Call to Claim your Prize: Perceived Benefits and Risk Drive
Intention to Comply in a Mass Marketing Scam

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 Abstract

Mass marketing scams extract an enormous toll, yet, the literature on scams is just emerging (Fischer, Lea, & Evans, 2013). We use the framework of Jones, Towse, and Race (2015) as a conceptual framework to motivate this project. In Experiment 1, 211 adults reviewed a solicitation and rated their intention of contacting an "activation number" for a prize. Scarcity and signs of authority were manipulated. Many (48.82%) indicated some willingness to contact to "activate" the winnings. Intention of responding was inversely related to the perception of risk (b = -.441, p < .001) and positively associated to perception of benefits (b = .554, p < .001), but not with the experimental condition. In Experiment 2, 291 adults were randomly assigned to one of the three conditions (low, medium, or high activation fee), and were asked to report willingness to contact. Activation fees decreased intent to contact, but response rates remained high (25.70%) with higher perception of risk reducing contact rates (b = -.581, p < .001), and benefit perception increasing intent to contact (b = .381, p < .001). Our studies indicate that scammers may use persuasion elements, but consumers are responding to perceived risks and benefits in their decision-making.

Public Significance Statement

Mass marketing scams (MMS) represents one of the most rapid growing crimes, costing billions of dollars worldwide. MMS employ a range of tactics to entice potential victims. Our novel project indicated that attention to the reward, minimization of risk, and lower levels of education increase consumers’ susceptibility to these scams.

Call to Claim your Prize: Perceived Benefits and Risk Drive
Likelihood of Contact in a Mass Marketing Scam

Mass marketing scams (MMS) cost consumers billions of dollars worldwide, with the Nigerian scam alone totaling $12.7 billion in 2013 (*Smart people easier to scam*, 2014). MMS, furthermore, are linked to physical risk or harm, loss of homes, depression, and even contemplation of (and actual) suicide (Button, Lewis, & Tapley, 2014; Fraud Advisory Panel, 2015). With soaring costs and millions of people being affected, government agencies (e.g., FBI), third sector organizations (e.g., AARP), consumer organizations (e.g., Action Fraud), and international units (e.g., The International Mass-Marketing Fraud Working Group) have identified MMS as a major international crime problem. Yet, there is little empirical data regarding the psychological factors that render some individuals more susceptible to these scams and tactics employed by the perpetrators.

 MMS refers to any type of fraud scheme that uses one or more mass-communication technique or technology including the internet to present fraudulent solicitations (The United States Department of Justice, 2015). In general, MMS fall into three categories, (1) advance-fee fraud schemes, (2) bank and financial account schemes, and (3) investment opportunities. Advance-fee fraud schemes are a type of scam that is based on the concept that the victim is promised a substantial benefit, such as a sweepstakes winning, inheritance, or some object of value, but must pay a fee (e.g., “activation,” “tax,” or “shipping”) or a series of fees before they can receive the benefit.

Advance-fee fraud schemes employ basic principles of persuasion to induce compliance with a small request. Potential victims are typically asked to provide some contact information by way of an email or phone number for the possibility of receiving a (financial) prize. Victims’ initial compliance can serve as a foot in the door (FITD; Freedman & Fraser, 1966) for the scammers to hook potential victims and later make additional requests, employing a larger arsenal of techniques to persuade (and at times, coerce) the person. Individuals who make that initial contact are often placed on a “suckers list” and their information can be bought and sold as a commodity. In extreme cases, victims are unwittingly used as “money mules” themselves placing them at risk for criminal prosecution (Charles, 2014). The current experiments were specifically designed to examine the earliest stages of this process, as it is the least cognitively demanding and appears innocuous because these solicitations often only ask individuals to provide “harmless” information and make a small behavioral commitment (e.g., a phone call).

 To date, MMS have received scant attention from behavioral economists or psychologists, and there is a paucity of data on the underlying factors involved in responding to MMS. However, research on the topic is emerging, due to its financial and social implications. The social problem of scams also presents an opportunity to test models of decision-making and persuasion in field studies. Most papers to date have been conceptual reviews applying well known psychological theories to the problem of MMS rather than empirical investigation (Lea, Fischer, & Evans, 2009). Capitalizing on dual-process models, a number of researchers have suggested that deceptive pitches target automatic and intuitive System 1 processing, and have developed models that emphasize the interaction of persuasion and the cognitive capabilities of the target (Drew & Cross, 2013; Jones et al., 2015; Wood, Hanoch, & Woods, 2016; Wood & Lichtenberg, 2016). Other models have been proposed highlighting visceral influences of persuasion (Langenderfer & Shimp, 2001). For example, on some solicitation letters, benefits (i.e., large financial prizes) are often presented in bold, enlarged colorful fonts. These presentations are specifically designed to highlight the benefits of the solicitation and activate affective processes. Common tactics from Cialdini’s model of persuasion and social influence have also been proposed (Cialdini, 2006; Fischer et al., 2013; Langenderfer & Shimp, 2001). This work emphasizes persuasion elements of the solicitation materials versus individual differences of the consumer and these elements include the components of authority or credibility (e.g., from a legitimate source, like “IRS” scams), scarcity (e.g., “act now”, “only 3 left at this price”), social proof (e.g., “meet previous winners!”), reciprocity (e.g., may give a “free” extra gift), and liking (such as an affinity scam for a group like a charity or veterans), as well as some small behavioral commitment (e.g., “call now!”).

In a recent paper incorporating a mixed method approach, Fischer and colleagues (2013) interviewed scam victims, conducted a content analysis of scam materials, and carried out a field study with mailings out to the community. The authors reported that each of these approaches provide some insights into the psychology of scams, but were not necessarily consistent. For example, high affect/positive words, authority, and scarcity were frequently employed according to both the content analysis and in person interviews. However, in the field test, there were no reliable effects of reward size or authority on return rates. Approximately 15.8% of their sample indicated that they had complied with a scam in the past, suggesting that a significant percentage of the population is susceptible to scams and are likely to respond to them.

While the work of Fisher and colleagues is important, it did not examine any individual differences that could help explain why some respond to scams and some do not. Previous work on financial exploitation and fraud, for example, has revealed that individual difference variables—such as numeracy and risk taking propensity—can help explain differences in risk taking behavior (National Research Council, 2003; Peterson et al., 2014; Wood et al., 2014; Wood, Liu, Hanoch, & Estevez-Cores, 2016). Numeracy and financial literacy have been found to be related to a wide range of financial outcomes, including increased retirement savings, and less vulnerability to financial exploitation in older adults (Wood & Lichtenberg, 2016). Negative social interaction may increase vulnerability secondary to a lack of a sounding board regarding a financial decision, or a willingness to call a stranger listed in a solicitation (Liu, Wood, Xi, Berger, & Wilber, 2017). Thus, individual differences such as risk propensity, numeracy, loneliness, and general financial status may influence an individual’s decision to respond to MMS solicitations.

Advance-fee scams such as sweepstakes solicitations differ from other scams in several important ways. Sweepstakes scams use the lure of a reward to drive behavior, and also employ some element of risk assessment. In phishing scams, in contrast, the victims are unaware that they are targets. In sweepstakes scams, the respondents know that they are contacting some sweepstakes company, even if they are ultimately deceived regarding its legitimacy. In these scams, individuals must weigh the potential for risks with the benefit of winning a substantial prize. Thus, the decision to respond to MMS may be mainly driven by the perception of benefits and risks that they offer (Cialdini, 2006).

Jones, Towse, and Race (2015) have proposed a three-factor model to understand the email fraud decision making context. Their model included (1) Persuasive techniques employed by the sender, (2) Cognitive make-up of the user (working memory capacity, self control, inhibition), and (3) UserX, the human computer interaction (Jones et al., 2015). In the current series of studies, we apply this model to the social problem of MMS victimization. We developed a prototype sweepstakes solicitation based on a review of the structure and content of a sample of 25 advance fee type scam solicitations obtained from the Postal Inspector in Los Angeles, California. These solicitations frequently contained elements such as credibility / authority (“We obtained your name from Target”), scarcity (“respond by June 1st to claim your winnings”), a small request for a potentially large reward (“call to activate your winnings”).

In Experiment 1, the persuasion elements of scarcity (time limit: high versus low) and authority (brand name: high versus low) were manipulated. We collected information regarding the participants’ perception of the potential benefits and risks of the solicitation as both a quantitative rating and a qualitative statement. Experiment 1 also included individual difference measures of subjective numeracy, social isolation, demographic variables, and financial status.

In Experiment 2, we created a manipulation requesting an activation fee in the original solicitation ($0, $5, or $100). In this study, we used a high authority, high scarcity solicitation in all conditions, resulting in a 3 (fee activation: none, low, high) by 1 (high authority, high scarcity condition) design. Experiment 2 included identical individual difference measures as well as a few additional questions regarding financial status (described below).

We predicted a relatively low base rate of responding (5–10%) with increased intent to contact in the high authority/high scarcity conditions. We predicted a decrease in intent to contact the MMS solicitation with the addition of an activation fee. Finally, we predicted that individuals’ rating of risks and benefits of the offer as well as lower numeracy, increased isolation, higher risk propensity and lower financial security will be related to increased likelihood of contacting the MMS solicitation.

**General Method**

**Materials**

**Solicitations**. For this project, a scam solicitation was developed based on twenty-five scam solicitations, which are currently involved in active cases being investigated in Los Angeles area and were “successful” at hooking the victims involved in the cases. Because of the active investigation, these solicitations cannot be made public. From this sample, a simple prototype solicitation was produced from which four different versions were derived (see Appendix A). These letters were identical except that authority and scarcity were manipulated to create four conditions: High Authority / High Scarcity, High Authority / Low Scarcity, Low Authority / High Scarcity, and Low authority / Low Scarcity. Authority was operationalized as a section in the letter that indicated source: “We received your information from Target, Costco, Walmart” (high authority) or “We received your information from our vendor” (low authority). Scarcity was operationalized through the indication of a time limit with high scarcity indicated by “Be aware that the deadline for claiming your price is September 30, 2015” versus low scarcity, “We urge you to claim your prize as soon as possible.” Participants were then asked, “After reading this solicitation, how likely are you to contact the activation number” on a 7 point Likert scale ranging from extremely likely (1) to extremely unlikely (7). Next, they were asked two qualitative statements: (1) “In your opinion, what are the benefits of responding to this letter?” and (2) “In your opinion, what would be the risks to responding to this letter?” Participants were then asked to make quantitative ratings of risks and benefits on a 10-point Likert scale.

**Subjective numeracy scale**. A 7–item subjective numeracy scale was included (Fagerlin et al., 2007).

**Three-item UCLA Loneliness Scale**. The scale measured participants’ subjective feelings of social isolation (hardly ever, some of the time, often feeling left out, isolated, and lack of companionship; Hughes, Waite, Hawkley, & Cacioppo, 2004).

**Demographics**. Participants were asked their age, gender, ethnicity, income, financial status, employment status, education, and marital status.

**Debriefing**. We explained the goal of the study. A link to learn more about the prevention of MMS was also provided as part of the debriefing.

**Procedures**

Participants in both studies experiments were recruited through Amazon’s Mechanical Turk (MTurk). The results obtained through MTurk are reliable and comparable to those obtained by using hand-completed surveys (Casler, Bickel, & Hackett, 2013; Gibson, Piantadosi, & Fedorenko, 2011). All participants were residents of the United States. After providing consent, participants were informed that they would read a letter and answer some questions regarding its content. Participants were paid $0.50 for their participation.

**Experiment 1**

**Method**

**Participants**. Participants were 221 adults recruited on Amazon’s Mechanical Turk (age ranged from 28 to 83 years old, *M* = 35.51, *SD* = 11.93). Nine participants’ responses were excluded because the qualitative responses were vague or nonsensical, they completed the survey in an extremely short time, or they failed to provide any demographic information. For demographic information, please see Table 1.

**Results**

Overall, close to half (48.82%) of the sample indicated willingness (15.17% somewhat likely, 14.69% likely, 18.96% very likely) to contact the scammers. Notably, there was no effect for the manipulated conditions of authority or scarcity on the willingness to contact the MMS (*F*(3, 207) = 1.47, *p* = .223). Except for education, none of the individual difference measures assessed including numeracy, loneliness, and demographics were significant predictors of participants’ response. Higher education was predictive of lower likelihood to contact the number (*b* = -.348, *p* = .018).

 Individuals also rated the risks and benefits of the solicitation. Participants’ likelihood of positively responding to the solicitation was significantly related to assessment of risk (*b* = -.734, *p* < .001) and assessment of benefits (*b* = .676, *p* < .001) such that lower risk or higher benefits both predicted likelihood to contact. Using multiple regression analysis with all the above predictors in the model, and the four authority/scarcity conditions dummy coded, risk assessment (*b* = -413, *p* < .001) and benefit assessment (*b* = .580, *p* < .001) continued to predict higher intention of responding above and beyond other variables. Additionally, participants who read the letter with low authority and high scarcity (*b* = -.941, *p* =.003) were less likely to contact compared with those who read the letter with high authority and high scarcity, in presence of all other variables (see Table 2).

Participants were also asked, “In your opinion, what are the benefits of responding to this letter?” Seventy-one percent indicated that winning money was a specific benefit, and 63.5% thought it was a legitimate offer. Participants were also asked, “In your opinion, what would be the risks to responding to this letter?” Sixty-one percent indicated that the solicitation was potentially a scam, and 39% expressed concern that the solicitation was about identity theft (see Appendix B for measures used).

**Discussion**

In summary, inExperiment 1, we found a much higher than expected intention to comply rate, no effect of the authority / scarcity manipulations, and that risk and benefits perception were strong predictors of intention to comply. In addition, our data showed that higher education levels were related to lower intention to comply levels. Finally, participants were drawn to the financial benefits of the solicitation, but were also concerned about the possible risks of responding such as identify theft. Given that almost half of the sample indicated willingness to comply with the message, we next examined other factors that could help influence response rate.

**Experiment 2**

In Experiment 1, we were surprised at the high rate of participants’ who indicated willingness to contact the MMS solicitation. In Experiment 2, we added a cost associated to the solicitation in the form of a hypothetical “activation fee,” to examine whether this additional cost resulted in decreased interest. Further, we manipulated the level of the activation fee to determine if a higher fee was associated with even more decreased interest than a lower fee. In this study, individuals either were asked to call to “activate” their winnings (same as Experiment 1), or call and pay either a $5 or $100 activation fee. We hypothesized that individuals who were willing to call and pay $100 in the “high fee” activation condition would represent a distinct group especially vulnerable to MMS. All other aspects of the design were identical except for a few additional probes related to the financial situations of participants. Given that there were essentially no differences in response rates between conditions in Experiment 1, we used one standardized letter for all participants (High Authority / High Scarcity).
**Method**

**Participants**. Participants were 291 adults (age ranged from 19 to 83 years old, *M* = 38.20, *SD* = 12.52) recruited on Amazon’s Mechanical Turk. The original sample size was 302, but 11 participants’ responses were excluded because their qualitative answers were vague or nonsensical and they failed the manipulation check (i.e., “Was there an activation fee in the letter you read? If yes, how much was the fee?”). For full demographic information, see Table 1.

**Procedure**. Following informed consent, participants were randomly assigned to one of three conditions (no activation fee, $5 activation fee, and $100 activation fee). All participants received the same base solicitation letter (high authority/high scarcity).
**Results**

Slightly over a quarter of the sample (25.7%) indicated some willingness (11.0% somewhat likely, 5.8% likely, 8.9% very likely) to call the contact number and pay the activation fee if requested. Compared to other participants, those who said they were very likely to call the contact number were more likely to be high school graduates (46% versus 26%), while participants with a bachelor’s degree and above were not very likely to respond (χ2(6) = 17.32, *p* = .008). Having an activation fee affected participants’ reports of likelihood to respond positively to the MMS solicitation (*F*(2, 288) = 4.20, *p* = .016), such that no-activation-fee participants (*M* = 3.19, *SD* = 2.33) indicated higher level of willingness to call, compared with those who had to pay $5 (*M* = 2.48, *SD* = 1.92) or $100 (*M* = 2.39, *SD* = 2.03). Additionally, having to pay $100 (*M* = 6.18, *SD* = 1.46) was rated to be more risky than the $5 (*M* = 5.86, *SD* = 1.41) and no-activation-fee (*M* = 5.40, *SD* = 1.93) conditions (*F*(2, 287) = 5.59, *p* = .004). Again, none of the individual difference measures assessed including numeracy and loneliness were significant predictors of intent to contact.

Among the demographic variables, age and education independently predicted responses after controlling for activation fee, such that older adults (*b* = -.003, *p* = .004) and highly educated participants (*b* = -.254, *p* = .002) were less likely to make the call, while high activation fee deterred participants from calling in both models. Just like in Experiment 1, risk and benefit assessment affected participants’ responses, such that assessment of higher risk discouraged contact (*b* = -.833, *p* < .001), but higher benefit assessment was associated with higher willingness to contact (*b* = .587, *p* < .001). Quantitative ratings indicated that likelihood to call with the request remained significantly related to assessment of risk (*b* = -.387, *p* < .001) and benefits (*b* = .594, *p* < .001) controlling for conditions and all other demographic and individual variables. Interestingly, in this final model including all predictors, activation fee was no longer a predictor of contact (*b* = -.026, *p* = .800), but education level remained significant with higher educated participants less likely to call (*b* = -.254, *p* = .005; see Table 3).

Participants were able to leave qualitative comments regarding their decision-making. Fifty-four percent of the benefits noted the potential for a $50,000 windfall. Fifty-eight percent noted likelihood of a scam.

**Discussion**

Our results from Experiment 2 indicated that intention to contact positively to the MMS solicitation remained high, although it was halved from Experiment 1. Thus, including activationwas successful in deterring individuals from reporting high likelihood to respond to the scams. Participants were less likely to indicate that they are willing to call when there is an activation fee, although there was no difference between $5 or $100. As with Experiment 1, risk and benefits assessments remained robust predictors of intention and they remained predictors above and beyond all other predictors. Finally, unlike Experiment 1, increased age was associated with reduced willingness to contact the MMS; while in accordance with Experiment 1, education was also linked to reduced intention to comply with the MMS. Low levels of education increased intent to contact.

**Summary and Concluding Discussion**

As one of the top five consumer scams, MMS extracts billions of dollars from people across the globe as well as affecting the well-being of millions of (often vulnerable) victims. To reduce the likelihood of becoming a scam victim, the United States Department of Justice (2015) recommends that people remove their names from solicitation lists and not respond to claims that they have won money. As our study, and millions of victims, reveals, this proves to be a very difficult advice to follow. Gaining a better understanding of the mechanisms involved in responding to these scams, thus, is urgently needed.The two studies presented hereprovide much needed insights into these concerns. Our results from Experiment 1 reveal a higher rate of likelihood of responding than anticipated. Furthermore, few individual differences measures distinguished between those with higher and those with lower intention to comply. For example, we found that high and low numeracy people were as likely to report willingness to respond to the letter, despite the fact that education was a significant predictor. What could help explain this discrepancy? Reyna and colleagues (2009) have maintained that numerical abilities are independent of IQ and education level, suggesting that the two extract independent influence. Second, to the best of our knowledge, the subjective numeracy scale has not been used in the financial domain, let alone in scam related studies. It is possible that using an objective numeracy measures would have yielded different results. Furthermore, in our study, participants did not need to make any computation or transform data, but only read about a large sum of money.

Consistent with previous work, we saw evidence of scarcity and authority manipulations in our review of scam materials, but in our empirical studies, participants did not appear to be making discriminations based upon them (Fischer et al., 2013). That is, scammers appear to be aware of the persuasion literature and actively employ its tactics, but our research suggests that consumers are not attending to these elements and are basing response decisions upon an evaluation of risk and benefit. Thus, we are left with the question of why people are willing to respond to these scams, and even pay up to $100 to be scammed. Our novel studies provide additional insights to this vital question. In line with earlier work (Hanoch, Johnson, & Wilke, 2006; Slovic & Lichtenstein, 1968; Weber, Blais, & Betz, 2002), our data revealed that risk and benefit perception plays a key role in people’s response. Indeed, those who perceived higher benefits and minimal risks were more likely to indicate that they will respond to the MMS solicitation. Therefore, it is possible that what drives peoples’ positive response to MMS is their perception of the benefits associated with the offer (large financial prizes) while undervaluing the possible risks (identity theft, further persuasive tactics by scammers). Our data also indicated that education served as protective measure, yet numeracy did not. Individuals with lower levels of education were more likely to find the offer appealing and respond to the solicitation which is different from previous reports finding of higher scam compliance in well-educated individuals (Applied Research & Consulting LLC, 2013; Ultrascan AGI, 2014). The difference may be the context, with better-educated consumers more likely to fall for investment schemes and less educated consumers more likely to fall for sweepstakes type scams.

In summary, in these two experiments, we developed materials designed to study basic elements of persuasion employed in advance-fee scams. We used the framework of Jones, Towse, and Race (2015) as a conceptual framework to understand consumer behavior regarding susceptibility to MMS. Their model included (1) Persuasive techniques employed by the sender, (2) Cognitive make-up of the user (working memory capacity, self control, inhibition), and (3) UserX, the human computer interaction (Jones et al., 2015).

Our initial investigations indicated that the persuasive effects employed by the sender that most impacted response rate was the opportunity for a large reward. While authority and scarcity appear in every letter we reviewed from the postal inspector’s office, our manipulation did not have an impact. It is possible that our manipulation was not strong enough and a greater emphasis on these attributes (**bold letters**), more specific authority (IRS; AMAZON), clearer scarcity (YOU HAVE 24 HOURS to RESPOND), would have an impact. The scammers clearly believe they matter.

In terms of individual cognitive differences of the user, as stated above we found that low education is the most consistent finding that increases response rate. In future studies, we will seek to determine more specifically why individuals with lower education levels are at increased risk for scams. In terms of human computer interactions (or in our case, letters), our current design only allows us to examine the susceptibility from one technological framework. Future studies should vary the type of scam and examine vulnerabilities based on the nature of the UserX interface.

We conceptualized these solicitations as a foot in the door persuasion tactic designed to obtain contact information to facilitate future larger requests. Consistent with previous literature in social psychology, individuals were relatively willing to contact a MMS solicitation and were even willing to pay money to do so. Our analysis indicated that although many consumers were aware in general of the potential risk involved (“it could be a scam”), they do not seem aware of the general business model used by scammers (i.e., FITD), and are potentially at risk for future requests. Further, the appeal of winning drove much of the interest in the solicitation. The results indicated that it was largely participants’ assessment of the risks and benefits and education level that drove their responses versus other individual difference variables (numeracy and social isolation). Consistent with the model of Jones et al. (2015), our results suggest that the most important persuasion element of the sender is the promise of a reward. In terms of individual differences, cognitive variables do not appear as important as motivational factors with the exception of education in our general sample. Contrary to popular belief, age was not a significant risk factor. However, we also note that the mean age of our sample was relatively young (35.51 in Experiment 1 and 38.2 in Experiment 2) and age effects may emerge in studies designed to sample larger groups of elderly participants. Educational outreach should stress the risk of the solicitations and encourage consumers to delete or toss out any scam solicitation.

There are several important limitations in the above experiments. We acknowledge that there is a mismatch between the use of an electronic format and presentation of the sweepstakes “letters” we used in this project. It is possible that the use of this format and the use of an MTurk sample in general biased our results in some direction. However, we note that our findings are consistent with other research on scam susceptibility. We also note that our relatively high response rate may reflect extra “authority” granted to a University affiliated project. At the same time, we note that the majority of our participants were able to identify the solicitations as likely a scam (61 % in Experiment 1 and 58 % in Experiment 2) but these numbers may be even higher in the field. In future studies, we plan to examine the overall size of the prize to determine if consumers are lured more by lower versus higher prizes. We also plan to explicitly measure risk propensity to better understand risk assessment and susceptibility.

In summary, our research suggests somewhat of a paradox. On the one hand, consumers are for the most part able to recognize potential scams. However, rather than use a helpful heuristic (ignore letter), a sizeable percentage considers responding. It seems that the lure of the prize (large sum of money) is largely driving individuals’ behaviors, leading many of them to discount the possible risks. After all, what harm can be done by just responding to a letter? Given the complex nature of scams (where even sophisticated entities like Google fall prey), it is unlikely that a single measure will serve as a panacea. Yet, our study results point in a number of possible directions. First, despite efforts by governmental agencies as well as private companies, there is clear need for better consumer education regarding the high likelihood of risk is recommended. As currently many schools provide eSafety programs, these should also incorporate materials about how to avoid scams. Second, because the presence of an activation fee helped reduce intention to comply with the scam, one possibility is to encourage consumers to ask themselves if they will be willing to pay an activation fee before replying to these scams. Finally, given that perception of benefits and of risks were the most important factors in intention to comply, one clear option is to encourage individuals to focus only on the risk and discount the benefits. Needless to say, much more work is needed in examining these possibilities, but given the growing prevalence of scams even a small reduction in compliance can make a big difference.

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|  |  |  |  |
| --- | --- | --- | --- |
| Table 1 |  |  |  |
| *Sample Demographic Information* |  |
|   |   | Experiment 1 (*n* = 211) | Experiment 2 (*n* = 291) |
| Mean Age  |  |  35.51 (11.93) years |  38.31 (12.53) years1 |
| Gender | Male | 120 (56.87%) | 166 (57.04%) |
|  | Female | 89 (42.18%) | 123 (42.27%) |
|  | Other |  2 (0.95%) |  2 (0.69%) |
| Marital Status | Married | 68 (32.23%) | 102 (35.17%)1 |
|  | Divorced |  14 (6.64%) | 30 (10.34%)1 |
|  | Widowed | 0 (0.00%) |  4 (1.38%)1 |
|  | Single | 129 (61.14%) | 154 (53.10%)1 |
| Education | High school degree/GED | 67 (31.75%) | 81 (27.84%)1 |
|  | Associate’s degree | 34 (16.11%) | 47 (16.15%)1 |
|  | Bachelor’s degree | 93 (44.08%) | 127 (43.64%)1 |
|  | Master’s degree | 12 (5.69%) | 24 (8.25%)1 |
|  | Professional degree (MD, JD, etc.) | 5 (2.37%) | 10 (3.44%)1 |
| Income Level | Less than $25k | 84 (39.81%) | 97 (33.33%)1 |
|  | $25,000-$49,999 | 69 (32.70%) | 77 (26.46%)1 |
|  | $50,000-$74,999 | 32 (15.17%) | 57 (19.59%)1 |
|  | $75,000-$124,999 | 19 (9.00%) | 48 (16.49%)1 |
|  | $125,000-$174,999 | 7 (3.32%) | 8 (2.75%)1 |
|  | $175k+ | 0 (0.00%) | 3 (1.03%)1 |
| Ethnicity2 | White | 178 (84.36%) | 257 (88.32%) |
|  | Hispanic/Latino | 6 (2.84%) |  14 (4.81%) |
|  | Black | 18 (8.53%) |  15 (5.15%) |
|  | American Indian |  6 (2.84%) |  5 (1.72%) |
|  | Asian | 14 (6.64%) |  14 (4.81%) |

Note: 1One individual declined to report this demographic. 2Some participants identified with multiple ethnicities so these percentages sum to a total greater than 100%.

Table 2

*Regression Results from Experiment 1 Predicting Compliance Rate*

|  |  |  |
| --- | --- | --- |
|   | Variables Entered Independently | Variables Entered Jointly |
|   |   |   |   |   | Collinearity Statistics |
|   | B | *p* |  B | *p* | Tolerance | VIF |
| Benefit rating | 0.676 | 0.000 | 0.580 | 0.000 | 0.737 | 1.356 |
| Risk rating | -0.734 | 0.000 | -0.413 | 0.000 | 0.762 | 1.312 |
| Subjective Numeracy | 0.015 | 0.509 | 0.006 | 0.769 | 0.669 | 1.494 |
| Objective Numeracy | -0.100 | 0.524 | -0.161 | 0.205 | 0.689 | 1.452 |
| Loneliness | 0.002 | 0.977 | 0.074 | 0.187 | 0.860 | 1.162 |
| Age | -0.018 | 0.176 | -0.010 | 0.359 | 0.607 | 1.648 |
| Gender | -0.284 | 0.348 | 0.188 | 0.410 | 0.799 | 1.252 |
| Education | -0.348 | 0.018 | -0.082 | 0.456 | 0.816 | 1.226 |
| Annual income | -0.125 | 0.377 | 0.069 | 0.564 | 0.642 | 1.558 |
| Marital status: Married (reference group) |   |   |   |   |
|  Divorced |   |   | 0.117 | 0.813 | 0.714 | 1.401 |
|  Widowed |   |   | --- | --- | --- | --- |
|  Single |   |   | 0.050 | 0.864 | 0.551 | 1.815 |
| Ethnicity: White (reference group) |   |   |   |   |   |
|  Hispanic or Latino |   |   | 0.614 | 0.346 | 0.915 | 1.093 |
|  Black or African American |   | 0.754 | 0.063 | 0.893 | 1.120 |
|  Native American or American Indian | 0.225 | 0.747 | 0.949 | 1.054 |
|  Asian / Pacific Islander |   |   | -0.262 | 0.552 | 0.895 | 1.118 |
|  Other |   |   | --- | --- | --- | --- |
| Employment status: Full-time (reference group) |   |   |   |
|  Part-time |   |   | -0.134 | 0.672 | 0.860 | 1.163 |
|  Unemployed |   |   | 0.033 | 0.911 | 0.803 | 1.246 |
|  Student |   |   | -0.639 | 0.159 | 0.749 | 1.336 |
| Letter Type: High Authority & High Scarcity (reference group) |   |
| High Authority & Low Scarcity |   | -0.481 | 0.116 | 0.640 | 1.562 |
| Low Authority & Low Scarcity |   | -0.190 | 0.531 | 0.614 | 1.630 |
| Low Authority & High Scarcity |   | -0.941 | 0.003 | 0.612 | 1.633 |
| (Constant) |   |   | 3.709 | 0.001 |   |   |
| Note. "Marital status: Widowed" and "Ethnicity: Other" have missing correlations and were deleted from the analysis.  |

Table 3

*Regression Results from Experiment 1 Predicting Compliance Rate*

|  |  |  |
| --- | --- | --- |
|   | Variables Entered Independently | Variables Entered Jointly |
|   |   |   |   |   | Collinearity Statistics |
|   | B | *p* |  B | *p* | Tolerance | VIF |
| Benefit rating | 0.587 | 0.000 | 0.594 | 0.000 | 0.715 | 1.398 |
| Risk rating | -0.833 | 0.000 | -0.387 | 0.000 | 0.746 | 1.340 |
| Subjective Numeracy | 0.000 | 0.879 | 0.000 | 0.669 | 0.890 | 1.123 |
| Objective Numeracy | -0.221 | 0.073 | 0.109 | 0.203 | 0.874 | 1.144 |
| Loneliness | 0.111 | 0.080 | -0.042 | 0.358 | 0.814 | 1.228 |
| Age | -0.028 | 0.004 | 0.005 | 0.545 | 0.653 | 1.533 |
| Gender | -0.013 | 0.958 | 0.066 | 0.705 | 0.812 | 1.232 |
| Education | -0.254 | 0.020 | 0.231 | 0.005 | 0.765 | 1.306 |
| Annual income | -0.139 | 0.172 | -0.038 | 0.632 | 0.679 | 1.472 |
| Marital status: Married (reference group) |   |   |
|  Divorced |   |   | 0.015 | 0.961 | 0.743 | 1.346 |
|  Widowed |   |   | 0.074 | 0.918 | 0.910 | 1.099 |
|  Single |   |   | 0.202 | 0.316 | 0.642 | 1.559 |
| Ethnicity: White (reference group) |   |   |   |
|  Hispanic or Latino | 0.267 | 0.490 | 0.929 | 1.077 |
|  Black or African American | 0.318 | 0.403 | 0.907 | 1.102 |
|  Native American or American Indian | -0.927 | 0.155 | 0.891 | 1.122 |
|  Asian / Pacific Islander | -0.368 | 0.379 | 0.855 | 1.169 |
|  Other |   |   | 0.740 | 0.597 | 0.951 | 1.052 |
| Employment status: Full-time (reference group) |   |
|  Part-time |   |   | 0.335 | 0.176 | 0.787 | 1.270 |
|  Unemployed |   | 0.150 | 0.558 | 0.763 | 1.311 |
|  Student |   |   | 0.360 | 0.461 | 0.893 | 1.120 |
| Activation fee | -0.399 | 0.009 | 0.053 | 0.617 | 0.911 | 1.097 |
| (Constant) |   |   | 1.917 | 0.010 |   |   |

Appendix A



Appendix B

Please answer the following questions about the letter you have just read.

After reading this letter, how likely or unlikely are you to contact the activation number?

* Very Likely (1)
* Likely (2)
* Somewhat Likely (3)
* Neither Likely nor Unlikely (4)
* Somewhat Unlikely (5)
* Unlikely (6)
* Very Unlikely (7)
* No opinion or undecided (8)

In your opinion, what could be the benefits of responding to this letter?

In your opinion, what could be the risks to responding to this letter?

Please answer the following questions about the possible benefits and risks to responding to the letter you read.

How beneficial do you think the offer in this letter is?

* Very Low (1)
* (2)
* (3)
* Neither Low nor High (4)
* (5)
* (6)
* Very High (7)

How risky do you think the offer in this letter is?

* Very Low (1)
* (2)
* (3)
* Neither Low nor High (4)
* (5)
* (6)
* Very High (7)

Why do you perceive the benefit in responding to this letter to be low or high?

Why do you perceive the risk in responding to this letter to be low or high?

How good are you at working with fractions?

* Not at all good (1)
* Kind of good (2)
* Reasonably good (3)
* Good (4)
* Very good (5)
* Extremely good (6)

How good are you at working with percentages?

* Not at all good (1)
* Kind of good (2)
* Reasonably good (3)
* Good (4)
* Very good (5)
* Extremely good (6)

How good are you at calculating a 15% tip?

* Not at all good (1)
* Kind of good (2)
* Reasonably good (3)
* Good (4)
* Very good (5)
* Extremely good (6)

When reading the newspaper, how helpful do you find tables and graphs that are parts of a story?

* Not at all helpful (1)
* Kind of helpful (2)
* Reasonably helpful (3)
* Helpful (4)
* Very Helpful (5)
* Extremely Helpful (6)

When people tell you the chance of something happening, do you prefer that they use words ("it rarely happens") or numbers ("there is a 1% chance")?

* Always prefer words (1)
* Sometimes prefer words (2)
* Rarely prefer words (3)
* Rarely prefer numbers (4)
* Sometimes prefer numbers (5)
* Always prefer numbers (6)

When you hear a weather forecast, do you prefer predictions using percentages (e.g., “there will be a 20% chance of rain today”) or predictions using only words (e.g., “there is a small chance of rain today”)?

* Always prefer percentages (1)
* Sometimes prefer percentages (2)
* Rarely prefer percentages (3)
* Rarely prefer words (4)
* Sometimes prefer words (5)
* Always prefer words (6)

How often do you find numerical information to be useful?

* Never (1)
* Sometimes (2)
* Rarely (3)
* Slightly Often (4)
* Often (5)
* Very Often (6)

How do you see yourself? Are you generally a person who is fully prepared to take risks or do you try to avoid taking risks?

* Very willing to take risks (1)
* (2)
* (3)
* In the middle (4)
* (5)
* (6)
* Not at all willing to take risks (7)

At the end of the month of my paycheck I am likely to still have plenty of money in my account?

* Very Likely (1)
* Likely (2)
* Somewhat Likely (3)
* Neither Likely nor Unlikely (4)
* Somewhat Unlikely (5)
* Unlikely (6)
* Very Unlikely (7)

Now, thinking about your life...

|  |  |  |  |
| --- | --- | --- | --- |
|  | Rarely (1) | Some of the time (2) | Often (3) |
| How often do you feel that lack of companionship? (1) |  |  |  |
| How often do you feel left out? (2) |  |  |  |
| How often do you feel isolated from others? (3) |  |  |  |

If 3 elves can wrap 3 toys in 1 hour, how many elves are needed to wrap 6 toys in 2 hours?

* 2 (1)
* 3 (2)
* 4 (3)
* 6 (4)

Jerry received both the 15th highest and the 15th lowest mark in the class. How many students are there in the class?

* 15 (1)
* 27 (2)
* 29 (3)
* 30 (4)

In an athletics team tall members are three times as likely to win a medal than short members. This year the team has won 60 medals so far. How many of these have been won by short athletes?

* 10 (1)
* 15 (2)
* 20 (3)
* 25 (4)

What is your age?

What is your gender?

* Male (1)
* Female (2)
* I do not identify with the options given (3)

What is your annual income?

* $0 - $24,999 (1)
* $25,000 - $49,999 (2)
* $50,000 - $74,999 (3)
* $75,000 - $124,999 (4)
* $125,000 - $174,999 (5)
* $175,000+ (6)

What is your employment status?

* Full-time (1)
* Part-time (2)
* Unemployed (3)
* Student (4)

What is your education?

* Do not have high school degree/GED (1)
* High school degree/GED (2)
* Associate’s degree (3)
* Bachelor's degree (4)
* Master's degree (5)
* Professional degree (MD, JD, etc.) (6)
* Ph.D (7)

What is your marital status?

* Single (4)
* Married (1)
* Divorced (2)
* Widowed (3)

What is your ethnicity? Please check all that apply.

* White (1)
* Hispanic or Latino (2)
* Black or African American (3)
* Native American or American Indian (4)
* Asian / Pacific Islander (5)
* Other (please specify) (6) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

DEBRIEFING:

Thank you for participating in our study! We want to remind participants that while some marketing solicitations represent legitimate opportunities, others do not and are simply tools for scammers to get contact information from you.

Responding to deceptive marketing solicitations may result in being targeted for other solicitations and scams in the future. If you would like to find out more about mass marketing scams or have been a victim please visit the Federal Trade Commissions Webpage. This site has general information, reporting instructions and resources for scam victims.

https://www.ftccomplaintassistant.gov/#crnt&panel11