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How neurotic are scam victims, really? The big five and Internet scams

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"Homo sum, humani nihil a me alienum puto[1]*"*
(Terentius, 163 B.C., 75:2)

1 Introduction

The debate about the existence of *criminal personality* (i.e. personality traits criminals have in common) has been dividing criminologists for literally hundreds of years - one has to just recall Lombroso (e.g. Ellwood, 1912) and his 19th century studies into the biological properties of the c*riminal man*, and the backlash in the professional community (e.g. Gould, 1996, pp. 153-165) to see how far back the debate about criminal personality reaches. Generally speaking, criminological theories are cyclic in their ambivalence between seeing the culprit for the development of crime as society or as individual characteristics that are relatively stable over time (i.e. personality traits). *Social disorganization theory* postulates that poor and transient neighbourhoods produce criminals because there is no foundation to develop social structure, which is a precursor for social order (cf. Bursik, 1988). Control theories (CT), on the other hand, postulate that individuals turn to crime if they *lack* certain personality traits such as belief in moral validity of rules, attachment to others, commitment to achievement and involvement in conventional activities (Hirschi, 1969). Furthermore (according to CT),

[1] I am a man; and I consider nothing that concerns mankind a matter of indifference to me.

criminals are able to neutralize their social and moral inhibitions in order to commit crimes (Sykes & Matza, 1957). The etiological distinction is not clear-cut – for example Sykes and Matza (1957) postulate that an individual controls (or not) their impulses, while at the same time they claim outright that embracing or rejecting deviant behaviour rests squarely on socialisation. Gudjonsson and Sigurdsson (2004) demonstrated a clear connection between offenders and specific antisocial personality traits.

While there are different archetypes of offenders (cf. Duffield & Grabosky, 2001; for different theories of offending when it comes to fraud alone), with certain pronounced personality traits, those traits are, out of necessity, different according to the type of offense (e.g. a scammer could hardly be similar to a serial killer in every way). If we accept the premise that a specific type of offender has specific pronounced personality traits, then it would be reasonable to infer that (in crimes that involve social interaction) their victims have certain pronounced personality traits, too, i.e. their personality traits would make them a more likely target. Note that we are using the term target in the same sense as Cohen and Felson (1979), who claim that the term victim is loaded and that a target can also be inanimate. The focus of the present thesis is Internet fraud, where the assumption that targets of offenders have certain pronounced personality traits is supported by the fact that a certain amount of victim facilitation (Muftić, Bouffard, & Bouffard, 2007; Wolfgang, 1957) is required in order for the fraud to work. That is to say, a person *has to accept the scammers' offer* (Langenderfer & Shimp, 2001; Shadel & Pak, 2007, p. 52; Titus, 1999). Thus, a victim has to respond and that response is partially governed by social and personal factors. In this Chapter, we will focus on personality traits that facilitate Internet scam compliance.

Research into human personality has yielded several reliable and validated psychometric scale, for example Eysenck Personality Questionnaire (Eysenck, 1981;

Eysenck & Eysenck, 1969; Zuckerman, Kuhlman, Joireman, Teta, & Kraft, 1993), 16PF scale (Cattell & Schuerger, 2003; Cattell, 1946) and NEO-PI-R (McCrae & Costa, 1987). We focused on a broad test that is brief but is still thought to capture most facets of personality, plus two tests of specific traits (i.e. impulsivity and lack of self-control) that *a priori* and in line with our previous research appear to play a role in scam compliance.

1.1 The Big Five

While, historically there were (and are) several personality inventories available, most of them are based on, or can be related to, the so-called Five Factor Model (FFM) which describes human personality with five bi-polar factors: openness, conscientiousness, extraversion, agreeableness, and neuroticism (Goldberg, 1981). The FFM is derived from ideas proposed by Cattell (1946), who claimed that human personality could be summarized using sixteen factors – hence the name *sixteen personality factors* or 16PF model. Fifteen years later researchers reconstructed Cattell's investigation (Cattell & Schuerger, 2003; Cattell, 1946; Cattell, Cattell, & Cattell, 1993) and claimed that personality could be adequately described by five factors (Goldberg, 1981; Norman, 1963; Tupes & Christal, 1961). At present, a commonly used scale that measures the so-called big five factors (Goldberg, 1981) is the NEO Personality Inventory or NEO PI-R (McCrae & Costa, 1987) containing two hundred and forty items. A shorter version containing sixty items, called NEO-Five-Factor-Inventory or NEO-FFI was proposed later (cf. McCrae & Allik, 2002). Both scales have been repeatedly validated and tested for reliability with good results (cf. McCrae & Allik, 2002; McCrae & Costa, 1987; Whiteside & Lynam, 2001).

While using either of the NEO scales poses no significant methodological challenges, there are three potential drawbacks that need to be mentioned. Sixty items,

while less than two hundred and forty, still constitutes a significant time investment for an average respondent, especially when NEO-FFI is combined with other scales in a single sitting (Donnellan, Oswald, Baird, & Lucas, 2006). Another potential drawback is that NEO scales are not free, which significantly increases the cost of research when one is operating with larger samples and low return rates (Ashton, 2005). And finally, although connected to the second drawback, most NEO publishers discourage or outright forbid using their scales in experiments conducted over the Internet which poses a challenge for researchers (Goldberg et al., 2006), especially those interested in the Internet specific phenomena.

In response to these drawbacks, Goldberg (1992, 1999) introduced the International Personality Item Pool (IPIP) scale, which while containing 100 items (from a pool of 2000), is free for use in pen and paper or the Internet form and has been validated against NEO PI-R, proving to be a valid and reliable measure of the big five. Since IPIP is free to use and modify, many researchers have derived scales from it, for instance IPIP-NEO (120 items, corresponding to NEO PI-R scale; Johnson, 2000) and the mini-IPIP (Donnellan et al., 2006).

We used the Mini-IPIP in our research for several reasons – it is a twenty-item scale that still validates favourably against NEO PI-R and has shown to be highly reliable (Ashton, 2005; Donnellan et al., 2006; Johnson, 2000). It is also free and can be delivered over the Internet, where most Internet scams take place.

It should be noted that some studies have reported specific issues when conducting personality assessment over the Internet. For example, Joinson (1999) reported that while scores on personality traits tested in his investigation did not significantly differ across online and virtual populations, social desirability scores did, with online participants scoring lower in social desirability than general population. In a

sense, this is an argument for conducting personality assessment over the Internet as it alleviates one of the traditional criticisms of the NEO-PI-R model that it does not control for social desirability bias (e.g. Ben-Porath & Waller, 1992). The superset of personality inventory items used in the present Chapter (i.e. IPIP) has been validated and compared across the Internet and pen and paper settings and the analysis yielded no significant differences between the two (Buchanan, 2007; Chuah, Drasgow, & Roberts, 2006).

1.2 Self-Control

There is strong evidence that low self-control plays a substantial role in victimization in general (Carter, 2001; Gottfredson & Hirschi, 1990; Tangney, Baumeister, & Boone, 2004) and fraud specifically (Holtfreter, Reisig, & Pratt, 2008) while reducing the effect of demographic factors such as gender and income (Holtfreter, Reisig, Leeper Piquero, & Piquero, 2010; Schreck, 1999). Individuals with low self-control have difficulties controlling their emotions, leaving them vulnerable to errors in judgment (Tangney et al., 2004) that lead to less than optimal decisions when responding to scams (Langenderfer & Shimp, 2001).

While the ability for self-control can be perceived as a personality trait, it can also be seen as a limited resource (i.e. a cognitive state), that can be depleted over time (e.g. Baumeister, Bratslavsky, Muraven, & Tice, 1998). If we look at self-control as a trait, research shows that breakdown of self-control significantly increases the odds of becoming a victim in general (Schreck, 1999). There is no readily available research into scams, specifically, and breakdown of self-control. But, if we look at self-control as a state, there is a line of thought postulating that a scam is simply an illegitimate marketing offer (Lea, Fischer, & Evans, 2008), which allows us to use existing marketing research as a good indicator of individual behaviour when responding to a

scam. Baumeister, Sparks, Stillman and Vohs (2008) have shown that rational decision making in consumer behaviour is impaired when individuals' ability to control their emotions is stressed. As a corollary, we can predict that low self-control will have an impact on scam compliance.

For this part of our experiment, we used a scale of self-control originally proposed by Tangney, et al. (2004) and then refined into a brief self-control scale (BSCS) by Holtfreter, et al. (2010). Both scales have been validated and tested for reliability with good results. Items on the BSCS are listed in Appendix 4.

1.3 Impulsivity

While researchers seem to agree that impulsivity is an important facet of personality, there is some confusion about its placement in the personality structure. Some researchers define impulsivity as a part of the FFM, for example Costa and McCrae (1993) see it as a facet of neuroticism and Goldberg (1992) sees it as part of extraversion. Some researchers define impulsivity as a mechanism that enables individuals to participate in risky behaviour (Block, 1995), and some use different terms for the same construct, for example Tellegen (1985) calls it impulsivity control, and Zuckerman calls it impulsive sensation seeking (Zuckerman et al., 1993).

A reasonable summarization of impulsivity (one that takes into account the previous findings) put forward by Whiteside and Lynam (2001) is that it is an artificial construct, encompassing four distinct personality traits: urgency (a need to experience strong impulses), (lack of) premeditation, (lack of) perseverance and sensation seeking .

As mentioned before, there is a pronounced tendency from researchers to interchange the terms of impulsivity and control; and the constructs, if not the same, are at least closely linked (Evenden, 1999; Muraven, Shmueli, & Burkley, 2006; Reynolds,

Ortengren, Richards, & de Wit, 2006). Lowered self-control might lead into lack of premeditation and perseverance (Schreck, 1999), while a need to experience strong impulses and experience new sensations (i.e. sensation seeking), would, through time, deplete the ego and make self-regulation harder (Magar, Phillips, & Hosie, 2008; Taylor & Hamilton, 1997). In theory, individuals who score highly in sensation seeking should use the Internet more, as it would provide them with a wide variety of new experiences (Amichai-Hamburger, 2007) and thus become more likely to encounter online scams. It would be reasonable to assume that individuals who act under negative affect, without forethought to possible consequences, would be more likely to be scam compliant. This claim, however, still needs to be investigated empirically and will be one of the claims tested in the present Chapter.

A modified UPPS impulsive behaviour scale (UPPS-IBS; Whiteside, Lynam, Miller, & Reynolds, 2005) was used for the purposes of this experiment – a scale that is generally used to diagnose individual psychopathology. It was constructed through use of relevant portions of ten established personality or impulsiveness scales (Whiteside & Lynam, 2001), such as NEO-PI-R (McCrae & Costa, 1987), I-7 Impulsiveness Questionnaire (Eysenck, Pearson, Easting, & Allsopp, 1985), and sensation seeking scale (Zuckerman, 1994) amongst others; and has been established to be reliable (Whiteside et al., 2005). This scale was additionally shortened during the course of the present experiment, and still proved to be a reliable and valid measure of impulsivity (cf. Section 4.4.3, p. 16).

1.4 Personality traits and scams

In summary, the purpose of the following experiment was to determine whether there were any specific personality traits standing out in scam victims. Within the big five, it would make sense to infer that any personality traits that inherently lower the

ability for self-control of an individual, or cause impairment of rational decision making, would be more pronounced in scam victims. Thus, we predicted that an average scam victim might be generally more open, extraverted and agreeable than the average person. On a more specific basis we would expect that more compliant individuals would have a lower capacity for self-control and would find it harder to control their impulses.

2 Method

2.1 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 (combined sample). 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.

2.2 Experimental design

2.2.1 Dependent variables

There were initially 5 dependent variables that were derived from 45 questions across 9 scenarios. The scenarios were assembled from the American National Consumer League's Fraud Center whitepaper on fraud trends (2009), the UK Office of Fair Trading report on psychology of Scams (Fischer, Lea, et al., 2008), and respondent-reported scams from a previous study (Modic & Lea, 2013). Five questions were asked after the description of each scam scenario. They are listed in Table 1.

Table 1
Items on scenarios

Likely	How likely is it that this is a scam?
Other Likely	How likely is it for people to respond favourably to this?
Experienced	Have you been in such a situation in the last three years?
Responded	Have you responded to such an offer in the last three years?
Lost Out	Have you lost money* to such an offer in the last three years?

Note. * The amount lost can be (very) small

Table 1 shows items included with each of the 9 scams from scenarios. Likely and other likely were measured on a Likert-type scale, ranging from 1 = "extremely unlikely", 2 = "unlikely" , 3 = "neither likely, nor unlikely", 4 = "likely", 5 = "extremely likely". Experienced, responded and lost out were a 2-outcome YES / NO type questions.

Preliminary analysis showed that in our sample only the first step in falling for a scam (i.e. responding to a fraudulent offer; Cukier, Nesselroth, & Cody, 2007; Dyrud, 2005) showed any variance – there were only a handful of participants who had lost money to online scams in the past three years and many participants (64%) experienced at least one of the schemes mentioned in the scenarios. In addition, experiencing a fraudulent offer does not require active participation from the prospective victim, thus

measuring how their personality traits impact events out of their control was not reasonable. Our main dependent variable (DV) was therefore responded, which was the sum of the responses to "Have you responded to such an offer in the past three years" for each of the 9 scenarios (listed in Table 4 below). Responded was heavily positively skewed – in the combined sample out of 430 participants only 74 had responded to one or more of the scenarios. In order to perform regression we transformed the DV into a categorical variable with three levels (0 - not responded; 1 - responded to one scenario, 2 - responded to more than one scenario). In addition, to balance the sample (in order not to skew the results as, for example, suggested by Howell, 2006), we selected 75 random cases from our initial pool of 336 respondents who had not responded to any fraudulent offer and combined these cases with responses from participants who have responded at least once to a fraudulent scenario. Our sample size (balanced sample) was set at 149 participants, with our only remaining DV now renamed into responded (3L). The data from remaining participants who had not responded to any scam offers (holdout sample) were kept as a holdout sample and used in subsequent factor and reliability analysis.

2.2.2 Independent variables

There were ten independent variables (IV) in this experiment in addition to the demographic data.

Five sub-scales were computed from the means of the items representing the five Mini-IPIP personality inventory scale factors adopted from Donnellan et al. (2006): extraversion, openness, neuroticism, agreeableness and conscientiousness. Factor analysis of our data confirmed the existence and validity of these factors (the factor matrix is reported in Appendix 4). The whole Mini-IPIP scale exhibited moderate internal reliability (main sample) of .632 (α_s = .659, n = 146, 20 items). The five factors

exhibited moderate to good internal reliability, ranging from .575 to .796 (see Table 2). In the holdout (H) and balanced (B) samples, the whole Mini-IPIP exhibited moderate standardized internal reliability of .768(H) and .612(B) respectively with the five factors ranging in standardised reliability from .630 to .838 (see Table 3 for full results).

The brief self-control scale (BSCS; Holtfreter et al., 2010) was a composite score (computed from the means of target items) of the brief self-control scale, first developed by Tangney et al. (2004). The BSCS exhibited moderate internal reliability (main sample) of .701 (α_s = .700, n = 146, 13 items). In the combined and balanced samples, the BSCS exhibited good standardized internal reliability of .764(C) and .740(B) respectively (see Table 3 for full results).

UPPS Impulsive Behaviour Scale (UPPS-IBS; Whiteside & Lynam, 2001) was a composite score (computed from the means of target items) of the full UPPS-IBS, containing 43 items, divided into four factors. Additionally, four sub-scales were computed from the means of the items representing the four UPPS-IBS factors: premeditation, urgency, sensation seeking and perseverance. The full UPPS-IBS was used in the main wave of the present study only and was pruned down for the ARS and SVU waves of the experiment (cf. the results Section, p. 16; for the factor matrix). The whole UPPS-IBS exhibited good internal reliability of .726 (α_s = .729, n = 146, 43 items). The four factors exhibited good internal reliability, ranging from .853 to .880 (see Table 2). The modified UPPS-IBS in the holdout and balanced samples, exhibited moderate standardized internal reliability of .611(H) and .554(B) respectively with the four factors ranging in standardised reliability from .718 to .881 (see Table 3 for full results).

Table 2

Reliability Testing of mini-IPIP, BSCS and UPPS-IBS on Main Wave Data (n = 146)

Factor	Cronbach α	α_s
Mini-IPIP (Overall)	.632	.659
Extraversion	.796	.796
Agreeablenes	.725	.731
Neuroticism	.748	.750
Openess / Imagination	.742	.742
Conscientousness	.573	.575
Brief Self-Control Scale (Overall)	.701	.700
UPPS-IBS (Overall)	.726	.729
Premeditation	.845	.853
Urgency	.860	.860
Sensation seeking	.878	.880
Perseverance	.871	.880

Table 3

Reliability Testing of mini-IPIP, BSCS and Modified UPPS-IBS for Holdout and Balanced Samples

	Holdout[a]		Balanced[b]	
Factor	Cronbach α	α_s	Cronbach α	α_s
Mini-IPIP (Overall)	.677	.768	.611	.612
Extraversion	.801	.804	.836	.838
Agreeablenes	.784	.784	.772	.776
Neuroticism	.705	.705	.722	.722
Openess / Imagination	.657	.657	.628	.630
Conscientousness	.702	.703	.749	.751
Brief Self-Control Scale (Overall)	.755	.764	.746	.740
Modified UPPS-IBS (Overall)[c]	.602	.611	.546	.554
Premeditation	.852	.852	.881	.881
Urgency	.868	.869	.867	.869
Sensation seeking	.808	.815	.827	.840
Perseverance	.762	.770	.718	.718

Note. [a] n = 276 , [b] n =149, [c] Modified UPPS-IBS - see results section for the new factorisation

2.2.3 Design

To control for order effects the items in the mini-IPIP, BSCS and UPPS-IBS were randomised within each scale. All participants answered the exploratory and demographic questions at the beginning of the survey. Since this experiment was running 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. We

decided that since we were already gathering some demographic data, we should gather all at the same point in the questionnaire.

2.3 Procedure

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

(a) 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.

(b) Demographics and general section

(c) Main questionnaires (scenarios, mini-IPIP, BSCS and UPPS-IBS). Debriefing was included with each scale or scenario. In the scenarios section, the respondents were told that they would be presented with nine 'real-life situations'. Some of them might be fraudulent. In fact all except one (in-store credit card) were fraudulent.

In the first wave the study was available for 35 days and most of the participants completed it in the first few days that it was 'live'. The study on ARS forums was available for 30 days and the rise in the response rate was dependant on online editor publishing notices on the front page. The study on SVU ran for 3 months and yielded 41 responses in that time (5 of those participants responded to scams).

3 Results

3.1 Descriptives

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. Detailed results are presented in Table 4.

Table 4

Scam Compliance for Likely, Experienced, Responded and Lost Out in Scenarios for the Combined Sample (n=429)

SCENARIOS	Likely[a] [%]	Experienced[b] [%]	Responded[c] [%]	Lost Out[d] [%]
Fake Cheque	69	12	5	1
Phishing	78	51	7	0
419 (AFF)	99	62	1	1
Internet auctions	87	8	4	1
Lottery scams	98	46	2	1
Lonely hearts swindles	64	6	4	2
Boiler Room	75	10	1	0
Pyramid schemes	83	24	3	1
In-store credit card*	9	62	18	1
Overall[e]	100	78	17	4

Note. A number of individuals responded to

[a] Answered 'likely' or 'extremely likely' to a question 'How likely is it that this is a scam?'

[b] Answered 'yes' to a question 'Have you been in such a situation in the last three years?'

[c] Answered 'yes' to a question 'Have you responded to such an offer in the last three years?'

[d] Answered 'yes' to a question 'Have you lost money to such an offer in the last three years?'

[e] Excluding In-store Credit card.

* This is not a scam, it is, at most, a shady business practice. It was excluded from further analysis.

Since the response rates were not high enough to test for scam compliance in each specific scenario (described in detail in the Appendix 4), we focused on overall compliance (i.e. response rate) with responded (3L) as our DV. One scenario was excluded from further analysis (in-store credit card) as this is not a scam (62% of the combined sample respondents and 70% of the balanced sample respondents correctly thought that it was unlikely or extremely unlikely that this was a scam). The skewness and kurtosis for likely, other likely and experienced was examined and there were no values greater than an absolute value of 1, suggesting normal distributions. Responses in lost out were not normally distributed - out of 430(C) respondents only 21 *in toto* have lost money to the Internet scam scenarios used in this experiment. The means and standard deviations for the eight remaining scenarios in the balanced sample are presented in Table 5.

Table 5
Descriptive Statistics for Scenarios (exc. In-Store Credit-Card) in the Balanced Sample (n=149)

VARIABLE	Scenarios	M	SD
Likely	How likely is it that this is a scam?	4.28	0.42
Other Likely	How likely is it for people to respond favourably to this?	3.04	0.71
Experienced	Have you been in such a situation in the last three years?	2.54	1.71
Responded (3L)	Have you responded to such an offer in the last three years?	0.57	0.67
Lost Out	Have you lost money to such an offer in the last three years?	0.10	0.30

3.2 Reliability testing

In line with much past research, reliability testing of all three scales used in this experiment showed moderate to excellent reliability in the combined sample and low to excellent reliability in the balanced sample (see Table 2). Note that improving the low reliability scores in openness (mini-IPIP) could be improved by increasing the balanced sample size. That is to say that future research should include more victims.

3.3 UPPS-IBS reconstruction and validation

The full UPPS-IBS contained 43 items which needed to be pruned down for the purposes of this experiment. Initial reliability (moderate to good) of the scale and its factors was reported in Table 2 (cf. p. 12). The reliability of the modified scale (low to good) was reported in Table 3 (cf. p. 12). Items that were kept in the scale are listed in Table 6.

Table 6

Remaining Items on Modified UPPS Impulsive Behavior Scale

Premeditation	
4.	I like to stop and think things over before I do them.
6.	I tend to value and follow a rational, 'sensible' approach to things.
7.	I usually make up my mind through careful reasoning.
10.	I usually think carefully before doing anything.
11.	Before making up my mind, I consider all the advantages and disadvantages.
Urgency	
4.	When I feel bad, I will often do things I later regret in order to make myself feel better now.
6.	When I am upset I often act without thinking.
7.	When I feel rejected, I will often say things that I later regret.
9.	I often make matters worse because I act without thinking when I am upset.
10.	In the heat of an argument, I will often say things that I later regret.
Sensation Seeking	
1.	I generally seek new and exciting experiences and sensations.
2.	I'll try anything once.
6.	I would enjoy parachute jumping.
7.	I welcome new and exciting experiences and sensations, even if they are a little frightening and unconventional.
9.	I sometimes like doing things that are a bit frightening.
Perseverance	
1.	I generally like to see things through to the end.
3.	Unfinished tasks really bother me.
6.	I finish what I start.
8.	I am a productive person who always gets the job done.
9.	Once I start a project, I almost always finish it.

Note. Full IPPS-UBS published in Whiteside and Lynam (2001). Numbers correspond to original item numbers.

Confirmatory factor analysis was run on the remaining 20 items to examine their 4 factor structure. The Kaiser-Meyer-Olkin measure of sampling adequacy was .85, above the recommended value of .5. Bartlett's test of Sphericity was significant (χ^2_{190} = 3486.11, $p < .001$). Principal Axis Factoring was used with Oblimin rotation. Results yielded a four factor matrix with all items that were kept after reliability testing (cf. Table 6), loading into the predicted factors (see Table 7 for the factor loadings).

Table 7

Factor Loadings and Communalities Based on a Principal Axis Factoring with Oblimin Rotation for 20 Items from modified IPPS-IBS in the Holdout Sample (n = 276)

	Urgency	Sensation Seeking	Perseverance	Premeditation
I like to stop and think things over before I do them.				.741
I tend to value and follow a rational, 'sensible' approach to things.				.556
I usually make up my mind through careful reasoning.				.685
I usually think carefully before doing anything.				.786
Before making up my mind, I consider all the advantages and disadvantages.				.805
When I feel bad, I will often do things I later regret in order to make myself feel better now.	-.600			
When I am upset I often act without thinking.	-.748			
When I feel rejected, I will often say things that I later regret.	-.751			
I often make matters worse because I act without thinking when I am upset.	-.822			
In the heat of an argument, I will often say things that I later regret.	-.795			
I generally seek new and exciting experiences and sensations.		.661		
I'll try anything once.		.551		
I would enjoy parachute jumping.		.699		
I welcome new and exciting experiences and sensations, even if they are a little frightening and unconventional.		.788		
I sometimes like doing things that are a bit frightening.		.742		
I generally like to see things through to the end.			.672	
Unfinished tasks really bother me.			.473	
I finish what I start.			.889	
I am a productive person who always gets the job done.			.588	
Once I start a project, I almost always finish it.			.853	

Note. Factor loadings < .35 are suppressed

3.4 Personality traits and scam compliance

Because the principal dependent variable was measured on three ranked levels (no compliance, compliance with one scam and compliance with more than one scam) ordinal logistic regression was employed to help determine which of the personality traits measured by mini-IPIP, BSCS and UPPS-IBS could be used to inform scam compliance. In addition to personality traits, a few demographic factors (age, IT experience, gender, educational level) were entered into the equation, to measure their influence on response rate.

Initially, Pearson correlations amongst the factors were examined. Age was highly positively correlated with relationship status ($r_{145} = .60$, $p < .001$) and highest level of education completed ($r_{145} = .29$, $p < .001$). Gender was highly positively correlated with IT experience ($r_{145} = .51$, $p < .001$) and moderately correlated with sensation seeking ($r_{140} = .23$, $p = .008$); and negatively correlated with extraversion ($r_{147} = -.24$, $p = .004$) and agreeableness, ($r_{146} = -.26$, $p = .002$). IT experience was negatively correlated with extraversion ($r_{148} = -.22$, $p = .008$) and urgency ($r_{142} = -.25$, $p = .003$) and positively with openness ($r_{148} = .22$, $p = .008$) .

Extraversion was highly positively correlated with agreeableness ($r_{149} = .41$, $p < .001$) and negatively correlated with premeditation ($r_{143} = .35$, $p < .001$). Conscientiousness was negatively correlated with self-control ($r_{144} = -.33$, $p = .005$) and positively correlated with perseverance ($r_{143} = .53$, $p < .001$). Neuroticism was positively correlated with self-control ($r_{144} = .30$, $p < .001$) and urgency ($r_{143} = .41$, $p < .001$); and negatively correlated with sensation seeking ($r_{143} = -.33$, $p < .001$) and perseverance ($r_{143} = -.30$, $p < .001$).

Self-control was positively correlated with urgency ($r_{143} = .37$, $p < .001$) and negatively correlated with premeditation ($r_{143} = -.25$, $p = .003$) and perseverance ($r_{143} =$

.27, p = .001). Premeditation was highly negatively correlated with urgency (r_{143} = -.54, p < .001). These correlations have support in the existing research mentioned in the Introduction to this Chapter (e.g. individuals who are good at premeditation will find it easier to resist urges to act impulsively; Whiteside & Lynam, 2001). The correlations between the dependent variable and the independent ones were small to moderate, indicating that ordered logistic regression was appropriate (when also taking the categorical nature of the DV into account; Norusis, 2010). Since IT experience was statistically significantly correlated with almost half of the other IV's (6 out of 14) and was not normally distributed, we removed it from further analysis, to avoid multicollinearity.

Ordered logistic regression was run on two models – Model 1 included all IV's mentioned above, Model 2 excluded highly insignificant factors in Model 1. Results are reported in Table 8.

We tested for parallel regression assumption (i.e. that the relationship between each pair of outcome groups is the same; Tabachnick & Fidell, 2005, pp. 504, 535) in each model and confirmed that ordinal logistic regression was an appropriate test for our models. Results are reported in Table 9.

Table 8

Ordinal Logistic Regression Models for Personality Traits Influencing Compliance in Scenarios (n = 149)

	Model 1			Model 2			95% Conf. Int. (Model 2)	
Variables	estimate	S.E.	Wald	estimate	S.E.	Wald	Lower B.	Upper B.
Responded_3L = 0	-7.10	3.44	4.25**	-5.28	2.86	3.40**	-10.89	0.33
	[0.00]			[0.01]				
Responded_3L = 1	-4.19	3.40	1.52	-2.38	2.83	0.71**	-7.92	3.16
	[0.02]			[0.09]				
Gender	2.09	0.50	17.56***	2.12	0.49	18.64***		
	[8.06]			[8.36]				
Education	-0.67	0.25	6.88**	-0.70	0.23	9.06***		
	[0.51]			[0.50]				
Age	0.02	0.15	0.02					
	[1.02]							
MINI-IPIP								
Extraversion	0.60	0.27	5.18**	0.55	0.23	5.57**		
	[1.83]			[1.74]				
Openness	-0.36	0.30	1.46	-1.03	0.54	3.66**		
	[0.69]			[0.36]				
Conscientousness	-0.22	0.27	0.66					
	[0.80]							
Neuroticism	-0.15	0.27	0.31					
	[0.86]							
Agreeableness	-0.18	0.29	0.37					
	[0.84]							
Self-Control	-1.23	0.61	4.09**	-1.03	0.54	3.66*		
	[0.29]			[0.36]				
UPPS-IBS								
Premeditation	-0.70	0.34	4.28**	-0.84	0.32	6.73**		
	[0.49]			[0.43]				
Sensation Seeking	-0.39	0.25	2.51	-0.35	0.23	2.47**		
	[0.68]			[0.70]				
Urgency	0.45	0.29	2.41	0.31	0.26	1.45**		
	[1.57]			[1.36]				
Perseverance	-0.03	0.34	0.01					
	[0.97]							
Model $\chi 2$ =	48.05***	(13)		46.54***	(8)			
Nagelkerke R^2 =	.36			.35				

Note. Entries (Estimate) are unstandardized regression coefficients, S.E. standard errors, Wald are results of Wald $\chi 2$ test, odds ratios ($exp^{estimate}$) are in square brackets. Model 2 contains (marginally) significant predictors from Model 1.
* p < .1; ** p < .05; *** p< .001

Table 9

Test for Proportional Odds Assumption in Scam Compliance Models

Model	$\chi 2$	df	p
1	6.42	13	.929 (ns)
2	9.32	8	.316 (ns)

Note. Non-significant results confirm that there is no relational difference between categories in Responded_3L.

Model 2 yields seven significant predictors of response rates in scam compliance – gender, educational level, extraversion, openness, premeditation, urgency and sensation seeking. The model had a moderate predictive strength (Nagelkerke pseudo R^2 = .35), with females approximately 8 times more likely to respond to fraudulent offers (odds ratio of 8.36). Those participants who reported lower levels of completed education were also more likely to be scam compliant (for each completed level of education the odds of compliance halved: odds ratio of 0.50). Extraverted individuals were more likely to respond, as were those who were less open to new experiences (openness) and had lower high-risk preferences (sensation seeking). Those who were not good at predicting the outcome of a scam (premeditation) and were prone to act impulsively under negative affect (urgency) were also more likely to be compliant .

Categories of responded (3L) were significantly different between themselves (cf. Table 8), indicating that individuals in both groups significantly differed from the individuals in the repeated response group when taking the model regressors into account. While confidence intervals between the two groups of responders overlapped, indicating that responders shared some variance, there were still indicators that there was a progression from non-compliers to compliers (Norusis, 2010).

4 Discussion

The current study investigated the extent to which participants' personality traits influenced their compliance in scam responding. 31% of the sampled population has

responded at least once to fraudulent offers in the past three years, but if we remove the population from the scam victims united forums (which has a much higher incidence rate, since victim support forums mostly attract victims), only 17% responded, which is in accordance with previous research into scam incidence that showed victimization rates of approximately 20% (Lea et al., 2008; Shadel & Pak, 2007, p. 33).

A majority of respondents (81%) experienced at least one of the fraudulent scenarios in the past three years and they mostly knew that they were fraudulent (depending on the scenario – from 64% - lonely hearts swindles, to 99% - Nigerian 419 letters).

Our initial hypotheses were partially confirmed – openness and extraversion did play a role in scam compliance along with specific impulsivity traits and low self-control. Other personality domains did not feature as significant predictors of scam compliance. Approximately 35% of the variance in scam compliance, when it comes to responding to scams was explained by six personality traits (extraversion, openness, self-control, premeditation, urgency and sensation seeking); participants' gender and educational level. Conscientiousness, agreeableness, neuroticism and perseverance whilst having small to moderate correlations with response rates, did not feature as significant predictors in the logistic regression models.

The best single predictor of compliance was (lack of) premeditation (part of UPPS impulsive behaviour scale) that closely resembles the *narrow impulsivity* construct put forward by Eysenck and Eysenck (1977). Lack of premeditation was previously linked to errors in decision-making (e.g. individuals make poor, emotionally driven choices when it comes to gambling; Zermatten, Van der Linden, d'Acremont, Jermann, & Bechara, 2005), substance abuse (i.e. excessive drinking; Adams, Kaiser, Lynam, Charnigo, & Milich, 2012); and antisocial personality disorder and psychopathy

(Miller, Flory, Lynam, & Leukefeld, 2003). Researchers in general agree that individuals with high scores in (lack of) premeditation have a lower ability to foresee outcomes of their actions (Bayard, Raffard, & Gely-Nargeot, 2011; Torrubia, Ávila, Moltó, & Caseras, 2001) which, when applied to scam compliance, means that those individuals will be more likely to comply with requests for sensitive information, simply because they will not think the consequences through. In this respect, familiarity with different types of scams and their end-games should help potential victims, which also ties in with another predictor of compliance, educational level.

The second best predictor trait of scam response rate (in both single and repeated compliance) was extraversion (mini-IPIP), demonstrating that individuals who are fun-loving, talkative (McCrae & Costa, 1987) and thrive in social situations (Argyle & Lu, 1990; Goldberg, 1992; Moltafet, Mazidi, & Sadati, 2010) tend to respond to fraudulent offers more often than others. We can infer from this result (and find support in previous research, e.g. Nicholson, Soane, Fenton-O'Creevy, & Willman, 2005) that extraverts are prone to taking more risks (Cooper, Agocha, & Sheldon, 2000) and have a more daredevil attitude which leads to higher likelihood of answering unsolicited emails and making errors in judgement which leads to higher scam compliance (Fischer, Lea, & Evans, 2013).

There is additional evidence that extraverts are likely to ignore potential bad outcomes when they focus on potential gain (Newman, 1987) and that they tend not to learn from previous bad experiences (Torrubia et al., 2001) In conjunction with that, previous research has proven that the biggest determinant of repeat victimization is previous victimization (Menard, 2000; Outlaw, Ruback, & Britt, 2002; Titus & Dover, 2001). The exposure to scams combined with lower ability to learn from previous bad outcomes makes extraverted individuals a prime target for scammers.

It should be noted that extraversion (and agreeableness) are vulnerable to social context (i.e. they are encouraged to a different extent in different cultures; Jensen-Campbell, Knack, & Gomez, 2010). In this study, most of our respondents were either from the UK or USA, although the survey was open to everyone, so this result might not be applicable across cultures.

Sensation seeking and openness were a further two predictors of scam compliance. The impulsive need to seek new experiences (i.e. sensation seeking) has been linked to substance abuse and cheating in adolescence (Zimmermann, 2010; Zuckerman & Kuhlman, 2000), pathological gambling (Blaszczynski & Nower, 2002) and eating disorders (Cassin & von Ranson, 2005). The need for new sensations can overcome fear of potential consequences when engaging in a particular behaviour (Torrubia et al., 2001). Sensation seeking in UPPS-IBS has been modelled after the NEO-PI-R facet of excitement seeking (Whiteside & Lynam, 2001) which is part of the extraversion domain (Costa Jr & McCrae, 1995), putting additional weight behind the claim that extraversion is a significant predictor of scam compliance. However, all of this seems to contradict our findings that indicate that individuals who are not seeking excitement and high-risk situations, are more likely to be scam compliant. This finding is also strengthened by openness as a significant negative predictor. So, not only are those individuals who are more scam compliant not seeking thrills, they are also not open to new experiences, are less intellectually curious (which ties in with education as a negative predictor), are more likely to ignore their feelings and are less prone to flights of fancy (Costa Jr & McCrae, 1995). By isolating oneself from experiencing new things and from examining their emotional state, an individual has a lower ability to judge fraudulent offers against legitimate ones and thus they rob themselves from making an informed decision. In this respect falling for a scam is not a function of seeking something new, but a function of not recognizing a scam because of a lack of previous

experience and introspection. Although much research has been done on harmful effects of sensation seeking, our results suggest that sometimes daring to try out something new might be beneficial.

Urgency was another predictor of scam compliance. Urgency is defined as a tendency to commit to an action before thinking it through (Cyders & Smith, 2007), often stemming from negative affect (Whiteside & Lynam, 2001). An individual scoring highly in this trait would act similarly, in some ways, to an individual suffering from self-regulatory fatigue (cf. Baumeister & Heatherton, 1996).

Individuals who score higher in urgency and impulsivity in general, are more likely to focus on immediate gratification and ignore long-term effects of their actions (Loewenstein, 1996). In this respect they seem to act similarly to extraverts but for different reasons. While extraverts might focus on the potential gain (e.g. positive emotions) to exclusion of everything else, individuals scoring highly in urgency are likely to be ruled almost exclusively by their affect (both positive and negative; Cyders & Smith, 2007). That might make them more are susceptible to scammers who commonly employ visceral influences (Langenderfer & Shimp, 2001) to influence scam compliance. There is already a substantial amount of research available showing fraud victims in general to be more impulsive than the average individual (Shadel & Pak, 2007, p. 99). In this respect, victims of Internet fraud are similar to other victims of white collar crime.

Lack of self-control was another strong predictor of scam compliance. Low self-control has been previously linked to mainstream criminological theories (Gottfredson & Hirschi, 1990; Hirschi, 1969) and errors in judgement (Fischer et al., 2013). It is emerging as one of the persistent traits informing scam compliance across different domains and theoretical approaches. While, so far, we have looked at self-control as a

personality trait, additional research into self-control as a cognitive state is warranted.

A strong demographic predictor of compliance was gender. There is a relative gender bias in criminology studies. Most researchers consider offending in general and fraud in particular to be a male dominated activity (Davies, 1999; Holtfreter, 2005; Lagrange & Silverman, 1999; Steffensmeier & Allan, 1996). As far as becoming a victim is concerned, most studies report no interaction between gender and fraud victimization (Ross & Smith, 2011; Titus & Dover, 2001) with age being the only significant demographical predictor of scam compliance (i.e. younger population being more likely to be victimized; Muscat, James, & Graycar, 2002; Titus, Heinzelmann, & Boyle, 1995). There is a discrepancy between our results and previous research. In our study, gender was a significant predictor, while age of participants was not. This may be explained by the fact that in our sample (and in general; Jackson, Ervin, Gardner, & Schmitt, 2001; Schumacher & Morahan-Martin, 2001) men considered themselves to be more IT proficient than women did. Additionally, women on average feel more anxious and out of place when working with computers (*ibid*). It is then possible that the fact that in our experiment females are more scam compliant than the males is owed not to the gender itself but to the computer usage patterns between genders – individuals who are less sure of themselves and feel anxious of committing an error are more likely to comply to fraudulent requests. In addition, the less experienced IT users are less likely to recognize a fraudulent offer when they come across it. Both of these tie in with education, a significant predictor in initial compliance, where higher level of education (and thus being less likely to feel anxious about something that is well known) lowers the likelihood of being scammed.

There were only a few participants who lost money to scams in the present experiment. Future studies should focus on the full progression of scam compliance (i.e.

finding the scam plausible, responding and losing information to it and, ultimately, losing funds) and on determining any potential differences in personality traits of individuals who have complied with specific scenarios. Both of these goals could be achieved by increasing sample sizes and targeting individuals who were scammed. Previous research has shown that approximately 1% of people who receive fraudulent offers actually lose money to them (Dyrud, 2005), which is reflected in our sample. While this is excellent news for the general population, it makes data collection difficult.

The results of the present experiment suggest that there is a measurable connection between personality traits and scam compliance, lending support to the hypothesis that scam victims (and possibly all victims of crime where social interaction is required) do have specific pronounced personality traits. This lends valuable information to law enforcement officers who seek to create preventative programs tailored to specific populations.

Our results indicate that high extraversion and low openness in conjunction with inability to foresee consequences, low need for new sensations and tendency to react under negative affect; and low self-control inform scam compliance to an extent. In the present Chapter, we have shown that certain personality traits inform scam compliance, but there is a school of thought that claims that some of these traits (e.g. self-control) can also be seen as a cognitive state. In Chapter 2 we have shown that perception of risk influences decision making in general and in Chapters 3 and 4 we have shown that self-control was one of significant predictors of overall scam compliance. In Chapter 5 of the present Thesis we will investigate what bearing the perception of risk, decision making under uncertainty and lack of self-control have on scam compliance when it comes to a particular type of scam.

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