

Scam Compliance and the Psychology of Persuasion

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Abstract

Social psychologists have established various psychological mechanisms that influence perception of risk and compliance in general. The empirical investigation in this paper focused on how those mechanisms apply to complying with scams. A scale of susceptibility to persuasion was developed, validated and then applied to the phenomena of scam compliance in two studies. In the first study participants answered questions on the susceptibility to persuasion scale and a series of questions about lifetime compliance with 14 fraudulent scenarios. The scale was factorised and tested for reliability. Four reliable factors contributed to susceptibility to persuasion: influence of authority, social influence, self-control and the need for consistency. The susceptibility to persuasion scale was then used to predict overall lifetime scam compliance. Social influence, the need for consistency and self-control all had an impact on universal scam compliance. In the second study an independent sample of participants filled out the susceptibility to persuasion scale and answered questions measuring scam compliance for the past three years across nine fraudulent scenarios. The susceptibility to persuasion scale was validated and confirmed. Scam compliance over the past three years was measured and the results showed that authority, social influence, the need for consistency and self-control all informed scam compliance over that period.

Keywords

Internet fraud, Persuasion, Scam Compliance, Psychology, Self-control, Social Influence

1. Introduction

In comparison with other crimes, fraud requires an unusual degree of co-operation from its victims. A fraud or scam cannot work unless the victim takes positive action, and we would not call it fraud if that action was physically coerced. In this paper, we refer to the fraud-enabling actions that scam victims take as “compliance”, and we ask what psychological processes lead people to act in such ways, which are plainly contrary to their own interests.

Our perspective is that the mechanisms influencing scam compliance are the same as with many other social interactions. Perpetrating a successful scam boils down to the ability of the scammer to *sell* the mark (i.e. a potential victim) an idea – 419 scams (i.e. advance fee fraudulent letters), for example, have been described as, essentially, marketing offers camouflaged as personal correspondence (Cukier, Nesselroth, & Cody, 2007). Scammers use various mechanisms to achieve this goal, for instance *fairy tale archetypes* (Cukier, et al., 2007) or visceral influences to drive the mark, for instance seducing the prospective victims out of their money through promises of love and companionship (Deighton & Grayson, 1995; Whitty & Buchanan, 2012b).

One pronounced difference between scams and many other human interactions is that we generally enter scams under false pretences. Marketers may make misleading or overblown claims in order to sell us their products, but we are not in doubt about what they are selling. Scammers, on the other hand, pretend to offer something that does not exist. Scam compliance implies a belief that we are gaining some sort of utility, while, in reality, we are mostly losing it. Since, by definition, a rational person is not interested in lowering their utility (see, for example, rational choice theory: Becker, 1976), it follows that complying with a fraudulent request is an irrational act. Some scams do succeed, so a logical

corollary would be that there are observable factors that influence and, in particular, somehow reduce our ability to react rationally to an illegitimate marketing offer (i.e. a scam).

1.1 Factors potentially influencing scam compliance

Previous research (e.g. Cukier, et al., 2007; Fischer, Lea, & Evans, 2008; Petty & Cacioppo, 1986; and many others) has shown that there are several factors that are capable of influencing our ability to react rationally and some of them are particularly applicable when talking about scams. The most plausible candidates are listed below.

Liking & similarity (Cialdini, 2001). Individuals are more likely to respond favourably to others when they believe that those others like them have attitudes similar to their own (Cukier, et al., 2007; Hensley & Duval, 1976; Rusch, 1999; Silvia, 2005). Therefore, scam offers that are worded in way that would elicit an illusion similarity should make individuals more susceptible to scams.

Trust and authority (Cialdini, 2001). People tend to comply with requests from authority figures. For example, when the potential falsehood of interpersonal communication is hard or impossible to determine, individuals decide mostly on the basis of perceived trustworthiness and authority of the other party (Selin, 2006). In practical terms, an email appearing to be coming from a doctor, offering a new wonder-drug, would be trusted as much as an individual trusts doctors in general, regardless of the authenticity of the drug. Another example of the influence of authority on behaviour was demonstrated by Murphy (2004) who showed that individuals are generally more likely to pay taxes when they trust tax authorities. In scams, the perpetrators tend to misrepresent themselves as traditional authority figures in an effort to assert authority and elicit trust (Duffield & Grabosky, 2001; Dyrud, 2005).

Social influence (Cialdini, 2001). There is ample research showing that people are susceptible to social influence (Asch, 1956; Deutsch & Gerard, 1955). Markus and Kitayama (1991) showed that individuals in diverse cultures tend to construct their self-worth through comparison with others in their group. In criminology, crime rates can be explained by the attitudes that society has towards crime (i.e. individuals are more likely to commit crimes, if they believe that crime is widespread in their community; Kahan, 1997). In popular culture, fads and fashion are clear representations of social influence (Bikhchandani, Hirshleifer, & Welch, 1992). In legitimate marketing, it has been found that high susceptibility to social influence leads to purchasing decisions based on the sellers' preferences (Bearden, Netemeyer, & Teel, 1989). If this extends to scams, it would lead to prospective marks who are more susceptible to social influence being more likely to comply with requests from scammers, to their detriment.

Risky behaviours (sensation seeking). In order to achieve a higher state of arousal (physiological or psychological), individuals may engage in risky behaviours (e.g. driving too fast, binge drinking, gambling. This process is called *sensation seeking* (Fischer, Kubitzki, Guter, & Frey, 2007; M. Zuckerman, 1994). Previous research has shown that sensation seeking is associated with harmful, risky and irrational behaviours (Zimmermann, 2010), such as promiscuity and criminal activity (Horvath & Zuckerman, 1993). It is also an important factor in development of personality disorders and some eating disorders (e.g. bulimia nervosa; Cassin & von Ranson, 2005). Some evidence also points to sensation seeking being a factor in self-injury (Klonsky, 2007).

One way to define risky behaviours is to see them as any interaction that includes a gamble where a potential negative consequence is counterbalanced by a perceived positive one (Moore & Gullone, 1996). In that respect engaging a scammer is clearly a risky behaviour though perhaps subjectively so only, if individuals perceive both the potential negative and potential (though in most cases fictional) positive outcome. Furthermore, a sense of arousal derived by the potential marks from the uncertainty of outcome would make it reasonable to postulate that high sensation seeking scores would lead to high scam compliance. In support of that Fischer, Lea, et al. (2008) in their report to the UK office of Fair Trading on the psychology of scams conducted a qualitative analysis of 30 interviews of victims of scams and have shown that some victims had treated scams as a kind of gamble: they suspected that the offer might not be honest, but from their point of view the size of the potential gain outweighed that risk.

Self-control (lack of) (cf. Thaler & Shefrin, 1981) is a strong predictor of criminal activity, from the perspective of both the offender and the victim. Gottfredson and Hirschi (1990) General Theory of Crime posits that individuals commit crimes because there is an opportunity to commit them and because they are unable to control their hedonic urges (Gottfredson & Hirschi, 1990; Holtfreter, Beaver, Reisig, & Pratt, 2010; Tittle, Ward, & Grasmick, 2003). Holtfreter, Reisig, Leeper Piquero, and Piquero (2010) have shown that there is a significant overlap across offenders and their victims with lack of self-control being a strong predictor in both cases. Langenderfer and Shimp (2001) have shown that lack of self-control increases the likelihood of being swindled as individuals have a harder time regulating their emotional responses when their ability to control themselves is lowered.

Low self-control has also been shown to be a strong factor influencing rational choice in individuals (Carter, 2001; Nagin & Paternoster, 1993) making the prospective victims more compliant and the offenders more likely to offend. The ability to control oneself (i.e. self-regulation; Muraven & Baumeister, 2000) tends to weaken under prolonged exposure to stimuli, leading to breakdown of rational decision making (R. F. Baumeister, Sparks, Stillman, & Vohs, 2008). Different tactics can be employed to lower the capacity for self-control (i.e. ego-depletion as defined by Baumeister, Bratslavsky, Muraven, & Tice, 1998) and scammers seem to be aware of this mechanism, if not, perhaps, of the theory behind it.

Illusions of superiority and control - individuals tend to deviate positively from an objective view of themselves. This phenomena is also called the above-average effect (or illusory superiority; Alicke, Dunning, & Krueger, 2005; Alicke, Klotz, Breitenbecher, Yurak, & Vredenburg, 1995). The effect of illusory superiority has been widely demonstrated, for example in academic performance, where 87% of Stanford MBA students reported themselves to be better than the median (E. W. Zuckerman & Jost, 2001). The same study researched self-perceived popularity among students and has shown that individuals consistently rate themselves as more popular than their peers. Another well-known example of illusory superiority effect is in driving performance. Svenson (1981) polled US and Swedish drivers on their driving skill and demonstrated that they consistently perceived themselves to be better than average (in some cases the discrepancy was high as 93% of polled Americans thought that they were above the median).

In addition to illusory superiority, individuals tend to judge their future prospects too positively. This phenomenon is called optimism bias (Lovallo & Kahneman, 2003). In

addition, individuals also feel they have more control over their life and environment than it is actually the case (illusion of control; cf. Taylor & Brown, 1988). Following this logic, prospective scam victims might overestimate their ability to detect fraud, both because they, on average, think that they are better at detecting fraud than they actually are, and because they think they are more in control of the situation than they actually are.

Scarcity & uniqueness of scam offer. Individuals are more likely to respond positively to marketing offers when they believe that the goods on offer are either scarce or unique (Folkes, Martin, & Gupta, 1993; Kramer & Carroll, 2009; Suri, Kohli, & Monroe, 2007). Previous research has shown that the ability for rational decision making is lowered under such conditions (Eisend, 2008; Fischer, Greitemeyer, & Frey, 2008; Fischer, Schulz-Hardt, & Frey, 2008). In scam research, Langenderfer and Shimp (2001) have shown that many fraudulent offers utilize this phenomenon to great effect. Scarcity has also been researched in regular marketing. For example Lynn (1989) demonstrated that art prints and wine are perceived as more valuable if the consumers think that there is a high demand for them. Kramer and Carroll (2009) demonstrated that when a good is out of stock, the likelihood that a consumer will purchase a similar good increases. Conversely, Shirai and Bettman (2005) have shown that when individuals believe that a particular deal is not unique and will be repeated in the future, the perceived attractiveness of the present offer is diminished. With respect to scams, it follows that offers that appear to be tailored to the person, or seem to be unique opportunities, or appear to be time time-constrained, should be more likely to elicit higher scam compliance.

Consistency and commitment. Individuals are likely to honour an oral or written commitment once they have established that it is in line with their wants (Bagozzi, 1992; Cialdini, 2001). This remains true even if the original incentive has changed or has been removed (Freedman & Fraser, 1966). While the strength of the need for consistency varies between different cultures it still remains a strong overall incentive to continue a certain behaviour (Cialdini, Wosinska, Barrett, Butner, & Gornik-Durose, 1999).

In marketing, consumers are likely to return to a certain brand once they have chosen it, even if there are better alternatives present (Thomson, MacInnis, & Park, 2005). Additionally, once consumers are committed to a certain offer, they are likely to follow through even if the initial deal has been later heavily changed in the seller's favour (i.e. the 'low-ball' offer; Cialdini, Cacioppo, Bassett, & Miller, 1978). For example, in used car sales, the seller might raise the price of a certain vehicle at the time of purchase and the buyer is still more likely to buy it, as compared with a buyer who knew the full cost beforehand (*ibid*).

By inference, scammers who persuade the mark to make an initial response to an offer, even if it does not require any payment, are more likely to get the mark to react in a second instance, when there usually is a request for money, and those who have already complied with one request for money will be more likely to comply with another from the same source.

The need for consistency and commitment could also be used to explain the dynamics of the sunk cost effect (Arkes & Ayton, 1999; Arkes & Blumer, 1985; Johnstone, 2002), where people take into account the amount already invested when they are deciding whether to continue with a certain transaction or not; even though rationally, they should not. Sunk cost effect is particularly relevant in the so called long-cons, where the mark

keeps sending money to the scammer, as they feel that they are now too far invested in the scam not to continue (Cukier, et al., 2007).

1.2 Scam Compliance

All of the mechanisms mentioned above are in principle capable of inducing scam compliance. However, it is possible that in practice, some of them have little or no effect; and even if all of them do have some practical effect, it is very likely that some are more important than others. Our intention in the present research was therefore to find out which were the most important in the current scam environment.

2. Study 1

A wide variety of psychological factors have been shown to have some influence on decision making processes in general (for a thorough overview cf. Kahneman, 2011) and scam compliance in particular (e.g. Fischer, Lea, & Evans, 2012; Rusch, 1999). We are particularly interested in the processes of persuasion, but as we have shown, even with this restriction, there is a substantial list of possibly significant processes. In order to impose some order on the field, in our first study we construct a scale of susceptibility to persuasion, and reduce it to a limited number of factors that effectively summarise individual differences in persuadability. We then investigate whether scores on those scales are correlated with self-reported lifetime scam compliance in various fraudulent scenarios. We used lifetime compliance as our dependent variable since scam compliance in general is not particularly common according to existing research (Dyrud, 2005; Fischer, et al., 2012; Lea, Fischer, & Evans, 2008) and lifetime compliance will give us the highest rates, thereby ensuring that we had enough variability to allow for the kind of analysis we planned.

2.1 Method

2.1.1 Participants

Our respondents for this study were undergraduate students from the University of Exeter. Approximately 3000 students were contacted via email and asked to participate in an online survey in exchange for either course credits (available only to first year undergraduates at the School of Psychology) or a chance to participate in an online raffle for up to 3 amazon.co.uk vouchers worth £20 each (each 100 participants increased the pot by one additional £20 voucher). 249 out of 284 respondents fully completed the survey.

2.2 Experimental design

2.2.1 Dependent variables

Dependent variables were derived from 45 items that were a part of a scenarios questionnaire containing the 14 typical fraudulent scenarios listed in Table 1. Each scenario was followed by the 3 2-outcome type YES / NO questions listed in Table 2. The scenarios were assembled from the American National Consumer League's Fraud Center whitepaper on fraud trends (2009) and the Office of UK Fair Trading report on psychology of Scams (Fischer, Lea, et al., 2008). Full descriptions of scenarios are included in the Supplemental Materials Section (Table S5).

Table 1
List of Scenarios

Fake Cheque	Fake or bounced cheque schemes
Fake Gig	Fake concert tickets
Merchandise	Online general fake merchandise scam
Gifts	Internet free gifts fraud
Phishing	Phishing schemes
419AFF	419 Scams Nigerian Scams
Auctions	Internet auctions
Loan	Advance fee / credit / loan fraud
Lottery	Lottery scams
Relationship	Online relationship scams
Fake Mag	Fake magazine subscriptions
Telephone Scams	Telephone scams
Boiler Room	Boiler room scams
Pyramid	Pyramid schemes

Table 2
Items on Scenarios

Plausible	Do you think it's likely that people would respond favourably to such a scheme?
Gave info	Have you ever provided personal information to a person running this type of scheme?
Lost money	Have you ever lost any money to such a scheme?

Three binary dependent variables were constructed from the amalgamated data of all scenarios: "Plausible" (whether the respondents said they found any scenario likely to be responded to); "Gave Info" (whether the respondents said they had ever divulged personal information in any of the scenarios); and "Lost Money" (whether the respondents said they had ever lost money to any of the scenarios). Previous research has indicated that favourable scam response (i.e. scam compliance) is a three-tiered process (Dyrud, 2005; Langenderfer & Shimp, 2001). The first step is the initial response (Plausible, cf. Table 2). The second step is divulging of personal information (Gave Info); and third step is losing utility (Lost Money). The phrasing of the Plausible DV was derived from the theory of defence mechanisms (Freud, 1937, p. 83), according to which denial is invoked if an individual is directly confronted with an issue that is ego-weakening. To avoid this issue, Plausible was phrased to question the plausibility of a scenario indirectly (see Table 2).

2.2.2 Independent variables

The independent variables (IV) in this study were scores on a series of scales designed to investigate Susceptibility to Persuasion, and in addition demographic data (gender, age, and a question about the number of bedrooms and people living in the house where the respondent grew up, a proxy for class background).

Susceptibility to Persuasion was measured by a set of 30 items designed to assess the social psychological factors identified in the Introduction as likely to influence scam compliance. The 30 items were divided into 8 a priori subscales corresponding to different factors. Items corresponding to liking and similarity (liking) were specially written for this experiment, but modelled after concepts described by Cialdini (2001, pp. 167 - 189), as were trust and authority (authority; Cialdini, 2001, pp. 209 - 229), social influence (influence; Cialdini, 2001, pp. 114 - 156), scarcity (Cialdini, 2001, pp. 237 - 266) and need for consistency (consistency; Cialdini, Trost, & Newsom, 1995; Cialdini, et al., 1975). Items describing high-risk preference (risky) were modelled after research conducted by Zimmermann (2010) and Fischer, et al. (2007). Items describing low self-control (self-control) were based on a model described by Thaler and Shefrin (1981). Items describing illusions of control (illusions) were created from the concepts described by Taylor and Brown (1988). All items are listed in the Supplemental Material Section (cf. Table S1).

Responses to these items were requested on a Likert-type scale, ranging from 1 = “Strongly Disagree”, 2 = “Disagree”, 3 = “Slightly Disagree”, 4 = “Neither Agree or Disagree”, 5 = “Slightly Agree”, 6 = “Agree”, 7 = “Strongly Agree”.

2.3 Design

To control for order effects the items in each section of the survey were randomised. The survey was delivered online. All participants answered the exploratory and demographic questions at the end of the survey. Initial data gathering was done by two undergraduate students at the University of Exeter. The survey was available for 20 days, and most of the participants completed it in the first few days that it was ‘live’.

2.4 Procedure

The survey was delivered online, and consisted of five sequential parts:

1. Introduction to the experiment, with a brief explanation of the structure and our reasoning for using it; assurance of anonymity; and a request for permission to use the data in the analysis.
2. Susceptibility to Persuasion Scale.
3. Scenarios listed in Table 1 with questions listed in Table 2. In addition an open text question was asked: “Can you think of other schemes which you believe to be very effective? Please describe the scheme in a few words”. Respondents were told in the introduction to this section that they were looking at scams.
4. Demographic (gender, age, class proxy) and general questions (participating for credits or amazon.co.uk voucher, permission to do a follow-up study).
5. Debriefing.

3 Results

Out of 249 respondents who answered the questionnaire in full, 80 asked for and received course credits (they were undergraduates at the School of Psychology, University of Exeter) and 169 participated in a raffle for an amazon.co.uk voucher.

3.1 Participants

All participants were students at the University of Exeter, most of them (82%) aged from 18 to 21 years. 170 participants (60%) were female, 77 (27%) were male. 37 participants (13%) opted out of answering that question. Most of them were from a secure financial background (21% spent their childhood in 4 bedroom houses or better, with 53% living in a household of 4 people).

3.2 Probability of compliance with scenarios

The level of at least minimal scam compliance (i.e. finding a scenario plausible) across scenarios was high – 74% of participants reported complying with at least one scenario on at least one level (i.e. Plausible, Gave Info or Lost Money). 58% of participants found at least one of the scenarios plausible, with Internet free gifts being most likely to be favourably responded to (41%) and Nigerian 419 scams being least likely to incur a favourable response (8%). 30% of participants had divulged personal information (gave info) in at least one of the scenarios, with most participants divulging personal information to scammers running Internet free gift schemes (20%) and in fraudulent auctions (16%). 419 letters, Internet loans, Relationship swindles and pyramid schemes were least likely to yield any personal information to the scammers (1%). 33% of participants had lost money to at least one of the scenarios, with most participants losing out to free Internet gift schemes (21%), followed by fraudulent auction schemes (17%). Detailed results are listed in Table 3.

Table 3
Scam Compliance for Scenarios (n = 284)

	Plausible [%] ^a	Gave Info[%] ^b	Lost Money[%] ^c
Fake Cheque	24	3	2
Fake Gig	39	6	4
Merchandise	39	11	10
Gifts	41	20	21
Phishing	23	2	0
419AFF	8	1	0
Auctions	42	16	17
Loan	33	1	1
Lottery	20	2	2
Relationship	33	1	1
Fake Mag	34	2	2
Telephone Scams	30	4	7
Boiler Room	25	2	1
Pyramid	31	1	0
Overall ^d	58	30	33

Note.

^a Answered YES to: "Do you think it's likely that people would respond favourably to such a scheme?"

^b Answered YES to: "Have you ever provided personal information to a person running this type of scheme?"

^c Answered YES to "Have you ever lost any money to such a scheme?"

^d Participants who complied at least once in any of the scenarios.

Reliability testing of scenarios (plausible, gave info and lost money across scenarios),

showed good to excellent reliability across the board. Results are reported in Table 4.

Table 4
Reliability Testing on Scenarios

Factor	Cronbach α	α_s
Scenarios (overall)	.893	.910
Plausible	.919	.916
Gave Info	.707	.765
Lost Money	.701	.829

3.3 Susceptibility to Persuasion scale construction and validation

Reliability testing of the a priori subscales of Susceptibility to Persuasion showed poor ($\alpha_s = .134$) to good ($\alpha_s = .741$) reliability. Three subscales were reliable from the outset (authority, social influence and low self-control). Full results are listed in the Supplemental Materials Section (Table S2).

3.3.1 Factorability of the Susceptibility to Persuasion Scale

The experimental data were screened for univariate outliers. The minimum amount of data for factor analysis was satisfied (Tabachnick & Fidell, 2005, p. 613), with a final sample size of 284, with over 9 times as many cases as variables.

The factor structure of the 30 Susceptibility to Persuasion items was examined. Several factorability criteria were used. Out of 30 initial items, 21 items correlated at least .3 with another item and 25 items correlated at least .27 with one other item. The Kaiser-Meyer-Olkin measure of sampling adequacy was .71, above the recommended value of .5. Bartlett's test of sphericity was significant ($\chi^2_{453} = 1617.80, p < .001$). Overall reliability of the Susceptibility to Persuasion was .730 ($\alpha_s = .718$). All communalities were above .23, with 28 above .3 and 25 above .4.

Principal axis factoring was used as we assumed that a certain part of the variance would not be explained by the Susceptibility to Persuasion scale. Direct oblimin rotation was used, as we assumed that certain factors would share variance. Seven factors with eigenvalues about 1.0 were found, explaining 50% of the variance in total. The first factor explained 14% of the variance, the second and third factors each explained 8% of the variance, the fourth and fifth factors 6% of the variance, the sixth factor 5% of the variance and the seventh factor 4% of the variance. The seven factor solution was further examined using varimax rotation but there was little difference between the analyses using different rotations, so direct oblimin was used in the final analysis. Factor loadings for the seven-factor solution are listed in Table S3 in the Supplemental Materials Section. Empirical subscales were constructed by selecting items whose highest loadings were on each of the seven factors. Substantial increases in the reliabilities of these subscales were achieved through elimination of several items. However three of the subscales were unreliable even after item elimination, so they were excluded from the final analysis. The final results of reliability

testing are reported in Table 5, showing moderate to high reliability in subscales defined by the remaining four factors.

Table 5
Reliability Testing of subscales based on factors in the Susceptibility to Persuasion Scale, after item deletion (n = 284)

Factor	Cronbach α	α_s
Authority	.671	.673
Social Influence	.757	.756
Low Self-Control	.807	.808
Need for Consistency	.629	.629
Overall	.748	.747

Table 6

Proportions of variance accounted for, Factor Loadings and Communalities Based on a Principal Axis Factoring with Oblimin Rotation for 12 items from Susceptibility to Persuasion Scale (n = 284)

	Self-Control	Authority	Consistency	Influence
Proportion of variance accounted for	27%	15%	13%	10%
I trust in legal authorities to sort my situation if I was defrauded.		.741		
I feel safe and legally protected when buying goods from authority figures.		.785		
I trust in information offered to me by authorities.		.793		
I am easily persuaded to do things by my friends.				.851
My friends do not easily influence me.				.758
I often follow the crowd, even when that is not in my best interest.				.796
I am not very organised.			.834	
I often follow a strict schedule.			.717	
I am often late to meetings despite planning to be on time.			.705	
I find it hard to restrain myself from buying things that interest me.	.855			
I only buy things when I really need to.	.855			
I cannot easily stop myself from making rash or impulse purchases.	.808			

Note. Factor loadings < .45 are suppressed

These results suggested that a four-factor solution would capture the useful structure of the responses to the items, so another factor analysis was run on the 12 items retained from the previous analysis, to confirm the four factor solution. Principal Axis Factoring with direct oblimin rotation was again used. The solution explained 65% of the overall variance. All Pearson correlations across the subscale items were at least .3. The Kaiser-Meyer-Olkin

measure of sampling adequacy was .744. Bartlett's test of sphericity was significant ($\chi^2_{66} = 781.80, p < .001$). All communalities were above .5. All items had primary loadings over .7 with four of them having a cross-loading above .32. The factor loading matrix for this final solution is presented in Table 6.

The final subscales were created for each of the four factors, based on the mean of the items with primary loadings on each factor. All scales were coded so that higher scores indicated greater susceptibility to scam compliance.

Individuals with high scores in the Low Self Control factor are likely to have a difficulty controlling their impulses. Those with high scores in the Authority factor are likely to be influenced by authority figures and are more likely to trust them. Individuals with high scores in the factor feel a strong need for consistency and structure. Those with high scores on the Social Influence this factor are likely to be influenced by their peers and social circle.

3.4 Predicting scam compliance

In order to predict self-reported overall scam compliance, a series of binary logistic regressions were run. To determine whether levels of collinearity biased the parameter estimates in the multivariate models, we evaluated the correlations between the remaining reliable independent variables (self-control, authority, consistency, influence) and demographics (gender, age, proxy for class background); and performed model diagnostics (cf. Belsley, Kuh, & Welsch, 1980). Age was moderately negatively correlated with authority ($r_{240} = -.179, p = .005$) and self-control ($r_{240} = -.179, p = .005$). Male gender was moderately negatively correlated with self-control ($r_{240} = -.214, p = .001$). None of the other correlations were significant.

The correlational data indicated that there were no potential collinearity issues in this sample (according to Tabachnick & Fidell, 2005, p. 125). Additional collinearity diagnostics were run to confirm this – although there was a high condition index in the 8th dimension of our model (36.1 – well above the cutoff of 30), the variance proportions were universally low, confirming that there would be no issues with collinearity (Tabachnick & Fidell, 2005, p. 90). One outlier was present and removed from further analysis. Regression models are reported in Table 7.

The overall goodness of fit for Model 1 was 57.9% (cf. Table8), showing that we could successfully predict when individuals would find at least one scenario plausible, in approximately 60% of the cases, taking all the predictors into account. In our sample, scenario plausibility was significantly predicted by age and Social influence. The model had a low predictive strength (Nagelkerke pseudo $R^2 = .05$) and was statistically insignificant, which precludes us from drawing any strong conclusions. One possible solution to this issue would be to more clearly granulate the dependent variable (and this was done in Study 2 of the present paper).

Table 7
Logistic Regression Models for Universal Scam Compliance

Variables	Model 1: Plausible (n = 236)			Model 2: Gave Info (n = 235)			Model 3: Lost Money (n = 235)		
	<i>b</i>	S.E.	Wald	<i>b</i>	S.E.	Wald	<i>b</i>	S.E.	Wald
Age	.16 [1.17]	0.07	4.45**	.02 [1.02]	0.06	0.10	.11 [1.11]	0.07	2.52
Gender	-.08 [0.93]	0.30	0.07	-.33 [0.72]	0.34	0.96	.27 [1.32]	0.39	0.48
Wealth	-.19 [0.83]	0.58	0.11	-.60 [0.55]	0.63	0.89	-.49 [0.95]	0.74	0.04
Authority	-.13 [0.89]	0.13	0.91	.04 [1.04]	0.14	0.09	-.01 [0.99]	0.17	0.00
Influence	.21 [1.24]	0.12	2.97*	.14 [1.15]	0.13	1.13	-.09 [0.91]	0.16	0.36
Consistency	.06 [1.06]	0.11	0.32	.23 [1.26]	0.12	4.04**	.16 [1.17]	0.14	1.32
Self-Control	.02 [1.02]	0.11	0.03	.08 [1.78]	0.12	0.42	.43 [1.54]	0.14	8.92**
Plausible				.58 [1.78]	0.31	3.47*	-.32 [0.72]	0.38	0.77
Gave Info							2.78 [16.13]	0.38	54.68***
Constant	-3.05 [0.05]	1.38	2.79*	-2.96 [0.05]	1.67	3.11*	-5.85 [0.00]	2.06	8.06**
Model $\chi^2 =$			12.08			15.17*			88.33***
df			7			8			9
Nagelkerke $R^2 =$.05			.09			.44

Note. Entries (b) are unstandardized logistic regression coefficients, (S.E.) are standard errors, odds ratios are in brackets.

* $p < .01$; ** $p < .05$; *** $p < .001$

Model 2 had a better predictive value (goodness of fit was 63.8%; cf. Table 9) and the regression was statistically significant, although still with a poor predictive strength (Nagelkerke pseudo $R^2 = .09$). Giving away information to scammers was significantly predicted by consistency and plausibility, indicating that individuals who felt strongly about honouring commitments are more likely to respond positively to requests for information, making them more scam compliant. The odds ratio of consistency indicates that every 1-unit increase in the consistency factor translates into a 26% increase (1.26:1) in the odds of divulging personal information. Additionally, those individuals who find a scenario plausible (i.e. believe that they would respond favourably to it) were more likely to divulge personal information to scammers.

Model 3 had a good predictive value (goodness of fit of 80%; an increase of 46.8% from the null hypothesis model that had a predictive value of 33.2%; cf. Table 10) and the regression was statistically significant, with a good predictive strength (Nagelkerke pseudo $R^2 = .44$). Losing money in any scenario was significantly predicted by self-control and giving information to scammers, indicating that individuals with lower self-control would be more likely to lose funds when encountering fraudulent offers. The odds ratio of self-control indicates that for every 1-unit decrease of ability to control themselves, individuals are 54% more likely (1.54:1) to lose money when engaging in scams. In addition, those individuals who divulge personal information to scammers were more likely to also lose money to them.

Table 8

Goodness of Fit for Logistic Regression (Model 1) - Plausible (n = 236)

Observed	Predicted		
	Not Plausible	Plausible	Correct [%]
Not Plausible [0]	73	25	74.5
Plausible [1]	74	63	46
Overall [%]			57.9

Note. The cut-off value was set at .6, to provide the optimal balance between false positives and misses.

Table 9

Goodness of Fit for Logistic Regression (Model 2) - Gave Info (n = 235)

Observed	Predicted		
	Not Given Information	Given Information	Correct [%]
Not Given Info. [0]	112	50	69.14
Given Info. [1]	35	38	52.05
Overall [%]			63.83

Note. The cut-off value was set at .35 to provide the optimal balance between false positives and misses

Table 10
Goodness of Fit for Logistic Regression (Model 3) - Lost Money (n = 235)

Observed	Predicted		Correct [%]
	Not Lost Money	Lost Money	
Not Lost Money [0]	131	26	83.4
Lost Money [1]	21	57	73.1
Overall [%]			80.0

Note. The cut-off value was set at .3 to provide the optimal balance between false positives and misses.

3.5 Respondent comments

Participants in the present study were asked to list any pervasive fraudulent scenarios they felt might be missing in our study. 242 (85%) of respondents did not list any additional scenarios. Out of those who did list additional scenarios, 17 (6%) listed variations on the present scenarios. Out of the remaining comments, only in-store credit card hidden charges (a shady business practice rather than a scam) were listed more than once (2 Respondents).

4. Study 1 discussion

Results of Study 1 yielded a reliable scale measuring susceptibility to persuasion on four dimensions (self-control, authority, consistency and social influence) across 14 fraudulent scenarios. The logistic regression predicting overall compliance yielded adequate results (cf. Table 7).

It appears, then, that overall lifetime scam compliance can be predicted from self-reported susceptibility to some of the persuasive tactics suggested by social psychologists. However, the present study has some limitations. Items on the scenarios measured compliance over respondents' lifetime, while the Susceptibility to Persuasion Scale measured its effects in the present moment, making the DVs and IVs non-contemporaneous. While measuring lifetime compliance is a logical first step in order to maximise the variability of the dependent variables, the next logical step is to construct DVs and IVs that both relate to the present time. Another limitation is that some of the 2-outcome binary variables (e.g. plausibility) lack granularity in certain cases; yet another potential issue is that the participants in Study 1 were students exclusively, which might skew the results.

Finally, the identification of scale items by factors and item analysis was carried out on the same sample as was used to test the hypotheses about scale variables predicting compliance behaviours. Although this is common practice, it is not ideal, and an independent test of the validity of the Susceptibility to Persuasion Scale would be highly desirable.

5. Study 2

Study 2 aimed to build on and confirm the results obtained in Study 1. Study 1 yielded a statistically reliable scale measuring Susceptibility to Persuasion, but the scale would still benefit from independent replication and validation. A principal aim of Study 2 was to confirm the reliability and factor structure of the scale derived in Study 1.

The fraudulent offers (scenarios) used in Study 1 proved to be reliable, but in certain cases (e.g. general merchandise scams and Internet auction scams) shared common variance. Data gathered from Study 1 allowed us to optimize the scenarios and take respondent comments into account when constructing a new list. The Study 1 scenarios were also expressly flagged as being fraudulent, which impacted plausibility analysis. This was rectified in Study 2 by describing scenarios as possibly fraudulent, allowing respondents to decide for themselves whether a particular scenario was fraudulent.

A time frame was set on our DVs, which while lowering the reported compliance rates gave us more relevant results. Our DVs (where applicable) were constructed to capture more nuance (e.g. instead of asking whether the participants thought that a scenario was plausible, we asked how plausible they found it on a scale of 1 to 5).

Since age was a significant predictor in Study 1, we conducted an analysis where we covered a more general age range. Data for Study 2 were collected through a large survey which also yielded additional data used to address a separate research question (see Modic, 2013).

6. Method

6.1 Participants

Our respondents for this study were recruited from the Internet. The experiment was run in three separate waves and the data amalgamated for analysis. The first wave (main sample) included students from the University of Exeter. Approximately 1700 undergraduate and postgraduate students were contacted via email and asked to participate in an online survey in exchange for either course credits (available only to first year undergraduates at the School of Psychology) or a chance to participate in an online raffle for up to 6 amazon.co.uk vouchers worth £10 each (each 100 participants increased the pot by one additional £10 voucher). The second wave (ARS sample) involved a well-known IT web magazine, named Ars Technica. The administrator of arstechnica.com was contacted and asked for cooperation. Ars Technica (ARS) has several million viewers who were asked for participation through a published notice on the first page of the webpage and on the forum. The third wave (SVU sample) involved a well-known scam victims' resource, the Scam Victims United web-page and message board. The administrator of scamvictimsunited.com (SVU) was contacted and asked for cooperation, which they gave. The SVU message board had approximately 25,000 registered users in 2010.

6.2 Experimental design

6.2.1 Dependent variables

Dependent variables were derived from 45 items that were part of a modified scenarios questionnaire containing 9 typical fraudulent scenarios. Eight of these were drawn from Study 1, after dropping scenarios that for which responses were highly correlated with others. The wordings of the scenarios were modified in some cases in the light of comments received from participants in Study 1. One additional scenario (in-store credit card offer) was added, as several respondents in Study 1 noted that it was missing. While this scenario depicts shady business tactics and is not an outright fraud it was included in the interests of face validity. Table 11 lists the scenarios used; full wordings are included in Supplemental

Materials Section (Table S4).

Table 11
List of Scenarios used in Study 2

Variable	Description
Fake Cheque	Fake cheque
Phishing	Phishing
419AFF	419 Nigerian Scams (Advance fee fraud)
Auction	Internet auctions
Lottery	Lottery scams
Relationships	Lonely hearts swindles
Boiler Room	Boiler room scams
Pyramid	Pyramid schemes
In-Store CC	In-store credit card

Five questions were asked in Study 2, after the description of each modified scenario. They are listed in Table 12.

Table 12
Items on Scenarios in Study 2

Item	Type of response required
How likely is it that this is a scam?	5-point Likert scale
How likely is it for people to respond favourably to this?	5-point Likert scale
Have you been in such a situation in the last three years?	Binary (YES/NO)
Have you responded to such an offer in the last three years?	Binary (YES/NO)
Have you lost money* to such an offer in the last three years?	Binary (YES/NO)

Note. * Lost Out was accompanied by: The amount lost can be (very) small."

From the responses, four binary variables were constructed: "Plausible" (scored 1 if the respondent answered "likely" or "very likely" to either of the first two items for any scenario), "Experienced" (scored 1 if the respondent replied "YES" to the third item on any scenario), "Responded" (scored 1 if the respondent replied "YES" to the fourth item on any scenario), and "Lost Money" (scored 1 if the respondent replied "YES" to the final item on any scenario). These four scores were the dependent variables used in the analyses.

6.2.2 Independent variables

The independent variables (IV) in this experiment were the scores on the four subscales of the Susceptibility to Persuasion scale derived in Study 1, plus the full scale score, and demographic data (gender, age, class background, IT knowledge, relationship status, education and occupational status).

Factor analysis of Study 2 data confirmed the factor structure of the Susceptibility to Persuasion questionnaire (see Table 13). The full scale exhibited moderate internal reliability of .727 ($\alpha_s = .735$, $n = 429$, 12 items). The four sub-factors exhibited moderate to good

internal reliability, ranging from .581 to .803 (Table 14).

Table 3.13

Factor Loadings and Communalities Based on a Principal Axis Factoring with Oblimin Rotation for 12 items from Susceptibility to Persuasion Scale in Study 2 (n = 429)

	Self-Control	Authority	Consistency	Influence
I find it hard to restrain myself from buying things that interest me.	.793			
I only buy things when I really need to.*	.609			
I cannot easily stop myself from making rash or impulse purchases.	.703			
I am not very organised.			.760	
I often follow a strict schedule.*			.546	
I am often late to meetings despite planning to be on time.			.415	
I trust in legal authorities to sort my situation if I was defrauded.		.635		
I feel safe and legally protected when buying goods from authority figures.		.801		
I trust in information offered to me by authorities.		.834		
I am easily persuaded to do things by my friends.				.931
My friends do not easily influence me.*				.540
I often follow the crowd, even when that is not in my best interest.		.459		.551

Note. Factor loadings < .4 are suppressed.

* Item is reverse scored.

Table 14
Reliability Testing of Susceptibility to Persuasion Scale in Study 2 (n = 429)

Factor	Cronbach α	α_s
Authority	.800	.803
Social Influence	.695	.693
Low Self-Control	.735	.735
Need for Consistency	.576	.581
Full scale	.727	.735

6.2.3 Design

To control for order effects the items within the Susceptibility to Persuasion scale and the scenarios were randomised for each participant. All participants answered the exploratory

and demographic questions at the beginning of the survey; since this experiment was available to the general public on the Internet, we needed to control for the participants' age first, as, for ethical reasons, we did not want to include responses from underage subjects. Since we were already gathering some demographic data, we gathered all at the same time.

6.3 Procedure

The survey was delivered online, and consisted of six parts:

1. Introduction to the experiment, with a brief explanation of the structure and our reasoning for using it; assurance of anonymity; and a request for permission to use the data in the analysis.
2. Demographics and general section.
3. Scenarios section. The respondents were told that "they are presented with nine real-life situations" and that "some of them might be fraudulent." In fact all except one (in-store credit card) were fraudulent. This was a change from Study 1 scenarios, where the respondents were told outright that they were looking at scams.
4. Susceptibility to Persuasion Scale.
5. Three other scales used in another analysis.
6. Debriefing was included after each scale or scenario. The study was available for 35 days, and most of the participants completed it in the first few days that it was 'live'.

7. Results

7.1 Participants

In the three waves, there were initially 580 respondents. After we removed incomplete and invalid responses (e.g. 1 participant who uniformly picked the rightmost answer throughout the whole survey and claimed to have lost money to all 8 scenarios), we ended up with 429 full responses, out of which 74 participants claimed to have responded to a fraudulent offer at least once in the past three years. Most of the respondents in the combined sample were aged between 22 and 30 years (36%) closely followed by those aged 18 to 21 years (32%), and those aged 31 to 40 years (20%). The remaining 13% were older than 40. All participants younger than 18 years (3%) were excluded from analysis. The majority of respondents (50%) described themselves as functionally Internet literate, with 22% describing themselves as experienced IT users and 25% describing themselves as somewhat proficient at IT. 31% of the respondents were female and 69% were male. 30% of respondents claimed they lived with a spouse or with a spouse and children, 22% of respondents lived alone, 21% with room-mates and 15% with their parents. The remaining 12% lived in school or shared housing. 50% of respondents were single, 46% in a relationship or married, with the remaining 4% divorced or widowed. On average, 73% of respondents thought that one or more presented scenarios were scams, with 64% experiencing at least one of the scenarios.

7.2 Predicting scam compliance in Study 2

Binary logistic regressions were used to predict overall scam compliance. Before proceeding with these, diagnostic tests were run on the independent variables. We evaluated the bivariate Pearson correlations between the subscales of the Susceptibility to Persuasion variables (self-control, authority, consistency, influence) and demographics (age, gender, IT knowledge and educational level); and performed model diagnostics. In Study 2 age was significantly correlated with educational level ($r_{373} = .410, p < .001$), authority ($r_{373} = -.295, p < .001$) and influence ($r_{373} = -.256, p < .001$). IT knowledge was significantly correlated with male gender ($r_{373} = .545, p < .001$). Social influence was significantly correlated with self-control ($r_{373} = .383, p < .001$) and authority ($r_{373} = .363, p < .001$). All the other correlations were below .25 or non-significant. To avoid collinearity issues age was removed from further analysis. Additional collinearity diagnostics were run on the remaining variables. There was a high condition index in the 9th dimension of the model (influence; 30.715), but the variance proportion was low (.48) confirming that we could proceed with the regression (Tabachnick & Fidell, 2005, pp. 90-91).

No analysis was carried out for the dependent variable Lost Out, as only nineteen respondents reported that they had lost money to any of the scenarios in the past three years, and this did not provide us with enough variance to conduct analysis. Likewise, no logistic analysis was carried on the dependent variable Experienced, as, in the present paper, we are looking at scam compliance where active participation is required. Merely experiencing a fraudulent scenario tells us how prevalent a particular scam is in the tested population, but does not require active participation in fraud. Regression models are reported for Plausible and Responded in Table 18.

Table 16

Goodness of Fit for Logistic Regression of dependent variable Plausible (n = 380)

Observed	Predicted		
	Not Plausible	Plausible	Correct [%]
Not Plausible [0]	116	96	54.7
Plausible [1]	79	89	53.0
Overall [%]			53.9

Note. The cut-off value was set at .44 to provide the optimal balance between false positives and misses.

Table 17

Goodness of Fit for Logistic Regression of dependent variable Responded (n = 343)

Observed	Predicted		
	Not Responded	Responded	Correct [%]
Not Responded [0]	281	35	88.9
Responded [1]	1	26	96.3
Overall [%]			89.5

Note. The cut-off value was set at .15 to provide the optimal balance between false positives and misses.

Overall goodness of fit for Plausible in Study 2 was 53.9%, showing that we could successfully predict when individuals would find a scenario plausible in little more than half of the cases (cf. Table 16). There was less than 1% difference between the goodness of fit of the model and the null hypothesis model. Scenario plausibility was significantly predicted only by authority. The model had poor predictive strength (Nagelkerke pseudo $R^2 = .01$) and was statistically insignificant, which precludes us from drawing any strong conclusions.

The regression model for Responded had a better predictive value (goodness of fit was 89.5%; cf. Table 17) and the regression was statistically significant, with a good predictive strength (Nagelkerke pseudo $R^2 = .45$). Giving information to scammers was significantly predicted by male gender, educational level, authority, social influence, consistency, self-control and plausibility. Less well educated males were more likely to have given away sensitive information, as were those who found any of these scenarios plausible. All subfactors of Susceptibility to Persuasion were significant regressors for Responded, the strongest being lack of self-control (Wald $\chi^2 = 16.58$; $p < .001$), closely followed by social influence (Wald $\chi^2 = 10.98$; $p = .001$) and authority (Wald $\chi^2 = 8.55$; $p = .003$). The odds ratio of self-control indicates that for 1-unit decrease of self-control (the factor measures *lack* of ability to control oneself) translates into a fourfold increase in the odds of divulging personal information. Compliance rates in individual scenarios were universally low which precluded us from measuring scam compliance in individual fraudulent scenarios.

Table 18

Logistic Regression Models for 3-year Scam Compliance in Scenarios (Study 2)

Variables	Plausible (n = 380)			Responded (n = 343)		
	<i>b</i>	<i>S.E.</i>	Wald	<i>b</i>	<i>S.E.</i>	Wald
Gender	-.06 [.94]	0.27	0.05	3.24 [25.47]	0.88	13.51***
IT Knowledge	.06 [1.06]	0.15	0.14	.29 [1.34]	0.37	0.62
Educational Level	-.01 [0.99]	0.11	0.01	-1.24 [0.29]	0.32	15.16***
Authority	-.21 [0.81]	0.12	3.09*	-.796 [0.45]	0.27	8.55**
Influence	.09 [1.10]	0.15	0.39	1.26 [3.53]	0.38	10.98**
Consistency	-.08 [.92]	0.12	0.44	-.82 [0.44]	0.33	6.22**
Self-Control	.03 [1.03]	0.13	0.06	1.44 [4.23]	0.35	16.58***
Plausible				-1.05 [0.35]	0.54	3.833*
Constant	.20 [1.23]	0.97	0.04	-8.30 [0.00]	2.84	8.58**
Model $\chi^2 =$			3.84			72.01**
df			7			8
Nagelkerke $R^2 =$.01			.45

Note. Entries (b) are unstandardized logistic regression coefficients, standard errors are in parentheses, odds ratios are in brackets.

* $p < .01$; ** $p < .05$; *** $p < .001$

8. Study 2 discussion

Study 2 yielded mixed results. The Susceptibility to Persuasion Scale was independently verified and proved to be reliable in a wider setting, but, as predicted, time-limiting our DV decreased the variability of the dependent variables in the sample. While the results of the analysis mirrored the current state of compliance better than in Study 1, the number of participants who reported that they had lost money to scams (in the past three years) was so low that it precluded any further analysis. Future experiments should rectify this situation by either targeting victims of specific scams exclusively, or by manipulating scam compliance by running an experiment where complying with scams would be a part of the experimental design. However, the lower level of compliance, as measured by giving information to scammers across all scenarios, was again successfully predicted and found to be associated with the Susceptibility to Persuasion scales.

9. General Discussion

9.1 Initial findings relating to the demographic factors

The present experiments give us some overall insight into scam compliance, at least if we take a liberal definition (i.e. anyone who finds a scam plausible has shown some level of compliance). The results show that both in the student (Study 1) and in the general population (Study 2) more than half of respondents find presented scams plausible. If we take a stricter definition of compliance (i.e. responded to at least one fraudulent offer with personal information) approximately 1/3 of student respondents and 1/10 of general respondents had complied. This discrepancy in compliance between groups becomes wider when we look at the odds of respondents losing money to Internet fraud (33% of student population and 3% of general population). We should point out that these results are not completely comparable (i.e. the student population answered questions that were not set in a specific time frame; the student population was told in advance that they are looking at scams). The results, however, do hint at the possibility that the student population is more scam compliant and as a corollary more vulnerable than the population at large. This means that there would be some advantage in conducting further studies using data sampled from the student population as the observed power of the studies would grow with a bigger proportion of scam compliant respondents.

Younger individuals (in both Studies) were more sceptical of scams (they found them less plausible), but at the same time, they were not less likely than older individuals to respond to fraudulent offers. Although in the past researchers have claimed that older people were more likely to fall victims to fraud (e.g. Langenderfer & Shimp, 2001), this notion has since been contested (Muscat, James, & Graycar, 2002; Shadel & Pak, 2007, p. 44; Titus, Heinzelmann, & Boyle, 1995) and this claim may have arisen from some widely publicised case histories rather than systematic data – although the most recent data do give it some support (Castle, et al., 2012). Another explanation for our findings could be put down to operational experience – younger generations are more ICT (Information and Computer Technology) savvy and informed, but might not have had as much real world experience with scams as older individuals. This would bear further investigation through gathering more usage data when conducting further research.

Giving away personal information across all scenarios and losing money were closely correlated in both studies in the present experiment. Additionally, giving away personal

information was a significant predictor in Study 1 in the models where losing money was the dependent variable of the regression. This correlation is explained by defining divulging personal information to a scammer and losing money to a scam as a function of personal utility (Krause & Horvitz, 2010), that is to say personal information has intrinsic value (Joinson & Paine, 2007). Individuals have an ambivalent relationship towards its worth – they nominally value privacy highly (Langenderfer & Cook, 2004; Olivero & Lunt, 2004; Wafa, 2008), not necessarily because they want to hide illicit or illegal behaviour, but because they want to avoid scrutiny and potential disapproval of their in-group (Goodwin, 1992). Additionally, women generally have more privacy concerns than men (Sovern, 1999, p. 1059; Youn & Hall, 2008). While privacy is perceived by average consumers as valuable, they also often treat it as nearly financially worthless at the same time; for example, they do little to preserve it, if mechanisms that are perceived to be trust-enhancing are employed (Joinson, Reips, Buchanan, & Schofield, 2010). Oberndorf (1999) showed that individuals are willing to exchange private information for a mail-in catalogue; and a study by Hann, Hui, Lee, and Png (2003) has shown that the average monetary worth individuals assigned to their privacy in e-commerce was approximately £30. Results of the Study 1 showed that a significant portion of respondents were reluctant to divulge personal information to scammers, but once they did, they were more likely to also lose funds to them. This was also true in Study 2. Multivariate analysis was not possible due to a lack of victims (in the sample) who lost funds, but out of 19 respondents who had lost money to scams, 15 had also divulged personal information to scammers. This confirms that the progression of scam compliance as postulated by Dyrud (2005) and Langenderfer and Shimp (2001) holds. This additionally allows us to infer that the sunk cost effect (i.e. individuals make a decision to continue with a transaction where they have not received any gain, but lost a certain amount of personal utility, in the hope that they will profit in the end if they continue with it; Arkes & Ayton, 1999; Arkes & Blumer, 1985; Johnstone, 2002) plays a role in the scam compliance process itself and not only in the final step of it (as, for example, summarized by Cukier, et al., 2007).

9.2 Social Psychological factors influencing scam compliance

The present experiments confirmed that several social psychological factors influence scam compliance. These factors were: social influence, compliance with authority, the need for consistency; and lack of self-control. The final scale containing these factors proved to be reliable and valid across different populations.

Logistic regression analysis in both studies confirmed a strong influence of the ability to exert self-control on scam compliance (Study 1 – losing money; Study 2 – giving away personal information). As in many other social settings (e.g. Consumer preferences; Hoch & Loewenstein, 1991; weight control, safe driving and substance abuse in adolescence; Reyna & Farley, 2006; time management; Steel, 2007), self-control plays an important part in decision-making where rational outcomes are preferred. Conversely, the inability to control one's own impulses leaves individuals vulnerable to making irrational decisions (Hoch & Loewenstein, 1991). These findings are also in line with the General Theory of Crime (GTC), within which low self-control is seen as the most important predictor of becoming a victim (Baron, 2003; Gottfredson & Hirschi, 1990, pp. 85-122; Holtfreter, Reisig, et al., 2010). It should be noted that although GTC has been criticised for being partial (Jones & Quisenberry, 2004) and tautological (Arneklev, Elis, & Medlicott, 2006), empirical research still confirms its validity and robustness (cf. Pratt & Cullen, 2000). The applicability of GTC to Internet fraud is not surprising as any type of fraud is crime, after all. It does, however, validate our findings. Scammers are capitalizing on victims' low self-control by using

mechanisms that have been shown to weaken it; by, for example, incorporating temporal constraints into their offers (e.g. in Nigerian 419 letters; Dyrud, 2005) or employing visceral influences (Cukier, et al., 2007; Rusch, 1999).

In both Study 1 and Study 2 consistency was a significant predictor of responding to a fraudulent offer, demonstrating that the need to honour previous commitments and act in accordance with one's self-perception (Cialdini & Goldstein, 2004) predicts falling for scams when an individual might not be aware of an offer being fraudulent. In Study 2 participants were asked whether they thought a particular scenario to be fraudulent – the Pearson correlation between likelihood of scenario being fraudulent and the need for consistency was low and insignificant, preventing us from drawing any conclusions about the relationship between perception of fraudulent nature of a scenario and honouring commitments. However, consistency was significantly positively correlated with social influence showing that when scammers appear to be a part of the victims' in-group, they are more likely to honour their commitments. Raising awareness of how scams work and what mechanisms the scammers employ should lower compliance rate as individuals will then not feel forced to honour their obligations towards scammers.

In Study 2, authority was a weak predictor of plausibility and a strong predictor of responding to fraudulent offers, allowing us to infer that individuals would be more likely to give personal information to authority figures, who, in case of Internet scams, employ a mix of *soft* (i.e. power coming from expertise in the field) and *harsh* tactics (i.e. influence exerted from the hierarchical position; Koslowsky, Schwarzwald, & Ashuri, 2001; Raven, Schwarzwald, & Koslowsky, 1998) to elicit compliance. For example, it is common in boiler-room scams (i.e. telemarketing scams usually involving illegal stock sales) for scammers to present themselves as reputable stockbrokers (harsh tactics) who sell stock on the basis of insider information (soft tactics) to the mark (cf. Stevenson, 2000). It has long been recognised in marketing that authority figures play a significant role in purchasing decisions (Sagarin, Cialdini, Rice, & Serna, 2002), hence the use of actors portraying doctors, lawyers and scientists in advertising. In Nigerian 419 scams, for example, communications often claim to be coming from an authority figure – from lawyers, doctors or high-standing government officials (Cukier, et al., 2007; Dyrud, 2005). In lonely hearts swindles the mark is often contacted by a 'doctor' or a 'lawyer' asking for funds needed by the romantic partner (Whitty & Buchanan, 2012a, p. 6) Several techniques to deal with the influence of authority on decision making have been proposed in the past, and they are applicable in the case of scam compliance too. Forewarning marks of the persuasive intent of the offer helps them resist compliance (Cialdini & Petty, 1981; Petty & Cacioppo, 1979). Educating individuals about types of authority influence should also help in resisting compliance. Sagarin, et al. (2002) have shown that individuals who are aware of, and are able to make the distinction between, legitimate and illegitimate (or fake) authority are more resistant to complying with its requests.

Social influence was also a significant predictor of giving information to scammers in Study 2, allowing us to infer that individuals are susceptible to social trends and wish to conform with social norms, when it comes to scam compliance. Individuals will comply with in-group requests even if these requests go against the mark's preferences (Latané, 1996). In this respect, scammers need only to appear to have a close relationship with the mark, to elicit higher compliance rates. For example, they would claim that a mutual friend has told them to contact the mark or that they had a close relationship with the mark's distant relative (as is often the case in Nigerian 419 scams). In lonely hearts swindles, the scammers might appear

to have an unconditional positive regard for the mark in order to draw them in, and later softly influence their decisions (Whitty & Buchanan, 2012b).

Individuals comply with social pressure as non-compliance could expose them to isolation or ridicule which in turn lowers their self-esteem (Janes & Olson, 2000; Williams, Cheung, & Choi, 2000). In boiler room scams individuals are told that they should do what every savvy investor would do and buy certain stock (Stevenson, 2000). In lonely hearts swindles they financially support scammers as that is *what people do for their loved ones* (i.e. norm activation; Lea, et al., 2008; Whitty & Buchanan, 2012b). Another case of norm activation is found in Nigerian 419 scams, where scammers often present their offers as something that is beneficial both to the prospective victim and society at large (e.g. a certain percentage of the fictional funds that the mark would receive must be donated to charity; Cukier, et al., 2007).

Educational level was a significant predictor of responding to scams in Study 2 (cf. Table 10), allowing us to infer that less highly educated individuals were more likely to respond to fraudulent offers. Previous research is divided on this topic – on the one hand less educated people lack information and the familiarity with the Internet to make an optimal informed decision (Dutton & Shepherd, 2004), while on the other hand more highly educated people tend to be more regular users of the Internet according to Eurostat (Seybert, 2011), which means they are exposed to scams more. A higher level of education also leads to overconfidence (Camerer & Lovallo, 1999) which is a significant predictor of scam compliance both directly (Dutton & Shepherd, 2004; Shadel & Pak, 2007) and through reduced motivation to seek relevant information about a particular scenario (Fischer, Greitemeyer, et al., 2008).

9.3 Implications for the psychology of persuasion

Like previous considerations of the psychology of scam compliance (e.g. Rusch, 1999; Shadel and Pak, 2007), our investigation started from what is empirically known or theoretically believed about the social psychology of persuasion, and in particular from Cialdini's (e.g. 2001) influential studies. It is, however, one thing to show logically that a persuasive strategy could work, or to demonstrate under laboratory conditions that it can have some effect, and quite another to demonstrate that it has a material effect in practical applications. Our present results therefore have potential implications for the general study of persuasion in psychology as well as for the specific field of internet fraud. At least in the situation we have studied here, it seems that the most effective persuasive techniques are those relying on social influence, compliance with authority, the need for consistency, and most especially on lack of self-control. Techniques relying on liking and similarity, illusions of control, and the scarcity or uniqueness of the scam offer, though they were certainly deployed in the scam materials, did not seem to have been as effective with our participants. Nothing in the current social psychological theory of persuasion would predict this difference. If further applied studies show that it is true also in other fields where persuasive techniques are used in practice – for example, in legitimate selling, or in political propaganda – then the theory of persuasion will need to be developed in a more nuanced manner, in order to predict not just what persuasive techniques might work, but which of them actually do.

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