriefing), x_i is a vector of including a constant and respondent characteristics (IMC indicator, age, gender, financial literacy, product knowledge, numeracy, conscientiousness, impulsiveness, past correct decisions and risk tolerance), and $\gamma_{j,1}$ is a vector of coefficients.

The next step is to estimate two models of the probability that respondents choose good advice during the experiment, conditioning on their answers at stage one. The set of explanatory variables were expanded by an indicator for whichever of the four advisers gave bad advice to the respondent on this topic, and whether that adviser was certified or not:

$$\begin{aligned} &P\left(z_{i,j,21}=1\middle|x_{i,j},\gamma_{j,21},z_{i,j,1}=1\right)=\Lambda\left(x_{i,j}^{'}\gamma_{j,21}\right)|z_{i,j,1}=1, \\ &P\left(z_{i,j,22}=1\middle|x_{i,j},\gamma_{j,22},z_{i,j,1}=0\right)=\Lambda\left(x_{i,j}^{'}\gamma_{j,22}\right)|z_{i,j,1}=0. \end{aligned} \tag{4}$$

[29] The preliminary questions for each topic are: **debt repayment** *You have a $2000 credit card debt but you also want to save for a holiday. You should 1.) Save for your holiday first; 2.) Pay off your credit card debt; 3.) Do not know.* 1 and 3 were coded as incorrect*;* **consolidation** *Suppose you have recently changed jobs. You are now trying to decide whether or not to move your superannuation to your new employer's superannuation fund. You should 1.) Consolidate your superannuation accounts in one fund 2) Keep two superannuation funds in different funds 3) Do not know.* 2 and 3 were coded as incorrect; **index fund** *Which of the following best describes a share index fund? 1) Share index fund managers buy and sell shares to match the performance of a specific index (e.g. the 'ASX 200' index) 2) Share index fund managers actively select shares to outperform the relevant index (e.g. the 'ASX 200' index) 3) Do not know* 2 and 3 were coded as incorrect; **diversification** *If your investment account is invested in a 'balanced' investment option, this means that it is invested exclusively in safe assets such as savings accounts, cash management accounts and term deposits. 1) True 2)False 3) Do not know* 1 and 3 were coded as incorrect.

The last stage is to repeat the estimation in (4) with answers to the debriefing quiz, conditioning on answers given in the experiment:

$$P\left(z_{i,j,31}=1\middle|x_{i,j},\gamma_{j,31},z_{i,j,2}=1\right)=\Lambda\left(x_{i,j}^{'}\gamma_{j,31}\right)|z_{i,j,2}=1,$$
$$P\left(z_{i,j,32}=1\middle|x_{i,j},\gamma_{j,32},z_{i,j,2}=0\right)=\Lambda\left(x_{i,j}^{'}\gamma_{j,32}\right)|z_{i,j,2}=0. \quad (5)$$

Before moving to the discussion of the results, it is important to note that the results for stage one for the harder topics (index fund fees and stock diversification) should be interpreted with caution. The preliminary questions for the easy topics (debt and consolidation) aligned closely with the experimental advice and debriefing instructions (compare the questions presented in footnote 28 to the underlined advice in Table 3). On the other hand, the preliminary questions for the harder advice did not directly address index fund fees or diversification. Rather, the index fund preliminary question tested the respondents' general understanding of index funds and the diversification question tested whether respondents understood the components of a diversified balanced fund. Therefore, while the preliminary questions were related to the topics, the responses are a rough proxy for initial knowledge on the harder topics. As a result, measurement error is expected in any learning detected in stage 1 for these topics. The reader should keep this in mind when interpreting our findings.

Table 9 reports marginal effects from two of the five models estimated for each of the four topics. Overall, we found pre-existing knowledge and attentiveness encouraged more learning in the experiment and debriefing. Learning, in the sense of correcting mistakes at the next stage, was more likely for respondents with high financial literacy scores (index fund fees and stock diversification) or high product knowledge (account consolidation and diversification) or females (fees and debt). Similarly, high impulsiveness made it less likely respondents would answer correctly in the debriefing (fees and consolidation). Passing the second IMC made correct answers significantly

more likely at the second and third stages but passing the first IMC made a correct answer less likely for the consolidation topic.[30]

Finally, to get an idea of the transfer of respondents from one state to another as they progressed through stages of the survey, consider the flow diagrams shown in Figures 4 and 5 for two of the four topics, debt repayment and consolidation. [31] In the case of debt repayment shown in Figure 4, 97 people answered incorrectly before the experiment and 98 in the debriefing. Interestingly, these were not all the same people. Some individuals (58 people) who initially answered incorrectly appeared to 'learn' in the experiment and continued to answer correctly after the debriefing. While others (69 people) who initially answered correctly, reversed their opinions by responding incorrectly in the experiment. Of that group, 48 individuals then corrected themselves during the debriefing. One explanation for this finding is that the advisers' attributes or the video setting itself during the experiment may have influenced these individuals. While most people knew the correct answer to this question from the start, it appears there is evidence of learning among the small subset that answered incorrectly initially. Furthermore, the transitions of others between states also suggest that the experimental setting confused some respondents.

A similar picture emerged from answers to questions on consolidation shown in Figure 5. Whereas 138 respondents answered the preliminary question on consolidation incorrectly before the experiment, 103 corrected their responses in the experiment itself. On the other hand, 95 respondents who gave a correct answer before the experiment took the wrong advice in response to the videos. While the number of incorrect responses after the debriefing was roughly half the preliminary responses, suggesting learning, there is still a notable level of confusion among respondents similar to the earlier flow chart. For example, 83 people responded incorrectly in the experiment but correctly before and after it, lending more support to the idea that adviser attributes and the experimental setting may have had a significant influence.

[30] Further investigation indicates that these results might be related to a correlation pattern in the small sample.

[31] We focus exclusively on the easy topics because as discussed earlier the preliminary questions for these topics were more aligned with the in experimental advice and debriefing than the harder topics. The flow charts associated with the harder topics are available on request.

In summary, we found some evidence of learning on topics in the experiment. For the easier topics, we saw increased 'mistake' rates during the experiment itself, but corrected at the debriefing stage. The numbers of transitions into incorrect states from correct states related to these basic questions suggests that many respondents were still confused about these topics. The unreported results from the harder topics were even more dramatic but must be interpreted with caution given the caveat mentioned earlier.

4. Implications and Conclusion

We used a unique incentivized online choice experiment to study how individuals evaluated the quality of advice they received from advisers and whether their evaluation of the adviser's attributes, such as trustworthiness and professionalism, were influenced by factors other than overall advice quality. Our aim was to better understand why research suggests that individuals often view advisers who deliver poor quality advice favorably. We were particularly curious whether more or less informative adviser attributes like age, gender, and certifications could influence individuals' judgment of the quality of advice and whether they might follow a particular adviser regardless of the quality of advice being given to them.

We used a customized online video discrete choice experiment to test our research questions. Video advice delivery does not completely mimic a typical face-to-face meeting, but this approach offered several advantages over other empirical methods because it allowed us to eliminate variability in delivery of financial advice and we could easily control conditions in the experiment.[32] Before the experiment was built, the features were thoroughly pre-tested. In addition, to ensure consistent delivery across actors, the advice given was carefully scripted and the production of the video segments was closely supervised. Furthermore, we intentionally selected financial topics where only one recommendation could be considered 'good' advice and applicable to all different types of people. Also by design, the topics chosen were ones that ordinary consumers in many countries often confront, including paying down debt, consolidating retirement accounts, choosing a low-fee index fund and diversifying a stock portfolio.

[32] We provide results on video advice but cannot make strong claims about the extent to which results can be generalized to a face to face setting.

The experiment systematically varied the two advisers each respondent saw, the order sequence of advice topics and the quality of the advice each adviser provided on each topic. The experiment was based on design methods commonly used in discrete choice experiments.

Our experiment produced several interesting results. First, most individuals did well at separating good advice from bad advice. However, what was noteworthy was that respondents found that for some topics it was significantly more difficult to discriminate on advice quality than for others, particularly topics related to stock diversification and index fund fees. We referred to these topics as 'hard' topics, and paying down debt and consolidating retirement accounts as 'easy' topics. Categorizing our advice topics into these two groups proved valuable for our subsequent analysis of persistency and evaluation of advisers.

Second, we found individuals rely on extraneous signals to judge advice quality; for example, respondents preferred younger advisers. Advisers with certifications were also chosen more often. Respondent characteristics also mattered, specifically older, more numerate individuals, and those who had made good decisions in the past were more likely to choose 'good' advice.

Third, individuals demonstrated a degree of persistency in their choice of an adviser to follow, suggesting some clients may stay with advisers even when the quality of advice is not always good.

Fourth, as mentioned earlier, we found an important interplay between the quality of advice, the difficulty of the advice topic, and the order the advice topics were presented. Our results were consistent with a Bayesian updating model with clear and ambiguous signals developed by Fryer et al. (2013). This model predicts that respondents should be able to more easily form an opinion about an adviser's characteristics, such as trustworthiness and professionalism, after receiving advice on an 'easy' topic because the quality of the advice is simpler to discern and, therefore, provides more information about the adviser and a clear signal of quality. On the other hand, 'hard' topics, which produce ambiguous signals of quality, reinforce respondents' pre-existing opinions about the adviser, as long as respondents are compelled to update their prior at each signal, as the choice experiment demands. Our results are consistent with these predictions; we

found that advisers who could establish their trustworthiness early on an easy topic by providing good advice were still trusted after giving wrong advice on hard topics, and vice versa. Thus, our experiment provides a potential explanation as to how some advisers can maintain good reputations despite giving bad advice, and gives experimental evidence for 'catering' by advisers observed in field studies.

Finally, we found some evidence of learning in the experiment. For easier topics, we saw increased 'mistake' rates during the experiment itself that were corrected at the debriefing stage, suggesting that some respondents with sound views could be persuaded by the video content. In addition, transitions into incorrect states from correct states suggest that a subset of respondents were still confused about these very basic topics. This suggests that financial advisers can still play a role even when financial education is available.

Taken together, these results have many important public policy implications, especially in light of the growing international evidence that advisers often give poor quality advice to their clients that is not in their client's best interests. For individuals with low financial literacy, the concern should be even greater because theoretical research suggests that in some contexts individuals with low financial literacy are more likely to be given poor recommendations. Further compounding this problem is the evidence from the empirical literature suggesting that this vulnerable group is also less likely to question the advice they are given and more likely to follow it in whole than others with greater financial literacy. All of this research provides the motivation for our policy recommendations.

The first immediate implication of our findings is that consumers need more assistance in choosing advisers. Our results suggest that individuals struggle to judge the quality of advice on complicated but common issues. One way to help individuals select a high quality adviser is to provide adviser certification. Our results show that attributes like certifications can have a significantly positive effect on choice. This can be good or bad depending on how the certification is obtained.

In the U.S., too many certifications of variable quality exist, resulting in documented consumer confusion and the possibility that the certification is a misleading rather than effective signal of adviser quality. If the U. S. and countries in situations like

the U.S. could endorse just one qualification that required passing rigorous and repeated examinations, as well as regular training on relevant issues, certification could become an effective signal. Advisers holding this certification should also be regulated and frequently reviewed in a timely fashion to ensure consistent quality.

Regarding the hurdles for certification, there is no reason why associated exam(s) should not be challenging to pass. Other fields like health and law in the U.S. have well known examinations that significantly challenge testers. There is an advantage to such hard exams, which is that medical boards and bar exams weed out poor performers due to difficulty. Yet, hurdles for financial certifications in the U.S. and Australia are far lower than in these fields, raising an obvious question as to why the implications of poor financial planning are not just as serious as poor health choices or following bad legal advice? Assuming this is true, there is a compelling case for ensuring financial planners are well trained.

Remuneration strategies also should be designed to align adviser and client incentives. Guidance from Inderst and Ottaviani's (2012b) discussion of the empirical and theoretical literature related to this topic should be strongly considered when recommending and implementing methods.

Finally, any advisers falling under an endorsed certification should be required to uphold the strictest standard of care for consumers. While certifications can ensure that advisers are knowledgeable and up-to-speed about developments in finance, it does not guarantee necessarily that they provide advice in their client's best interest. In the U.S., the fiduciary standard should be implemented across the board for all types of advisers. By doing this, adviser responsibilities to clients when making recommendations would be clearly understood by everyone involved.

By implementing all or some of these measures, individuals with low levels of financial literacy can be better protected and the likelihood of selecting a good adviser increased. In the meantime, consumers should educate themselves about the regulated standards of care advisers must provide them, the methods for adviser remuneration and the meaning of different certifications in terms of supervision and required training and testing. Unfortunately, this last recommendation demands a significant time investment and personal motivation on the part of everyday consumers to follow. Given evidence

from past research, this type of complex information acquisition may be unrealistic to expect from most people particularly the most vulnerable populations characterized by limited financial literacy.

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Table 1. Design of the sequence of good and bad advice

Advice from adviser 1				Advice from adviser 2 (mirror image)			
1st pair	2nd pair	3rd pair	4th pair	1st pair	2nd pair	3rd pair	4th pair
B	B	B	B	G	G	G	G
B	B	G	G	G	G	B	B
B	G	B	G	G	B	G	B
B	G	G	B	G	B	B	G
G	B	B	G	B	G	G	B
G	B	G	B	B	G	B	G
G	G	B	B	B	B	G	G
G	G	G	G	B	B	B	B

Notes: Table shows sequence of advice quality for each treatment in the experiment. Each respondent viewed one of the eight rows.

Table 2. Sequence of advice topics

Sequence 1	Sequence 2	Sequence 3	Sequence 4
Debt	Diversification	Consolidation	Fees
Diversification	Debt	Fees	Consolidation
Fees	Consolidation	Diversification	Debt
Consolidation	Fees	Debt	Diversification

Notes: Table shows sequence of advice topics for each treatment in the experiment. Each respondent viewed one of the eight columns, interacted with the rows in Table 1.

Table 3. Financial advice scripts

Financial Topic & Narrator Introduction	Advice
Paying Down Debt In this scenario, you have accumulated some large outstanding credit card debt with a high associated interest rate. Recently, you have inherited some money unexpectedly and would like to know what to do with it. The next 2 financial advisers will recommend what you should do.	**Good Advice:** I understand that you have some large credit card debt but recently inherited money. It is important to think about your overall financial position when making a decision about what to do. It is easy to simply save this big sum of money in a savings account to achieve a savings goal, but the interest gained is far smaller than the high interest expense of not paying down your credit card debt. Therefore, I recommend you pay off your credit card debt to eliminate the high interest charges.
	Bad Advice: I understand that you have some large credit card debt but recently inherited money. It is important to think about your overall financial position when making a decision about what to do. It is hard to save big sums of money so it is important to think about your special savings goals when making this decision. Therefore, I recommend you ignore your credit card debt for now and put your inheritance in a separate savings account.
Consolidating Retirement Accounts In this scenario, suppose you have just changed jobs and started a new superannuation account. Currently, you already have two other superannuation accounts from past jobs. The next 2 financial advisers will recommend what you should do about it.	**Good Advice:** I see that you have three superannuation accounts with different super funds. Did you know that people are typically charged regular fixed administration fees on all of these superannuation accounts? As a result, I recommend that you roll all of these accounts together so you are not paying extra fees.
	Bad Advice: I see that you have three superannuation accounts with different super funds. Did you know that people are typically charged regular fixed administration fees on all of these superannuation accounts? Despite that, I recommend that you not roll all of these accounts together so you are diversified across different superannuation funds.

Table 3 Continued

Financial Topic & Narrator Introduction	Advice
Choosing a Low-Fee Index Fund In this scenario, you are thinking about investing in a managed share index fund. The next 2 financial advisers will recommend what you should do about it.	**Good Advice:** I understand you need help regarding your choice of share index fund. Did you know that all share index funds invest with the aim of matching the overall share market return? These various share index funds provide an almost identical product so why pay a fund manager more than the others for the same thing. Therefore, I recommend that you choose the share index fund with the lowest management fees.
	Bad Advice: I understand you need help regarding your choice of share index fund. Did you know that all share index funds invest with the aim of matching the overall share market return? These various share index funds provide an almost identical product but some fund managers have better reputations than others and you get what you pay for. Therefore, I recommend that you avoid the share index funds with low management fees.
Diversifying a Stock Portfolio In this scenario, you are thinking about investing in the share market. The next 2 financial advisers will recommend what you should do about it.	**Good Advice:** I understand you need help regarding how to invest your superannuation money. Did you know money invested in shares can go up and down? It is good to try to balance out the shares that go up with the shares that go down. Therefore, I recommend that you spread your money across a variety of shares in different types of companies and industries.
	Bad Advice: I understand you need help regarding how to invest your superannuation money. Did you know money invested in shares can go up and down? That is why it is good to invest in something you know and can easily monitor. Therefore, I recommend that you invest your money in one blue chip company.

Table 4. Demographics, survey sample and Australian population (18 – 79 years)

	Survey Respondent Sample	18-79 yrs Australian Population		Survey Respondent Sample	18-79 yrs Australian Population
Gender			**Marital Status**		
Male	50%	49%	Never Married	25%	30%
Female	50%	51%	Divorced/Separated	8%	13%
Age					
18-24 years	9%	10%	Widowed	3%	3%
25-29 years	11%	10%	Married or long term relationship	64%	54%
30-34 years	12%	10%	**Personal Income**		
35-39 years	12%	10%	$1-$20,799 (i.e. less than $399 a week)	22%	25%
40-44 years	12%	10%	$20,800-$51,999 (i.e. $400-$999 a week)	34%	32%
45-49 years	10%	10%	$52,000-$103,999 (i.e. $1,000-$1,999 a week)	30%	23%
50-54 years	10%	10%	$104,000 (i.e. $2,000 a week) or more	6%	7%
55-59 years	7%	9%	Negative or Nil Income	8%	6%
60-64 years	6%	8%	Not Stated	0%	7%
65-69 years	7%	6%			
70-79 years[a]	3%	8%			
Work Status			**Highest level of Education**		
Employed	68%	63%	High School or Less	24%	40%
Unemployed	4%	3%	Vocational/Technical certificate	22%	20%
Not in the labor force	15%	29%	Tertiary diploma	12%	9%
Retired	13%	not broken out	Bachelor degree	25%	15%
Not stated	0%	5%	Graduate certificate, diploma or degree	16%	6%
			Not Stated	0%	10%

Notes: Table shows percentages of survey sample of 1274 respondents by demographic category compared with the Australian census data for 2011.
Source: Survey results and Australian Bureau of Statistic. [a]Survey sample includes all respondents over the age of 70 years.

Table 5. Variable definitions

Variable Name	Description
Adviser characteristics	
Female	Indicator variable that equals one if the adviser was female, zero for male.
Older	Indicator variable that equals one if the adviser was older, zero for younger.
Not certified	Indicator variable that equals one if adviser's name was displayed, zero when 'Certified Financial Planner' was also displayed.
Advice	
Correct advice shown first	Indicator variable that equals one if the correct advice was shown before the incorrect advice, zero otherwise
Topic: Account consolidation	Indicator variable that equals one if the topic was account consolidation, zero otherwise
Topic: Stock diversification	Indicator variable that equals one if the topic was stock diversification, zero otherwise
Topic: Index fund fee	Indicator variable that equals one if the topic was index fund management fees, zero otherwise
Topic: Debt repayment	Reference category for advice topic
Respondent characteristics	
Passed IMC 1	Indicator variable that equals one if the respondent answered the first instructional manipulation check correctly, zero otherwise
Passed IMC 2	Indicator variable that equals one if the respondent answered the second instructional manipulation check correctly, zero otherwise
Respondent female	An indicator variable that equals one if the respondent is a female, zero otherwise
Respondent age	An polychotomous variable that equals one if the respondent is 18-24 years and rising by one in 5 years steps
Financial literacy	An indicator variable that equals one if the respondent's correct percentage on four financial literacy questions is above the sample median, zero otherwise. Questions test simple interest, inflation, diversification and compound interest.
Numeracy	An indicator variable that equals one if the respondent's correct percentage on three numeracy questions is above the sample median, zero otherwise. Questions test fractions, percentages and probability.
Product knowledge	An indicator variable that equals one if the respondent's correct percentage on four financial product questions is above the sample median, zero otherwise. Questions test topics used in advice experiment: debt, index funds, account consolidation, diversification.
Conscientiousness	An indicator variable that equals one if the respondent's conscientiousness is above the sample median, zero otherwise. Respondents rated themselves as organized, responsible, hardworking and careless (reverse coded) on a four point scale. Ratings were averaged.
Impulsiveness	An indicator variable that equals one if the respondent's impulsiveness is above the sample median, zero otherwise. Respondents rated themselves as buying too much, buying impulsively, without planning and or unnecessarily on a five point scale. Ratings were averaged.
Past correct decisions	Continuous variable measuring the percentage of times the respondent reported having acted competently in past financial decisions, as measured by eight examples relating to diversification, debt management, consolidation and investment management fees.
Risk Tolerance	Continuous variable measuring respondents' Likert scale ratings on five of Finametrica risk survey questions: risk tolerance compared to others; willingness to take risk in financial decisions (job, investments, overall); and confidence in their ability to make good financial decisions. Ratings were rescaled with zero indicating very low and one indicating very high tolerance then summed.

Table 6. Summary of survey responses

Variable	
Good advice chosen	*% of total choices*
All topics	83
Topic: Account consolidation	90
Topic: Stock diversification	81
Topic: Index fund fee	68
Topic: Debt repayment	93
Advisor Chosen	
Younger male	25
Older male	24
Younger female	26
Older female	25
Certified planner	51
Respondent characteristics	*% of respondents*
Passed IMC 1	89
Passed IMC 2	93
	Median score
High Financial literacy	0.75
High Numeracy	0.67
High Product knowledge	0.50
High Conscientiousness	3.40
High Impulsiveness	2.50
Past correct decisions	0.63
Risk Tolerance	2.34

Table 7. Marginal effects from logit estimation of correct advice choices

Adviser characteristics	
Female	0.027
	(0.020)
Older	-0.063***
	(0.020)
Not certified	-0.045**
	(0.020)
Advice	
Correct advice viewed first	-0.051**
	(0.020)
Topic: Account consolidation	-0.117***
	(0.041)
Topic: Stock diversification	-0.219***
	(0.039)
Topic: Index fund fee	-0.342***
	(0.041)
Respondent characteristics	
Passed IMC 1	0.100**
	(0.045)
Passed IMC 2	0.062
	(0.049)
Respondent female	0.025
	(0.022)
Respondent age (5 yrs)	0.011***
	(0.004)
High financial literacy	0.018
	(0.024)
High product knowledge	0.038
	(0.023)
High numeracy	0.056***
	(0.021)
High conscientiousness	0.024
	(0.022)
High impulsiveness	-0.007
	(0.022)
Past correct decisions	0.139*
	(0.077)
Risk tolerance	0.033*
	(0.020)
Sample Size	1274
Pseudo R^2	0.190

Notes: Tables shows the estimated marginal effects of adviser, advice and respondent characteristics on the probability of the good advice being selected at the first of four choice sets. The model includes main effects (18 coefficients) and a complete set of interactions between adviser characteristics (female, older, not certified) and whether the advice chosen was viewed first, and all topics and respondent characteristics (14x4 coefficients). Reference category for topic is debt repayment. Variables are defined in Table 5. Robust standard errors in brackets. *p<0.1; **p<0.05; ***p<0.01.

Table 8. Marginal effects from logit estimation of left adviser choices

Dependent variable / Model	Choice 1	Choice 2	Choice 3	Choice 4	Pooled Choices
Adviser characteristics					
Female	0.027	0.001	**0.012**	0.023	**0.013**
	(0.020)	(0.020)	(0.020)	(0.019)	(0.012)
Older	-0.063***	-0.001	-0.029	-0.026	-0.021*
	(0.020)	(0.020)	(0.020)	(0.019)	(0.012)
Not certified	-0.045**	-**0.018**	-0.032	-0.019	-0.020*
	(0.020)	(0.020)	(0.020)	(0.019)	(0.011)
Chosen in preceding topic		0.043**	0.058***	0.085***	0.056***
		(0.020)	(0.019)	(0.018)	(0.011)
Advice					
Wrong advice	-0.627***	-0.653***	-0.646***	-0.715***	-0.672***
	(0.020)	(0.020)	(0.020)	(0.018)	(0.011)
Topic: Account consolidation	0.033	-**0.039**	-0.005	0.026	-0.001
	(0.040)	(0.033)	(0.039)	(0.032)	(0.021)
Topic: Stock diversification	-0.019	0.015	-0.048	-0.017	-0.013
	(0.037)	(0.035)	(0.035)	(0.031)	(0.021)
Topic: Index fund fee	-0.055	-0.094**	-0.091**	-0.039	-0.076***
	(0.040)	(0.038)	(0.038)	(0.035)	(0.023)

Table 8. (Continued)

	Choice 1 (Cont.)	Choice 2 (Cont.)	Choice 3 (Cont.)	Choice 4 (Cont.)	Pooled Choices (Cont.)
Respondent characteristics					
Passed IMC 1	0.001	0.011	**-0.113*****	0.085**	-0.010
	(0.046)	(0.044)	(0.036)	(0.038)	(0.025)
Passed IMC 2	-0.022	-0.005	**0.012**	0.033	0.002
	(0.050)	(0.049)	(0.051)	(0.039)	(0.029)
Respondent female	0.004	0.003	**0.008**	0.000	**0.001**
	(0.022)	(0.020)	(0.020)	(0.019)	(0.012)
Respondent age (5 yrs)	0.006	0.002	-0.005	-0.003	-0.002
	(0.004)	(0.004)	(0.004)	(0.004)	(0.002)
High financial literacy	-0.043*	-0.069***	**-0.014**	0.035	**-0.020**
	(0.024)	(0.023)	(0.023)	(0.022)	(0.013)
High product knowledge	0.021	0.010	0.037*	**-0.009**	0.015
	(0.023)	(0.022)	(0.022)	(0.021)	(0.012)
High numeracy	0.006	0.010	-0.024	-0.046**	-0.017
	(0.021)	(0.023)	(0.024)	(0.020)	(0.013)
High conscientiousness	0.013	0.026	0.036*	**-0.010**	0.022*
	(0.022)	(0.020)	(0.021)	(0.019)	(0.012)
High impulsiveness	0.019	0.032	-0.031	0.009	0.006
	(0.022)	(0.021)	(0.020)	(0.018)	(0.012)
Past correct decisions	-0.076	**0.088**	0.001	-0.068	**0.000**
	(0.078)	(0.075)	(0.074)	(0.069)	(0.042)
Risk tolerance	0.031	0.020	0.009	-0.018	0.000
	(0.020)	(0.018)	(0.018)	(0.016)	(0.010)
Pseudo R^2	0.439	0.472	0.496	0.525	0.454

Notes: Table shows the estimated marginal effects of adviser, advice and respondent characteristics on the probability of choosing the first adviser. The model includes main effects (19 coefficients) and a complete set of interactions between adviser characteristics (female, older, not certified) and respondent characteristics (11x3 coefficients) and interactions between the indicator for a previously chosen adviser and all other variables (18 coefficients). Reference category for topic is debt repayment. Variables are defined in Table 5. Robust standard errors are in brackets. *p<0.1; **p<0.05; ***p<0.01. Bold coefficients indicate a significant interaction between the covariate and the indicator for 'previously chosen'.

Table 9. Learning: Marginal effects of respondent who gave an incorrect answer before experiment and correct answer after experiment

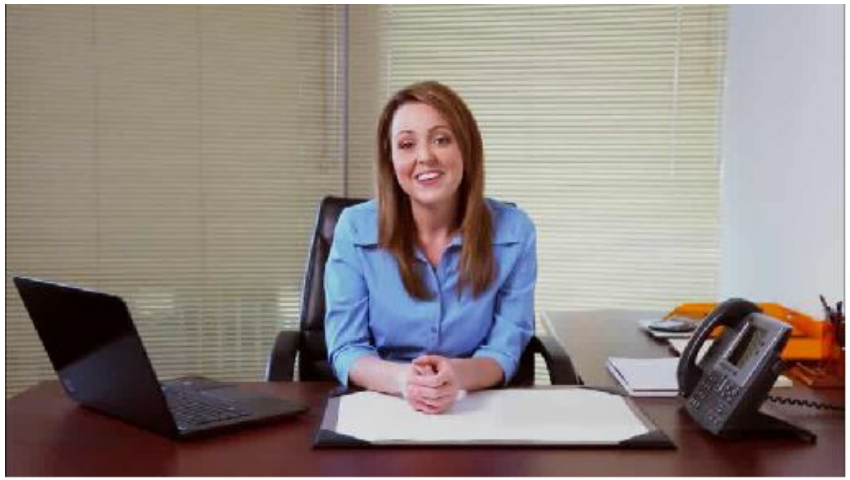
	Probability of learning in experiment given incorrect preliminary answer				**Probability of learning in debriefing given incorrect experiment answer**			
Dependent variable	Correct answer in experiment				Correct answer in debriefing			
Subsample	Respondent incorrect in preliminary quiz				Respondent incorrect in experiment			
Topics	Fees	Consol'n	Divers'ns	Debt	Fees	Consol'n	Divers'ns	Debt
Respondent characteristics								
Passed IMC 1	0.059	-0.258***	0.007	0.206	0.036	-0.224***	0.033	0.063
	(0.064)	(0.068)	(0.066)	(0.127)	(0.079)	(0.051)	(0.086)	(0.137)
Passed IMC 2	-0.054	0.406***	0.265***	0.038	0.066	0.437***	0.111	0.037
	(0.069)	(0.116)	(0.090)	(0.106)	(0.098)	(0.118)	(0.107)	(0.139)
Respondent female	0.063**	-0.092	-0.027	0.076	0.022	-0.056	0.021	0.271***
	(0.032)	(0.075)	(0.040)	(0.098)	(0.045)	(0.073)	(0.063)	(0.089)
Respondent age (5 yrs)	0.001	0.018	0.007	0.031*	-0.010	-0.012	0.002	-0.006
	(0.006)	(0.014)	(0.007)	(0.018)	(0.008)	(0.010)	(0.011)	(0.021)
High financial literacy	0.072**	0.003	a	-0.041	0.163***	-0.038	0.089	0.133
	(0.035)	(0.093)		(0.161)	(0.053)	(0.086)	(0.078)	(0.142)
High product knowledge	-0.006	0.199***	0.081*	0.033	0.045	-0.050	0.039	0.114
	(0.037)	(0.065)	(0.045)	(0.131)	(0.051)	(0.078)	(0.071)	(0.113)
High numeracy	0.009	0.113	0.051	0.059	0.083*	0.000	0.064	-0.070
	(0.034)	(0.071)	(0.046)	(0.134)	(0.049)	(0.076)	(0.071)	(0.129)
High conscientiousness	0.033	-0.103	0.066	b	0.019	-0.068	0.034	0.249**
	(0.032)	(0.096)	(0.042)		(0.046)	(0.058)	(0.063)	(0.113)
High impulsiveness	-0.002	0.050	0.013	-0.066	-0.122**	-0.136*	-0.027	0.049
	(0.032)	(0.083)	(0.039)	(0.083)	(0.047)	(0.073)	(0.063)	(0.093)
Past correct decisions	0.050	-0.145	0.094	0.194	-0.042	-0.364*	-0.090	0.494
	(0.113)	(0.331)	(0.150)	(0.323)	(0.164)	(0.212)	(0.228)	(0.330)
Risk tolerance	-0.041	0.094	0.014	0.048	-0.019	-0.063	0.050	-0.024
	(0.027)	(0.068)	(0.036)	(0.072)	(0.042)	(0.055)	(0.053)	(0.084)

Table 9. (Continued)

	Probability of learning in experiment given incorrect preliminary answer (Continued)				**Probability of learning in debriefing given incorrect experiment answer (Continued)**			
Dependent variable	Correct answer in experiment				Correct answer in debriefing			
Subsample	Respondent incorrect in preliminary quiz				Respondent incorrect in experiment			
Topics	Fees	Consol'n	Divers'ns	Debt	Fees	Consol'n	Divers'ns	Debt
Bad adviser indicator[c]								
Older male	0.012	0.045	0.067	-0.012	-0.009	0.024	0.008	0.156
	(0.042)	(0.108)	(0.058)	(0.124)	(0.061)	(0.098)	(0.078)	(0.138)
Younger Female	-0.088**	0.157	0.056	-0.076	-0.007	0.110	0.019	-0.078
	(0.043)	(0.107)	(0.054)	(0.119)	(0.058)	(0.079)	(0.074)	(0.125)
Older Female	0.011	0.091	0.054	0.114	-0.039	0.072	-0.153*	0.196
	(0.042)	(0.111)	(0.055)	(0.102)	(0.067)	(0.106)	(0.080)	(0.131)
Advisor\not certified	0.055*	-0.026	0.036	-0.063	-0.059	-0.027	-0.008	-0.188*
	(0.030)	(0.076)	(0.038)	(0.083)	(0.043)	(0.067)	(0.057)	(0.109)
Sample Size	962	138	549	97	402	130	246	90
Pseudo R^2	0.020	0.166	0.058	0.207	0.085	0.158	0.059	0.277

Notes: a. High financial literacy omitted because every individual in this subsample was rated low on financial literacy.b. High conscientiousness omitted because every individual in this subsample was rated high on conscientiousness. c. Reference category is younger male adviser. Table shows marginal effects from logit estimations of probability of learning (that is, giving a correct answer to a question on the specified topic) at second (experiment) and third (debriefing) stages of the survey given a wrong answer at the previous stage. Stage one estimates of correct responses are not reported here, but available from authors. Dependent variable in each case is a binary indicator for choosing the correct advice (answer) on the topic specified, conditioning on the individual's response to the question at the earlier stage. Independent variables are defined in Table 5.

Figure 1: Screen shot from online experimental task



You can replay a video by simply clicking on either image above

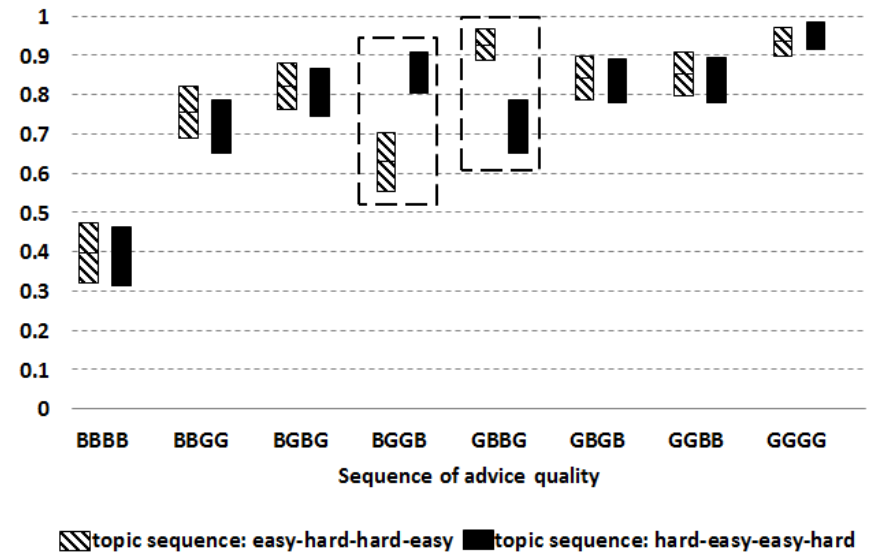
Whose advice would you be most likely to follow?

○ Financial Advisor A ○ Financial Advisor B

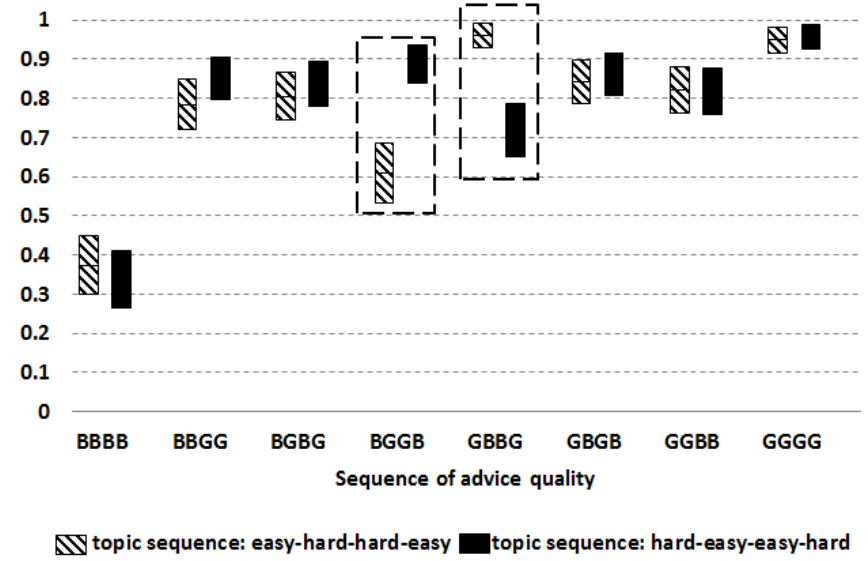
Figure 2. Pictures of advisers

Figure 3: Marginal effects of advice sequence on ratings for left and right adviser qualities

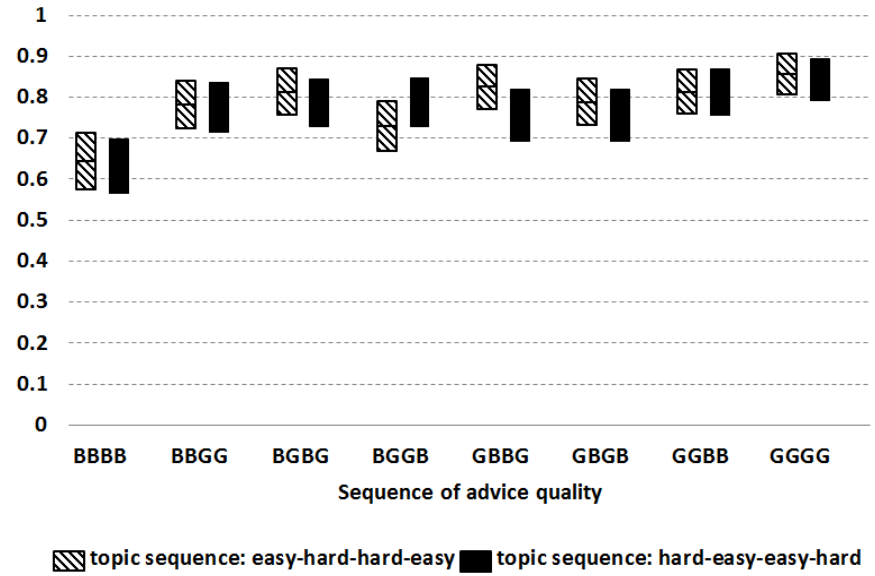
Panel A : Trustworthiness rating



Panel B: Competence rating



Panel C : Attractiveness rating



Panel D : Professionalism rating

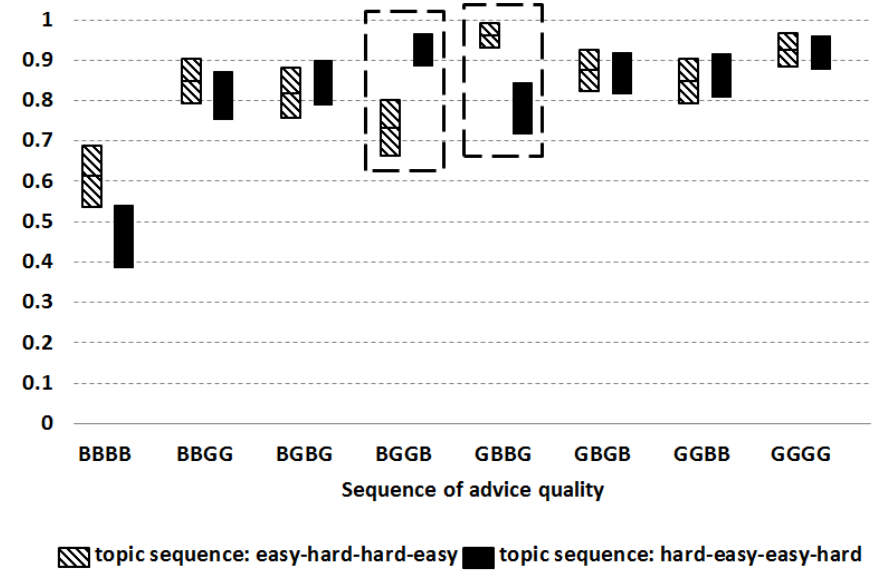


Figure 4. Number of respondents answering debt repayment questions correctly and incorrectly

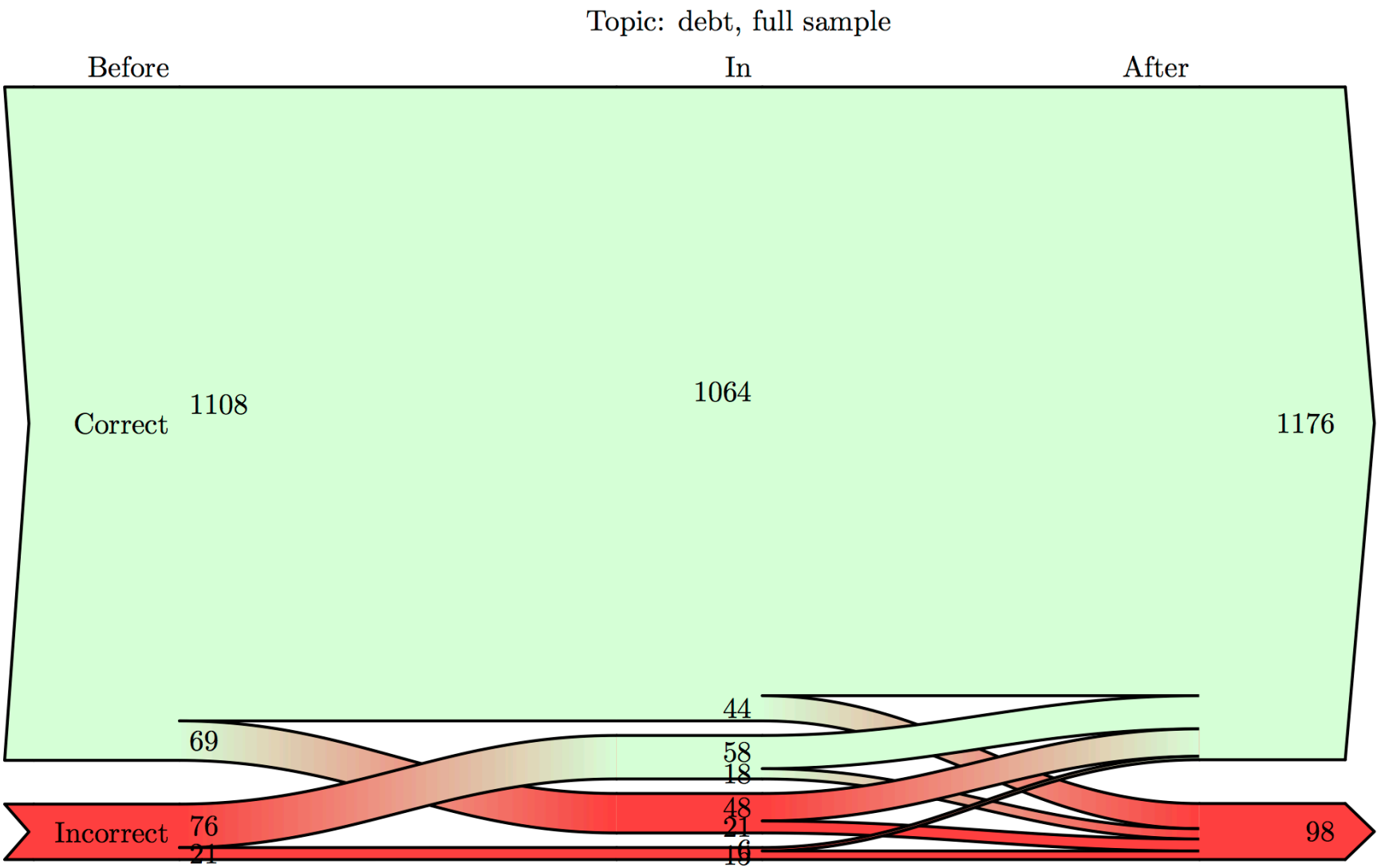


Figure shows number of respondents from 1274 total answering question on debt repayment correctly (pale shade) and incorrectly (dark shade) in the preliminary survey (before), during the video survey (In) and in the debriefing (After). Answers given in and after the experiment were separately incentivized.

Figure 5. Number of respondents answering consolidation questions correctly and incorrectly

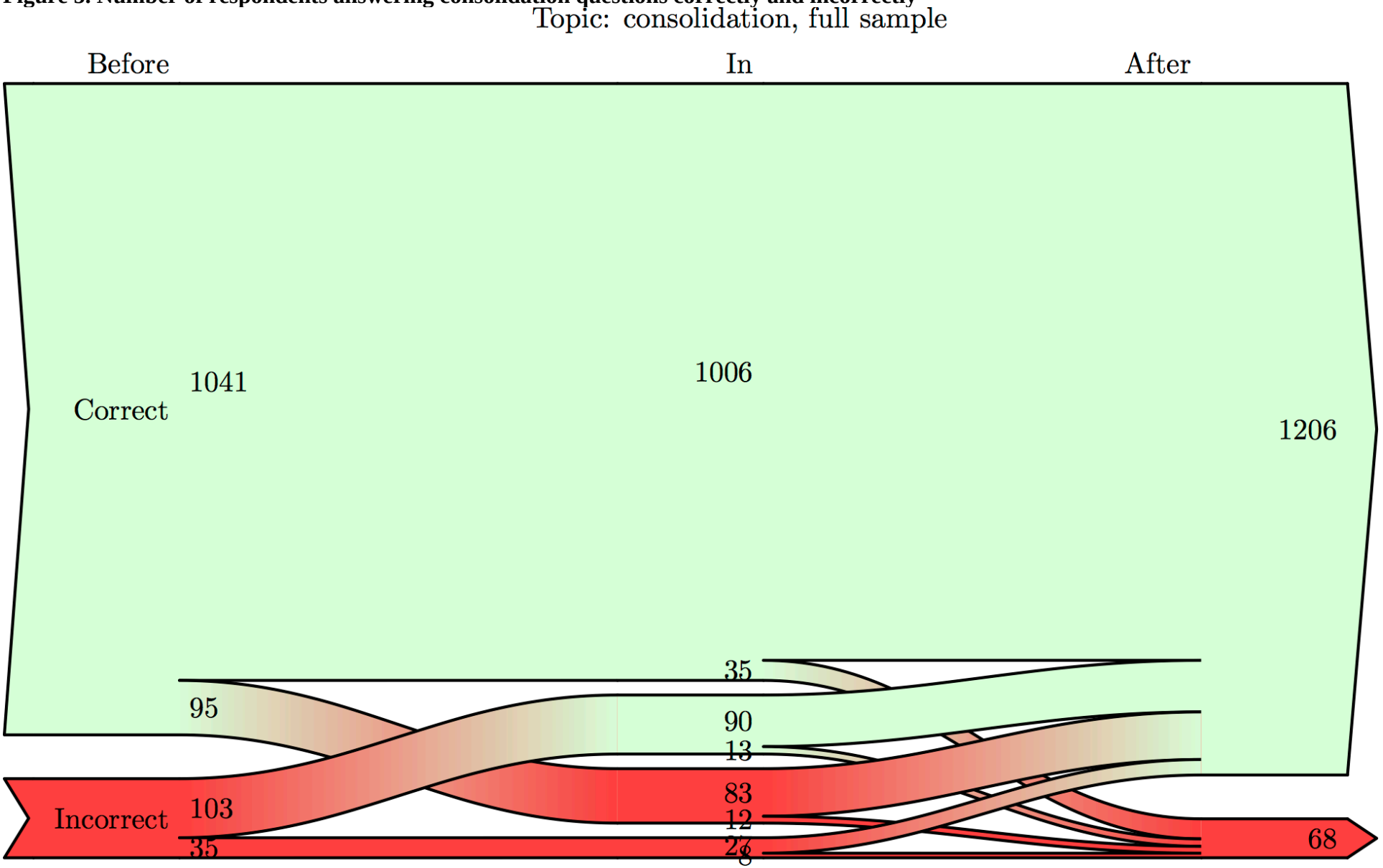


Figure shows number of respondents from 1274 total answering question on consolidation correctly (pale shade) and incorrectly (dark shade) in the preliminary survey (before), during the video survey (In) and in the debriefing (After). Answers given in and after the experiment were separately incentivized.