

**Amended Supporting Statement for a Paperwork Reduction Act  
Submission to OMB  
Federal Trade Commission Fraud Susceptibility Experiment  
(OMB Control No. 3084-NEW)**

The Federal Trade Commission (“FTC” or “Commission”) seeks to conduct an exploratory study on consumer susceptibility to fraudulent and deceptive marketing. This research would be conducted to further the FTC’s mission of protecting consumers from unfair and deceptive marketing. It is the first of two such studies that the FTC anticipates conducting. Should the FTC pursue the second study, it will seek clearance for it at the appropriate later time.

**A. JUSTIFICATION**

**1. & 2. Necessity for Information Collection and How the Data Will Be Collected and Used**

As part of its consumer protection mission, the FTC has brought hundreds of cases targeting fraud, and has committed significant resources to educational initiatives designed to protect consumers. The Commission hosted a Fraud Forum<sup>1</sup> on February 25-26, 2009 to examine fraud in the market place. The Commission has also conducted telephone surveys in 2003 and 2005 designed to measure the proportion of the U.S. adult population that has fallen victim to various consumer frauds. Despite this, surprisingly little is known about what determines consumers’ susceptibility to fraud. For example, the 2003 and 2005 FTC Consumer Fraud surveys found that education was not a significant predictor of fraud victimization. The study described in this supporting statement is a preliminary and exploratory step toward a greater understanding of the determinants of susceptibility to fraud. The study will examine whether economic and psychological characteristics of individuals contribute to vulnerability to fraud.

Economic and psychological experiments have identified several decision-making biases, such as impulsivity, over-confidence, overoptimism, and loss aversion, that can cause inaccurate assessments of the risks, costs, and benefits of various choices. FTC staff proposes to conduct an economic laboratory experiment to study whether these types of decision biases are related to consumer susceptibility to fraudulent or deceptive marketing claims. Staff intends to study consumers’ assessment of potentially deceptive advertisements, in addition to their assessment of non-deceptive advertisements. Staff seeks to understand which characteristics of individuals and advertisements predict consumers’ ability to differentiate between apparently fraudulent materials and apparently legitimate materials.

Subjects will be asked to rate the credibility of a series of plausible and implausible ads. Subjects also will be asked a series of questions designed to identify the presence and extent of various decision making biases found in the literature, as well as questions that assess their knowledge, abilities, attitudes, and background. More specifically, questions will be asked to measure subjects’: (1) perceptions of ad credibility; (2) consumer literacy; (3) numerical literacy;

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<sup>1</sup> Information on the Fraud Forum is available at:  
(<http://www.ftc.gov/bcp/workshops/fraudforum/index.shtm>).

(4) cognitive reflection; (5) risk aversion; (6) loss aversion; (7) time preference (and present bias); (8) overconfidence; (9) optimism; (10) skepticism of advertising in general; and (11) skepticism in situations often associated with deceptive advertising.

This exploratory study will be conducted within a university experimental economics laboratory, with a sample of 250 respondents who are at least 18 years old. Our contractor will recruit the sample from the laboratory's subject pool. We believe that the subject pool will contain mostly undergraduate students, but our contractor will increase diversity by recruiting non-student, older undergraduate students, part-time students, and graduate students before recruiting traditional undergraduate students.

Understanding when and why people are vulnerable to fraud would better inform the FTC's substantial, ongoing efforts to fight fraud through law enforcement and consumer education. The study is not intended to lead to enforcement actions; rather, study results may aid the FTC's efforts to better target its enforcement actions and consumer education initiatives, and improve future fraud surveys. Understanding some of the behavioral and psychological determinants of fraud vulnerability would allow us to improve our consumer education materials to address these specific vulnerabilities, more efficiently target our education materials to particularly vulnerable populations, and adapt disclosures to address critical vulnerabilities that lead to fraud victimization.

This is the first of two planned FTC exploratory studies on consumer susceptibility to fraudulent and deceptive marketing. The current study is a more time-intensive survey in a controlled laboratory setting, which permits a detailed examination of the determinants of fraud susceptibility. The second study will be a briefer, internet survey of a larger and more diverse set of consumers. We anticipate that the results from the current study may allow us to adapt and refine the questionnaire in the second study to incorporate any promising determinants of fraud victimization.

### **3. Information Technology**

The proposed study will use online sign-up and a computerized lab for data collection. The online sign up procedure will let subjects choose sessions that are convenient for their schedules. The computerized laboratory was selected as the means to collect data, in part, to minimize burden on respondents as well as to increase the design flexibility and to collect data in a cost-efficient manner.

### **4. Efforts to Identify Duplication/Availability of Similar Information**

FTC staff's efforts to identify duplicate sources of information included a review of studies, data, and information found through literature searches and contacts with relevant scholars and government agencies. Staff also examined earlier research conducted by the FTC.

In 2003 and 2005, the FTC conducted via telephone two nationally-representative surveys of consumer experiences involving fraud.<sup>2</sup> The 2005 survey asked 3,888 adults if they had been victims of any of 16 different types of frauds, and found that 13.5% of adults were victims of one or more of them. Very few demographic characteristics predicted fraud victimization. Hispanics and African-Americans were more likely to report victimization than non-Hispanic whites, though the differences were not statistically significant after controlling for other demographic variables. The elderly were less likely to report victimization for the frauds covered in the survey. Consumers who reported having more debt than they could comfortably handle were more likely to be fraud victims than those with less debt. The most common medium for fraudulent offers was print advertising; the Internet was the second most common medium.

Shadel and Schweitzer-Pak (2007) conducted a survey of 497 general population individuals as well as 94 lottery fraud victims and 71 investment fraud victims.<sup>3</sup> The survey found that investment fraud victims had *higher* financial literacy than the general population, but lottery fraud victims had lower financial literacy than the general population. Both lottery and investment fraud victims were more likely than the general population to have recently experienced a negative life event, such as an illness, divorce, or decrease in income. The survey also elicited psychological measures from both sets of fraud victims and the general population. The authors found significant differences between fraud victims and the general population on optimism, impulsivity, relative deprivation, and trust in professionals.

The British Office of Fair Trading (OFT) conducted a large study of psychological processes of scams involving (1) in-depth interviews of scam victims; (2) text-mining of a large number of scam materials; (3) general public questionnaires; and (4) a field experiment of simulated scams delivered through the mail.<sup>4</sup> Similar to Shadel and Schweitzer-Pak, the OFT found that scam victims often have greater than average background knowledge in the area of the scam's context. Scam victims also report putting more cognitive effort into analyzing a scam's content than do non-victims.

Although these studies examined characteristics of fraud victims, unlike the currently proposed study, none has simultaneously examined the role of both the decision flaws identified in the behavioral economics literature and of other variables from the neoclassical economics and marketing literatures in determining consumer susceptibility to fraudulent advertising claims.

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<sup>2</sup> K. Anderson. "Consumer Fraud in the United States: An FTC Survey," staff report, Federal Trade Commission, August 2004, [available at <http://www.ftc.gov/reports/consumerfraud/040805confraudrpt.pdf>] and "Consumer Fraud in the United States: The Second FTC Survey," staff report, Federal Trade Commission, October 2007 [available at [www.ftc.gov/opa/2007/10/fraud.pdf](http://www.ftc.gov/opa/2007/10/fraud.pdf)].

<sup>3</sup> D. P. Shadel and K.B. Schweitzer-Pak. "The Psychology of Consumer Fraud," PhD dissertation, Tilburg University, 2007.

<sup>4</sup> Office of Fair Trading. "The Psychology of Scams: Provoking and Committing Errors of Judgement," April 2009. Available at: [http://www.offt.gov.uk/shared\\_offt/reports/consumer\\_protection/oft1070.pdf](http://www.offt.gov.uk/shared_offt/reports/consumer_protection/oft1070.pdf)

Unlike the previous surveys, our controlled laboratory environment and randomized experimental design ensure that the FTC study identifies the particular behavioral characteristics of individuals that promote fraud susceptibility, as opposed to properties of advertisements or self-selected individuals that confound non-experimental surveys.

Another advantage of the proposed FTC fraud susceptibility experiment is that we will closely follow the methods for eliciting the economic and psychological measures found in prior literature. Our multiple-question measure of impulsivity is taken from the economic and psychology literature on time preferences, and consists of several different components such as cognitive impulsivity, short-run impatience for monetary outcomes, and long-run impatience (described below). This more detailed measure will allow us to better explore and disentangle impulsivity's contributions to fraud susceptibility than have existing studies that have used simpler measures.<sup>5</sup>

**5. Efforts to Minimize Small Organization Burden**

Not applicable. The questions are being asked only of individual consumers.

**6. Consequences to Federal Program and Policy Activities/Obstacles to Reducing Burden**

If this information is not collected, the FTC will lack new evidence about why consumers are susceptible to fraud. The information we propose to collect will help the FTC better understand how to fulfill its Congressional mandate to enforce laws against unfair and deceptive acts and practices. The information will also aid educational efforts to assist consumers in avoiding fraud victimization.

The study has been designed to minimize burden on respondents, using cost-effective techniques, without sacrificing the statistical value of the information to be collected.

**7. Circumstances Requiring Collection Inconsistent with Guidelines**

The collection of information in the proposed study is consistent with all applicable guidelines contained in 5 C.F.R. § 1320.5(d)(2).

**8. Public Comments/Consultation Outside the Agency**

As required by section 3506(c)(2) of the Paperwork Reduction Act ("PRA"), 44 U.S.C. §§ 3501-3521, the FTC published a notice seeking public comment on the proposed collection of information. *See* 74 Fed. Reg. 27794 (June 11, 2009). The FTC received no comments. Pursuant to

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<sup>5</sup> For example, while Shadel and Schweitzer-Pak examine impulsivity, they used a one-item Likert scale: "Nowadays, a person has to live pretty much for today and let tomorrow take care of itself. Do you: strongly disagree, disagree, neither disagree nor agree, agree, or strongly agree?"

OMB regulations (5 C.F.R. Part 1320) that implement the PRA, the FTC is providing a second opportunity for public comment while seeking OMB approval for the study.

**9. Payments or Gifts to Respondents**

Some of our experimental design utilizes measures from the economics and judgment and decision-making psychology literatures. These literatures typically tie respondents' payments to their choices and responses in order to maximize external validity to real world decisions.<sup>6</sup> In order to comport with the literatures we are drawing from, we will also incentivize the relevant (i.e., non-subjective) economic and psychology measures in our study. The contractor will pay subjects a minimum of \$8 for participating in the study. Subjects will be paid an \$8 show-up fee and have the opportunity to earn more during the course of the study based on their responses to various questions. We expect that subjects will earn an average of \$30 each and that most subjects will earn between \$20 to \$40. These amounts and variances are similar to typical economic and judgment and decision-making experiments, and provide subjects an incentive to think carefully about their answers.

**10. & 11. Assurances of Confidentiality/Matters of a Sensitive Nature**

This data collection will not include sensitive questions. A draft of the questionnaire accompanies this submission. Although the contractor will collect the names and contact information of study participants, this information will not be provided to the FTC or externally disclosed.

**12. Estimated Annual Hours Burden**

The FTC plans to seek information from 250 pretesting and production respondents for approximately 90 minutes each. Thus, the overall burden for this study will be approximately 375 hours. Allowing for pre-testing of the instructions on as many as 10 respondents, at an additional 30 minutes apiece, cumulative burden, inclusive of the pre-testing, will total approximately 380 hours.

**13. Estimated Annual Cost Burden**

The cost per respondent should be negligible. Participation is voluntary, and will not require any labor expenditures by respondents. There are no capital, start-up, operation, maintenance, or other similar costs to the respondents. Respondents will be compensated financially as described above in section 9.

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<sup>6</sup> C. Camerer and R. Hogarth. "The Effects of Financial Incentives in Experiments: A Review and Capital-Labor-Production Framework" *Journal of Risk and Uncertainty* 19 (December 1999), pp. 7-42.

**14. Estimate of Cost to Federal Government**

The total cost to the Federal Government for the information collection will be approximately \$174,000. This estimate includes the \$50,123 paid to the contractor to conduct the experiment. This cost also includes 2,000 hours of FTC staff time to design and manage the study, analyze the data, and draft a report at a cost to the government of \$62 per hour. The cost of FTC staff time is necessarily an estimate because several factors in this calculation may vary, including the number of staff involved and the actual amount of time required. Clerical and other support services and costs of conducting the study are included in this estimate.

**15. Program Changes or Adjustments**

Not applicable. This is a new collection of information.

**16. Plans for Tabulation and Publication**

We plan to use standard regression and statistical hypothesis testing techniques to analyze the data. FTC staff have not determined whether the results will be published in a report or other publication, and, if so, in what manner at what time.

**17. Display of Expiration Date for OMB Approval**

The FTC will display the expiration date alongside the assigned OMB control number on the first screen of the study instrument.

**18. Exceptions to Certification**

Not applicable.

**B. COLLECTION OF INFORMATION EMPLOYING STATISTICAL METHODS**

**(1) Description of Sampling Methodology**

The FTC proposes to conduct an experiment in a university's economics laboratory with a convenience sample of 250 subjects drawn from the campus community. A sample of 250 persons enables random assignment of subjects into different experimental conditions of sufficient size for analytic power. The sample is not intended to be nationally representative, but will still provide useful insights into consumer susceptibility to fraud. In addition, five to ten of these subjects will participate in a pretest. Pretest subjects will participate in an in-person interview about the clarity and comprehensibility of the instructions.

We believe that the subject pool will contain mostly undergraduate students, but our contractor will increase diversity by recruiting non-student, older undergraduate students, part-time students, and graduate students before traditional undergraduate students. We anticipate that nearly all of the subjects who arrive at the lab will complete the study.

The proposed study is a limited but focused exploration of the determinants of fraud susceptibility. The study focuses on individual traits and behaviors that may contribute to fraud susceptibility. Given the convenience sample, we do not intend to make population-wide projections from our results. Further, the study is intended to focus on individuals' traits and not on the characteristics of advertisements that contribute to fraud susceptibility.

Our experiment presents simulations of print advertisements on a computer screen. We acknowledge several factors contribute to the evaluation of real advertisements' credibility, including the presentation medium and contextual clues. Our proposed experiment is not intended to address the effect of every component of advertisement plausibility. Our presentation format allows us to easily manipulate the advertisement materials between subjects and allows subjects to easily and quickly view the entire advertisement and its claim. Although the results may not be representative of consumers' reactions in other media, the experiment's design will allow us to examine susceptibility to fraud within the context of print advertisements and ensures that any credibility effect is solely due to the change in the advertisement claims.

## **(2) Description of the Information Collection Procedures**

The FTC will use the study to examine whether various types of decision making biases that have been identified in previous economic and psychological experiments are related to consumer susceptibility to fraudulent and deceptive advertising. The study will be conducted in an experimental setting in a university economics laboratory with 250 subjects drawn from the campus community. Staff has contracted with a faculty member of George Mason University who will recruit the study subjects and oversee and administer the experiment.

### *The Study Components:*

**Ad credibility.** The ad credibility questions ask subjects to rate the credibility of a series of plausible and implausible ad stimuli to generate the study's central outcome variable. We plan to implement both between- and within-subject identification strategies that will allow us to distinguish between subjects' skepticism of advertising in general, skepticism regarding ads in particular product categories, and skepticism arising from the specific claims presented in implausible ads. We also will explore the effects of positive and negative framing of one ad, because substantial marketing literature suggests that people may respond differently to claims framed as creating positive gains, such as "boost your memory," rather than as reducing negatives, such as "eliminate your memory problems."<sup>7</sup>

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<sup>7</sup> Several academic articles report that people are more willing to take risks over monetary gambles if the risk is presented as an opportunity to escape losses rather than as a chance to create gains. Our "framing" methodologies will emulate those in A. Tversky and D. Kahneman, "The Framing of Decisions and the Psychology of Choice," *Science* 211 (January 30, 1981), pp. 453-458. For applications to the perception of advertisements see I. P. Levin and G. Gaeth, "How Consumers are Affected by the Framing of Attribute Information," *Journal of Consumer Research*, 15 (December, 1988), pp. 374-378.

Eight ads will be shown to each subject. Four ads making plausible claims will serve as controls to measure the subjects' baseline skepticism of advertising in general. These plausible-claim control ads will be for a fleece garment, a wireless mouse, pizza delivery, and an MP3 player.

For each of the remaining four ads, both plausible- and implausible-claim versions will be used. For each ad, the sample will be split in half. Any given subject will see either the plausible or implausible version, not both. This design will result in each subject seeing two plausible and two implausible versions of the paired ads. Using both plausible and implausible ads for the same products will provide controls for any product-specific ad skepticism. The paired ads will be for a weight loss product, a vacation resort, a job opportunity, and an energy/memory-aid drink. For both the plausible and implausible versions of the drink ad, we will further split the sample into positive and negative versions in order to examine possible framing effects. The particular combination of implausible ads shown to each subject will be randomized, as will be the order in which the eight ads are shown.

Subjects will be asked to rate the ads using three different seven-point measures of ad credibility: whether the ad is credible or not credible, truthful or not truthful, and deceptive or not deceptive. Subjects will be considered more vulnerable to fraud and deception if they rate implausible ads as credible, truthful, and non-deceptive.<sup>8</sup>

**Consumer literacy.** Consumers who have a better understanding of the risks in various marketplace situations may be less susceptible to fraudulent or deceptive advertising. We hypothesize that consumers with greater consumer literacy will deem fraudulent advertisements as less credible than individuals with less consumer literacy. FTC devised four questions to gauge subjects' consumer literacy, which pertain to situations where a lack of understanding could lead to poor decisions and consumer harm. Our consumer literacy questions regard the extent that television advertising is regulated by the government, the liability for charges made on a stolen credit card, whether the value of an unspent gift card will be refunded if the store goes out of business, and the extent that lenders will learn of any earlier missed loan payments by the consumer.

**Numerical literacy.** The ability to solve basic math problems may aid consumers in various marketplace decisions, including assessing the plausibility of claims made in advertisements. Some literature, for example, links cognitive skills, including numerical literacy, to better workplace outcomes, increased household wealth, and fewer decision making biases.<sup>9</sup> Gerardi et al (2010) survey mortgage borrowers' numerical ability and demonstrate that individuals with lower

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<sup>8</sup> Subjects also will be asked to rate how informative and appealing they find the ads, but these questions are intended only to make the purpose of the ratings less obvious.

<sup>9</sup> S. Burks, J. Carpenter, L. Goette, and A. Rustichini. "Cognitive Skills Affect Economic Preferences, Social Awareness, and Job Attachment," *Proceedings of the National Academy of Sciences*. 106 (May 12, 2009), pp. 7745-7750. J. McArdle, J. Smith, and R. Willis. "Cognition and Economic Outcomes in the Health and Retirement Survey," National Bureau of Economics Working Paper 15266.



numerical ability are more likely to be delinquent or default on their mortgages.<sup>10</sup> This negative correlation between numerical ability and mortgage delinquency persists even after controlling for socio-demographic variables and mortgage characteristics.

We hypothesize that subjects with greater numerical ability will display more skepticism towards the fraudulent advertisements than subjects with lower numerical skills. We employ the same five-question numeracy measure used in Gerardi et al. (2010) and Banks and Oldfield (2007).<sup>11</sup> Banks and Oldfield (2007) suggest constructing a numerical ability index comprised of four separate groups based on responses to these five questions.

**Cognitive reflection.** Cognitive reflection tests distinguish between people who give an obvious, intuitive, but wrong answer to a question from those who deliberate enough to find the correct answer. The first group may be characterized as exhibiting “cognitive impulsiveness.” Cognitively impulsive people may be more vulnerable to fraud and deception because they may not take sufficient time to evaluate whether offers are too good to be true, when further reflection may reveal the offers to be suspect. We will employ the three question “Cognitive Reflection Test” (CRT) by Frederick (2005), using the number of questions answered correctly as our measure of cognitive impulsiveness.<sup>12</sup>

**Overconfidence.** A significant literature reports that many people overestimate both the accuracy of their performance on various tasks (absolute overconfidence) and the probability that their performance is above average (social overconfidence).<sup>13</sup> Either type of overconfidence may lead consumers to be overconfident in their ability to assess the legitimacy of advertising claims. We hypothesize that greater overconfidence may lead consumers to overestimate the certainty of their assessments, resulting in increased vulnerability to deceptive ads when those assessments are wrong. We will identify overconfidence by asking subjects’ to assess both the accuracy of their performance on the numeracy and cognitive reflection questions and their performance relative to other subjects. These methods are similar to those used in earlier overconfidence studies, such as Klayman et al. (1999) and Dunning et al. (1990).

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<sup>10</sup> K. Gerardi, L. Goette, S. Meier. “Financial Literacy and Subprime Mortgage Delinquency: Evidence from a Survey Matched to Administrative Data,” Working Paper (2010).

<sup>11</sup> J. Banks and Z. Oldfield. “Understanding Pensions: Cognitive Function, Numerical Ability and Retirement Saving,” *Fiscal Studies*, 28 (June 2007), pp. 143-170.

<sup>12</sup> S. Frederick. “Cognitive Reflection and Decision Making.” *Journal of Economic Perspectives*, 19 (Fall 2005), pp. 25–42.

<sup>13</sup> J. Klayman, J. Soll, C. Gonzalez-Vallejo, and S. Barlas, “Overconfidence: It Depends on How, What, and Whom You Ask,” *Organizational Behavior and Human Decision Processes* 79 (September 1999), pp. 216–247. D. Dunning, D. Griffin, J. Milojkovic, and L. Ross, “The Overconfidence Effect in Social Prediction,” *Journal of Personality and Social Psychology* 58 (April 1990), pp. 568-581.

**Risk and loss aversion.** Consumers who are risk averse may be less susceptible to fraud because they are less willing to take a chance on whether a product will work as promised. Conversely, we hypothesize that more risk-prone consumers may be more willing to take chances on unknown products and may therefore be more susceptible to fraudulent advertising. Consumers who are loss averse (attaching greater importance to losses than gains of similar magnitude) may be less susceptible to fraud because they place greater weight on the money they would lose purchasing the product in the event that the product fails to live up to expectations. Consumers who are loss averse, however, might be more susceptible to particular types of frauds that promise to protect them from losses (e.g. protection from identity theft or liability for stolen credit cards).

We will measure risk and loss aversion using standard techniques from the literature.<sup>14</sup> This involves presenting a series of choices where subjects must choose between either receiving (or losing) a certain fixed amount of money or taking a gamble that they may receive (or lose) either a higher or lower amount. This yields two separate, continuous measures of risk- and loss-aversion. In a separate section later in the study instrument, we also will ask subjects to rate their willingness to take risks on a Likert-scale. This simple question has been shown to be highly predictive of risk-taking behavior across a wide variety of contexts.<sup>15</sup>

**Time preference.** The behavioral economics literature has shown that many people exhibit a pattern of time preference known as “present bias.” Present bias refers to placing a disproportionate weight on immediate costs and benefits compared to future outcomes. However, since the immediate present is continually shifting, present-biased individuals may regret previous choices. The literature suggests that present-biased people may have self-control problems such as procrastinating, overeating, accumulating too much debt, and saving too little for retirement.<sup>16</sup>

We hypothesize that self-control problems may contribute to vulnerabilities to certain types of frauds, such as get-rich quick schemes or miracle weight loss cures. Frauds that emphasize immediate results and little effort may be particularly enticing to present-biased individuals. The 2005 FTC fraud survey suggests that present bias might be correlated with fraud vulnerability given the finding that people who reported having more debt than they could comfortably handle were more likely to fall for fraud. We will employ the same methodology as in Meier and Sprenger (2010), which elicited time preferences via incentivized experiments and demonstrated that more

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<sup>14</sup> See, for example, C. Holt and S. Laury, “Risk Aversion and Incentive Effects,” *American Economic Review*, 92 (December 2002), pp. 1644-1655 and D. Kahneman and A. Tversky, “Prospect Theory: An Analysis of Decision Under Risk,” *Econometrica* 47 (March 1979), pp. 263-291.

<sup>15</sup> T. Dohmen, A. Falk, D. Huffman, U. Sunde, J. Schupp and G. Wagner, “Individual Risk Attitudes: New Evidence from a Large, Representative, Experimentally-Validated Survey,” *Journal of the European Economic Association*, forthcoming.

<sup>16</sup> R.H. Thaler, S. Benartzi. “Save More Tomorrow™: Using Behavioral Economics to Increase Employee Saving,” *Journal of Political Economy*, 112 (February 2004), pp. S164-S187; and G. Akerlof “Procrastination and Obedience,” *The American Economic Review*, 81 (May 1991), pp. 1-19.

impatient individuals had significantly greater amounts of credit card debt.<sup>17</sup> These questions present a series of choices where subjects must choose between receiving a particular amount of money today versus a slightly larger amount in two to four months (or, alternatively, a particular amount of money in two months versus a slightly larger amount in four months). The methodology yields two separate continuous measures of present-bias and “long-run” patience, or could be collapsed into a single continuous measure of patience. In addition to using this standard measure of present bias, we also will seek evidence of procrastination and self-control problems through a series of questions regarding subjects’ studying, spending, and bill-paying behavior. These questions will be administered in a separate section at the end of the instrument.

**Optimism.** Previous studies have found that mild optimism is associated with beneficial behavior but excessive optimism is associated with troubling behavior. For example, Puri and Robinson (2007) demonstrated that extreme optimists have shorter planning horizons, are less likely to save, and hold a larger share of individual stocks than moderate optimists.<sup>18</sup> We hypothesize that excessively optimistic consumers may be more susceptible to fraud because they may have overly optimistic expectations about the performance of products that others would view skeptically. There is some evidence of this in earlier studies. For example, Shadel and Schweitzer-Pak (2007) found that lottery fraud victims were more optimistic than the general population, though investment fraud victims were not.

We will use a measure of optimism previously used in the literature, known as the “Life Orientation Test – Revised (LOT-R)” scale.<sup>19</sup> The LOT-R scale consists of three optimism questions and three pessimism questions. We can either aggregate the optimism and pessimism questions into a single dimensional scale for our analysis, or separately create optimism and pessimism measures.

**General skepticism of advertising.** We hypothesize that consumers who are skeptical of all advertising may be less susceptible to fraud simply because they discount the claims made in any advertisement. We will use a series of nine questions developed and validated by Obermiller and Spangenberg (1998) to measure consumer skepticism of advertising in general.<sup>20</sup> Similar to Obermiller and Spangenberg, we will aggregate the responses to the nine-questions into a single skepticism measure.

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<sup>17</sup> S. Meier and C. Sprenger. “Present-Biased Preferences and Credit Card Borrowing,” *American Economic Journal: Applied Economics*, 2 (January 2010), pp. 193-210.

<sup>18</sup> M. Puri, and D. Robinson. “Optimism and Economic Choice,” *Journal of Financial Economics*, 86 (October 2007), pp. 71-99.

<sup>19</sup> P. Creed, W. Patton, and D. Bartrum. “Multidimensional Properties of the Lot-R: Effects of Optimism and Pessimism on Career and Well-Being Related Variables in Adolescents,” *Journal of Career Assessment*, 10 (February 2002), pp. 42-61.

<sup>20</sup> C. Obermiller and E. Spangenberg. “Development of a Scale to Measure Consumer Skepticism towards Advertising,” *Journal of Consumer Psychology*, 7 (1998), pp. 159-186.

**Situation-specific skepticism of advertising.** Some consumers may be more skeptical of product claims made in situations that are often associated with deceptive advertising. Such situation-specific skepticism may make consumers less vulnerable to fraudulent and deceptive advertising. We will attempt to measure situation-specific skepticism through a series of questions developed by FTC regarding situations with a higher potential for fraud, such as products advertised in late-night infomercials, products advertised by unknown companies, advertisements demanding urgent action by the consumer, and advertisements for non-traditional medical treatments. Consumers who become skeptical when they see, for example, an ad demanding urgent action, will be less vulnerable than those who rush their decisions in response to the ad. Similarly, consumers who believe they can find natural remedies that outperform conventional remedies may be more susceptible to fraudulent medical products.

**Demographics and background.** We also will collect demographic and background information from the subjects, including their age, race, gender, education level, academic major, college entrance exam scores, and employment status. We will use this information as additional control variables in our analysis. The information also will enable us to evaluate the diversity of our sample.

**Analysis of Data.** We will regress the 250 subjects' credibility assessments for each of the 8 advertisements on (1) individual fixed effects, to control for some individuals' greater skepticism for all products; (2) advertisement fixed effects, to account for some of the products naturally warranting lower credibility ratings; (3) a dummy variable indicating whether a particular ad contained a fraudulent claim; (4) each of the relevant behavioral trait variables, which yields each variable's role towards assessing advertisement credibility; and (5) the interaction term of the fraudulent dummy variable and each of the economic and psychological variables. This is our main parameter of interest, and yields the effect of each behavioral variables' impact on assessing the credibility of fraudulent advertisements. For example, a positive coefficient on the interaction of the fraudulent dummy and the optimism measure indicates that subjects with greater optimism are more likely to deem a fraudulent advertisement as credible. We will cluster our standard errors at the individual respondent level.

In order to estimate the power of our analysis given a sample of 250 participants, we performed a Monte Carlo simulation of a regression similar to the one that will be estimated with the actual data. By varying the assumed magnitude of the coefficients relating the various independent variables to the estimated dependent variable, as well as the degree of variability in the various variables, one can determine the smallest coefficient values that would be consistent with having an 80 percent likelihood of finding the difference significant at the 5 percent level.

Because the primary interest is in differences in the way participants with specific characteristics evaluate advertisements about which they should be highly skeptical ("the fraudulent ads") relative to the advertisements that are not so problematic ("the non-fraudulent ads"), the analysis focused on the terms that involve an interaction of a dummy variable denoting the fraudulent ads and the various characteristics. The analysis focused on two representative interaction variables, the interactions involving the numeracy measure and the optimism measure. The numeracy measure will consist of the total number of nine questions answered correctly, whereas the optimism measure is assumed to be a uniformly distributed index variable ranging from 1-3.

We conducted our analysis using several different assumptions about the variability in the independent variable, since the likelihood of finding a significant relationship depends on the assumed variability in the independent variable. In all of the cases examined, there was at least an 80 percent likelihood of finding a significant relationship if the coefficient on the variable created by interacting the numeracy or optimism measures with the fraudulent ad dummy variable represented at least 12 percent of the dependent variable's standard deviation. The greater the variation in participants' characteristics, the smaller are the effects that can be detected. For example, if one assumes a standard deviation of 1 in the responses to the numeracy variable, there is an 80 percent likelihood of finding a significant relationship if the numeracy variable interacted with the fraud dummy has an effect that is at least 10.7 percent of the standard deviation of the dependent variable. However, if the standard deviation of the numeracy variable is 2, rather than 1, there is an 80 percent likelihood of finding significant differences for effects as small as 4.7 percent of the standard deviation of the dependent variable. We also varied the assumed difference between the average evaluation of the fraudulent and the non-fraudulent ads. Changing this variable had very little effect on the ability to detect the effect of the variables interacting this variable with the behavioral characteristics.

In summary, our sample size provides strong power relative to our expected effect sizes, largely due to our within-subject experimental design.

### **(3) Methods to Maximize Response Rates/Reliability of Sample Data**

Respondents will earn a show up fee for participating in the study and will have the opportunity to increase their earnings during the course of the experiment. These types of incentives are standard procedure in similar experiments in the economic and psychology literature. The presence of the incentives should result in favorable response rates. We also expect that almost all subjects who start the study will complete it.

Our study is meant to be exploratory and would examine whether various types of decision making biases that have been identified in previous economic and psychological experiments are related to consumer susceptibility to fraudulent and deceptive advertising. The study will examine whether decision making biases and other subject characteristics are correlated with the subjects' perceptions of the credibility of various plausible and implausible advertisements. We do not intend to make population projections from our sample or characterize our sample as representative of the US population. Our proposed sample will be reliable and appropriate for these purposes.

### **(4) Testing of Procedures or Methods Undertaken**

We will pretest our instrument on up to 10 subjects to ensure that all questions are easily understood. The pretests will be conducted in the lab under the same conditions to be used in the actual experimental sessions. We will revise the instrument to address the concerns that arise during the pretests. We also intend to pause the experiment after the first 30 or so subjects in order to assess whether the procedures and test questions are working properly.

**(5) Individuals Consulted on Statistical Aspect of the Surveys**

FTC economists including Patrick McAlvanah ([PMcAlvanah@FTC.gov](mailto:PMcAlvanah@FTC.gov); 202-326-2974) and Keith Anderson ([KAnderson@FTC.gov](mailto:KAnderson@FTC.gov); 202-326-3428) have designed the study. The contractor (Daniel Houser, George Mason University Department of Economics) is experienced conducting economic laboratory experiments that meet professional standards for methodological rigor.