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Willing to be scammed:
How self-control impacts Internet scam compliance

Submitted by David Modic to the University of Exeter
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I certify that all material in this thesis which is not my own work has been identified and that no material has previously been submitted and approved for the award of a degree by this or any other University.

Signature: ……David modic……..

Abstract

At any given moment in time, there are people complying with fraudulent requests (i.e. scams) on the Internet. While the incidence rates are low (between five and ten percent of the population becoming victims on a yearly basis), the financial and emotional consequences can be high. In this Thesis we composed a unified theory of which factors made individuals more likely to comply with scams and what psychological mechanisms are unwittingly employed by con-men to make their (illegitimate marketing) offers more enticing. The strongest overall predictor of scam compliance (i.e. the extent to which an individual is likely to comply with fraudulent requests) was the level of self-control, regardless of the observed stage of a scam.

On the basis of previous research, we postulated and have empirically shown that falling for a scam is a 3-stage process (i.e. assessing a scam to be plausible - plausiblity, responding to scammers - responded and, finally, losing utility to them – lost out). Taking this paradigm into account, we analysed the three stages in separate investigations and tested the viability of various psychological factors that play a role in them.

We hypothesized that attitudes towards risky choices would play a role in finding an Internet scam plausible and thus started our investigation by transferring one of the classic economic psychological theories (i.e. Prospect Theory) into a virtual setting and demonstrated that risk preferences remain unchanged between concrete and virtual settings. Our investigation showed that attitudes towards risk are similar across virtual and concrete domains, but did not yield a reliable psychometric scale measuring risk preferences. As a corollary, in Chapter 3, we investigated psychological mechanisms that influence risky preferences as applied to all three stages of scam compliance.

The empirical investigation in Chapter 3 of the present Thesis focused on social psychological mechanisms of persuasion. A scale of susceptibility to persuasion was developed, validated and then applied to the phenomena of scam compliance in two studies. Four reliable factors contributing to susceptibility to persuasion emerged: influence of authority, social influence, self-control and the need for consistency. The susceptibility to persuasion scale was then used to predict overall lifetime (study 1) and time-limited (study 2) scam compliance across the three stages of scams. Social Influence weakly predicted the plausibility stage in study 1, while strongly predicting the response stage in study 2. The need for consistency strongly predicted response stages in both studies. While compliance with requests from authorities did not predict responses to any of the stages in study 1, it weakly predicted the plausibility of a scam and strongly predicted responding to it in study 2. Weak self-control was a significant predictor of losing funds in study 1 and a strong predictor of responding to scams in study 2. As lack of self-control (as a personality trait) emerged as one of the significant predictors of scam compliance, this led us to infer that there were other personality traits that would contribute to understanding scam compliance. That became the topic of Chapter 4 of the present Thesis.

In Chapter 4, we used the five factor model of personality, a brief self-control scale and the UPPS impulsive behaviour scale to measure the impact of personality traits on scam compliance in the response stage. Results showed that extraversion, openness, self-control, premeditation, sensation seeking and (negative) urgency had an influence on the response rates to fraudulent offers. Lack of self-control (as a personality trait) again emerged as a strong predictor of overall scam compliance, which led us to infer that self-control as a cognitive state would also contribute to measuring scam compliance in general and in specific types of fraud. The investigation reported in Chapter 3 showed fraudulent Internet auctions to be an effective scam. As a

consequence of these two findings, in Chapter 5, we investigated the impact of self-regulatory fatigue on compliance with fraudulent Internet auctions.

In the empirical investigation in Chapter 5 180 respondents in two groups were exposed to a cognitive task designed to be ego-depleting and then to a constructed fraudulent Internet auction. They were asked a series of questions concerned with the likelihood of them purchasing a desired item (i.e. the third stage of a scam) and its appeal to them. We found no evidence that lowered self-control (as a state) had any impact on the appeal of fraudulent offer or the likelihood of purchasing it. We also demonstrated that the perception of risk in the fraudulent Internet auctions is most strongly influenced by the feedback mechanisms and the sellers' ability to use correct English.

In the conclusion to the present Thesis we discussed the implications of our empirical investigations and constructed a fictional fraudulent offer that would be effective according to our research. It should, for example, be based on the advance fee schemes and should be delivered over the Internet to reach the most potential victims. Once we had created an outline of an effective scam, we used that as our starting point to suggest mechanisms that would be effective in resisting it. For example, individuals could employ heuristics in a better way or conduct reality checks; and software toolkits that would help in resisting scams could be developed on the basis of our findings. We also discussed future research directions (obtaining larger samples, focusing on specific types of scams and specific populations; and others) and general implications of our findings.

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Declaration

The research reported in this Thesis was carried out at the University of Exeter between October 2008 and August 2012 and was supervised by Professor Stephen E. G. Lea and dr. Louise Pendry.

This dissertation has not been submitted, in whole or in part, for any other degree, diploma or qualification at any University. Chapters 2 to 5 are articles that will be submitted to scientific journals. Chapters 3, 4 and 5 have been presented at Conferences (3 and 5 at the Security and Human Behaviour workshops in 2010 at Cambridge University and in 2012 at Google, New York; Chapter 4 at IAREP 2011 at the University of Exeter). An earlier draft of the Chapter 4 was also published in the IAREP 2011 conference proceedings. A similar version of Chapter 4 was also published in the Slovene language (translated by the Author) in the proceedings of the 4th Criminal Law and Criminology Conference. All experiments were designed and conducted by me, except for the pilot study in Chapter 3, where Owen Bigwood and Michael Cooper (3rd year undergraduate students at the School of Psychology) gathered the initial data. I analysed all the data myself and wrote the whole Thesis by myself.

Acknowledgements

Throughout this work I will refer to my work in first person plural – that is not to say that I did not write the present thesis by myself or conduct the relevant research or analysis contained herein. It is, however, my intention to point out that I did not write this Thesis in a vacuum. There were a number of people who have been of pivotal importance in its creation – some directly and some indirectly, and when I say 'we', I pay homage to them in one way or another.

My supervisors Stephen E. G. Lea and Louise Pendry have been essential for the completion of this Thesis. Their expertise and guidance have been priceless. I came as a stranger but I am leaving as a friend. I especially want to thank Stephen Lea who, besides offering expert guidance, was also there in times of great personal stress and hardship that befell my family a few years ago. Jessica Salvatore has kindly offered to read and comment on late drafts of the present Thesis and her feedback has been both constructive and invaluable.

I want to acknowledge the important contributions of some of my fellow PhD students at the University; Chris Duke, Dale Weston, David Crelley and Alex Butler have all at one time or another showed great interest and helped me with constructive feedback, expertise or solving methodological issues. Kris "Batman" Darby, Sarah Rose Evans, Laurence Foster, Claudia Cisneros-Peres, Jaka Jarc and Marjetka Pezdirc have all been of tremendous help and inspiration when writing a Thesis became a chore and I needed someone to help me start moving again. While not psychologists themselves they offered warmth and companionship; something that is perhaps more fleeting and intangible than hard facts but also priceless in many ways. Roman Mirnik has kindly

offered me office space during the final six months of this write-up. Much of the present Thesis has been written there and I am very grateful for his kindness.

This Thesis and I personally also greatly benefited from constructive feedback offered by fellow academics and professionals when my work was presented in various settings. In no particular order, I wish to thank Bruce Schneier, Alessandro Acquisti, Ross Anderson, William Burns, Richard John, Adam Joinson, Mark Levine and others for their suggestions. I also wish to thank Toni Anžlovar who helped with certain aspects of php programming that were required in the Chapter 5 study.

I wish to sincerely thank my long-suffering partner Kim Komljanec who has quietly toiled in the background while I was off researching. Without her all of this might still be possible, but it would certainly be meaningless. Her help and constant support, especially in the last months are a godsend and even though I might not talk about it much, I know how much it is worth. Finally, I wish to thank our little one, Sofia, who is now one year old and does not care about scams or SPSS or academic journals, but she does care about ‘Dadda’ and I care about her.

Chapter 1: General Introduction

1.1 General remark

The function of this Chapter is to provide a general overview of the literature that informs the topic (i.e. scams) covered in the present Thesis. General criminological and psychological underlying theories; and methodological approaches are covered here. The general introduction is followed by more detailed reviews of the relevant phenomena within each empirical chapter. In consequence this Chapter will be rather short.

1.2 The subject of the present Thesis

The present Thesis is about Internet scams and the reasons people comply with them. By its nature it is a multidisciplinary work that is making use of relevant research in the fields of psychology, criminology, economics and marketing, and their relevant subfields. The author of the present Thesis cannot hope to encompass all the relevant theories that could potentially have an impact on scam compliance, so the ones with the most support in the literature and with the subjectively high chance of informing individual compliance with fraud were picked. Note that we are not claiming that these theories are the only ones that have a bearing on compliance with the Internet fraud. The fundamental questions we seek to answer are: why do people comply with fraudulent requests? What mechanisms do the scammers employ to make their online offers more enticing? And what can be done to curb their efforts (to some extent)?

1.3 Etymology and aetiology of fraud

The word fraud comes from mid-14th century French *fraude* and from Latin *fraudāre* meaning to cause deceit or injury ("Fraud," 2011) . The term Scams, used as a synonym (both as a verb and as a noun) in common speech, has been with us for a much shorter period of time. The word is believed to be of obscure origin, probably first used

by the actor Steve McQueen in a Time magazine interview in 1963, when describing his former carnival boss as someone who scammed the public (Luce, 1963; Merriam-Webster, 2005; Simpson & Weiner, 2009).

The term fraud is not traditionally used in legislation as its definition is too dependent on a specific culture's normative systems (Brown, Esbensen, & Geis, 2010, p. 63) and is primarily used as an umbrella term to denote any act where somebody obtains funds through deception (Smith, Grabosky, & Urbas, 2004, p. 5). The term white collar crime is sometimes used instead, in the legal profession (Stotland, 1977). Criminologists such as Duffield and Grabosky (2001) have put forward theories and classifications of fraud, even though there is some confusion on what the legal definition actually is, classifying four different types – a) against an organisation by its principal or high-ranked official (e.g. stock fraud, backdating options…); b) against an organisation by a client or employee (e.g. embezzlement); c) against one individual by another individual (e.g. so called cons); and d) committed against a group of individuals using indirect means, print or electronic (e.g. fee advancement scams, fake online Duty Free shops, Inheritance scams). Fraud has been receiving a lot of publicity in the past few years, with the U.S. National White Collar Crime Center reporting that one in four American households were affected by fraud in 2010 (Huff, Desilets, & Kane, 2010, p. 22) and that many do not report it. Fraud conducted using the Internet for delivery is becoming more prevalent than any other kind of fraud - some researchers have gone as far as saying that scammers are committing malpractice if they are not using the Internet (Danner, 2000 as cited in Langenderfer & Shimp, 2001).

One of the reasons for the increase of Internet fraud is the growing adoption of Information and Communications Technology (ICT) which leads to a widening pool of prospective victims (Huff et al., 2010, p. 24), some of whom might be particularly

vulnerable, such as less experienced users who are not likely to be familiar with scams, for example a U.S. Federal Trade Commission report found that individuals aged between 24 and 54 are more likely to fall victim to telephone scams (Anderson, 2004, p. 68). For all the reasons mentioned above, the present Thesis will primarily focus on Internet scams.

Besides unclear definition of the term, another issue when researching fraud is the lack of incidence data. There are several reasons for that. First, it is generally agreed in criminology that obtaining realistic crime figures is very hard if not impossible (Biderman & Reiss, 1967; Hickman & Rice, 2010; MacDonald, 2001) due to the nature of criminal activity (it is in the best interest of criminals to avoid detection). Additionally, victims often do not self-report (Miller, 2010) as they fear a risk of secondary victimization (i.e. a person being victimized again because they were victimized in the first place; Finkelhor, Hotaling, Lewis, & Smith, 1990; Orth, 2002; Summit, 1983; Wilson, 2009, p. 205). Obtaining realistic crime rates concerning fraud is especially difficult as only approximately 25% of fraud victims report that they were defrauded. Research by Copes, Kerley, Mason, and Van Wyk (2001) showed that many victims do not report being defrauded, because they either do not perceive the crime to be serious (i.e. the amount lost was not too detrimental to their personal utility); or they do not know how to report fraud or who to report it to. Assessing computer fraud rates is additionally complicated by the lack of clear definition of computer fraud or cybercrime in general (Smith et al., 2004, p. 6). Classic criminological reports also do not classify fraud as one of the Group I of Crimes (i.e. crimes that are considered serious due to the harm inflicted and frequency of occurrence; U.S. Department of Justice, 1988). This lack of inclusion has been heavily criticized by contemporary criminologists, who stated that financial and emotional costs caused by fraudsters are comparable to those of Group I crimes (Kappeler, Blumberg, & Potter, 1993, pp. 147-

157). They also claimed that there are numerous hidden costs and consequences of fraud that only become apparent long after the act (e.g. social marginalisation or dropping out of the workforce; Jesilow & Pepinsky, 1985, pp. 54-62, 139-157). Another criticism is that fraud incidence is much greater now than it was before the widespread use of the Internet (Hinduja, 2008; Wall, 2005). According to the estimate by the U.K. Office of Fair Trading, more than three million people in the UK fell victims to scams in 2006 and lost more than three and a half billion pounds *in toto* (Fischer, Lea, & Evans, 2008b, p. 5). Global losses to fraudulent letters (from Nigeria) alone were estimated at thirty two billion US dollars in 2007, with claims of three hundred thousand active scammers being tracked and an estimate of millions of victims worldwide (Ultrascan Advanced Global Investigations, 2008). Overall losses to scams in 2001 in the United States were estimated at one hundred billion US dollars (Langenderfer & Shimp, 2001). While it is a widely held belief that the rising adoption of the Internet has given rise to high rates of computer crime (Duffield & Grabosky, 2001; Jaishankar, 2011, p. 4), all of the reasons stated above make it hard to gauge how high these rates actually are and how accurate the figures reported above are.

Traditionally, three different methodological approaches to surveying crime (cybercrime and fraud included) have been adopted by researchers (Brown et al., 2010, p. 59). Uniform Crime Reports consist of information collected by the local police departments and then forwarded to specific government agencies (in the case of the U.S., FBI; Shadel & Pak, 2007, p. 32). They are based largely on qualitative descriptions of individual cases and might not produce a clear overview of crime trends. National Crime Victimization Surveys focus on victims of crime and are usually done by governmental agencies (i.e. the U.S. Census Bureau and the U.S. Department of Justice in the U.S; and the Home Office in the U.K.) on a six months (U.S.) or continuous (U.K.) basis. Finally, academic researchers (as opposed to policemen and

legislators) often rely on participant self-report data, which can be unreliable and non-representative of the general population. We are aware of potential artefacts in the self-report studies. Those include (among others) demand characteristics where participants form an interpretation of the experiment's purpose and unconsciously change their behaviour to fit it (e.g. Nichols & Maner, 2008). Another such artefact is regression to the mean where random fluctuation in data appears as statistically significant change (Barnett, van der Pols, & Dobson, 2005; Galton, 1886). Additionally, experimenter bias (Gardner, Scheel, & Shaw, 2011; Rosenthal & Fode, 1963; Sackett, 1979; Wiley, 2009) where the experimenter has a certain bias and might, subconsciously, influence the experimental results could be present. We are aware of these and other artefacts and attempt to prevent, control for, or resolve them in traditional ways (as, for example, suggested by Haslam & McGarty, 2003).

In addition to classical methodological issues that are also present when surveying crime, there are specifics that arise when conducting research over the Internet. Since the experimental data is residing on an online server there are privacy and IT security concerns (Reips, 2007). The U.S. Privacy Rights Clearinghouse (2012) noted that more than three thousand data breaches have been reported since 2005. The breached institutions included banks, market chains and governmental institutions; and the amount of data lost per breach varied from an exposure of a few to several million records containing private information.

The nature of privacy itself has changed with the widespread adoption of the internet (Joinson & Paine, 2007; Joinson, Reips, Buchanan, & Schofield, 2010) and there are intricacies one should be aware of when conducting research. The nature of the Internet as a public forum (akin to a village square, where classes mixed, as described by Goffman, 1963) introduces several distinctions between online and offline

populations. First, there is a question of higher initial dropout rates than in laboratory based experiments (Reips, 2007) – individuals decide whether to participate once they start the experiment, not before. They also do not feel as compelled to finish the experiment as they do in laboratory settings (Birnbaum, 2004). Reips (2002a) and Birnbaum (2004) claim that this is due to the experimental environment (i.e. when participants quit prematurely in a lab, they have to explain themselves to the staff and other participants, while none of this applies when participating from home). Another distinction one must be aware of is that self-selection of the respondents over the Internet means that the sample might not accurately represent the general population (Birnbaum, 2004). Furthermore, online context effects (such as absence of the experimenter, lowered control over experimental conditions, influence of the respondents location, etc.) play a significant role in experimental design when conducting Internet based research (Smyth, Dillman, & Christian, 2007).

All of these issues can be mitigated by introducing various mechanisms into online experiments and their design that in a sense make participants more compliant or interested in participating (Birnbaum, 2004; Reips, 2007; Smyth et al., 2007). There also used to be an issue of reaching out to a specific class of the population, where the less affluent individuals did not have access to the Internet – this is now resolved to a certain extent by the U.N. proclaiming Internet access to be a basic human right (U.N. General Assembly, 2011) and tasking world governments to implementing free access for all. This has already been started in the United States by the Obama administration where Internet access is offered to the poor for free or at a subsidized price in order for them to be able to function better in a modern society, for example apply for job interviews or get employed (Schachter, 2012).

In addition to the apparent methodological issues in measuring crime rates, there

is also a question of *levels of explanation* in criminological research (Brown et al., 2010, p. 60). On a *macro level* criminologists attempt to explain crime rates, while on a *micro level* researchers attempt to explain why individuals commit crime (or fall victim to it). The focus of the present thesis is the victims and their fraud compliance rates, that is to say *the micro level* of crime, i.e. what psychological factors affect individuals' compliance with fraudulent requests. A preliminary step to measuring scam compliance is to familiarize ourselves with existing research into fraud and its mechanics and, from that, derive specific psychological mechanisms that inform compliance.

1.4 Existing research on scams

1.4.1 Criminological, economic and psychological theory

Like other crime, according to some criminological theories, fraud can be explained by Routine Activity theory (RA; Cohen & Felson, 1979; Miethe, Stafford, & Long, 1987; Roncek & Maier, 1991; Smith, Frazee, & Davison, 2000) which states that in order for crime to be committed, a convergence of three factors in the same place and time needs to be achieved: suitable guardians need to be absent, there needs to be a likely victim; and an offender who seizes the opportunity must be present. RA theory postulates that sociological factors (such as poverty or unemployment) do not have much of an influence on crime rates. Cohen and Felson (1979) state, much like Becker (1968), that committing a crime is a matter of rational choice, where offenders weigh pros (i.e. potential gain) and cons (i.e. severity of punishment and the likelihood of being caught) of a criminal act and commit a crime if the odds are in their favour. This rational choice model has been widely used in informing different types of crime, for example, corporate crime (Paternoster & Simpson, 1996), theft and sexual abuse (Nagin & Paternoster, 1993); and police corruption (Bowles & Garoupa, 1997). RA is an application of Rational Choice Theory (RCT; Becker, 1976) which states that all human

action is governed by rational decision making which should result in choices that yield the highest possible return to the individual making the decision. Using RCT to account for crime rates and form preventative measures has led to extremes – for example Bentham (1789/1973) has postulated that all crime could be prevented by simply making it impossible to get away with it and by making punishment so severe that potential loss to the offender would always outweigh the potential gain. Becker (1968), as the father of modern RCT, has himself criticised such extremism and stated that the cost of completely preventing crime would be so prohibitively high that implementing such preventative measures would defeat the purpose for which they were designed in the first place. For example the amount of money needed to implement the security measures which would completely prevent shop-lifting would so far outweigh the amount saved by them that no shop owner could justify or sustain it. A more recent example of indirect critique of the RCT approach to preventing crime is the United States' war against terrorism – in ten years after the 11th of September attacks on the twin towers in New York, the U.S. government has spent approximately one trillion U.S. dollars on fighting terrorism (Mueller & Stewart, 2011) and has been quite successful, but the probability of any one person being killed by a terrorist attack in the U.S. remains as it was before the 2001 attacks, "essentially zero" (Treverton, 2009, p. 24). Thus, enormous expenses were incurred to lower the probability of crime being committed by an almost un-measurable amount.

Routine Activity theory is based on RCT through its viewpoint that committing a crime is an act undertaken by a rational individual who seizes the opportunity to enhance personal gain (Brown et al., 2010, p. 172). Rational choice theories of crime have come under heavy criticism by sociologists when it comes to explaining crime rates in general, for example because a higher level of sanctioning does not correlate with a higher level of deterrence (Piliavin, Gartner, Thornton, & Matsueda, 1986) and

because maximum sanction does not deter maximally (Bowles & Garoupa, 1997). Despite these and other criticisms, for example, RCT's tautological nature of the definition of rationality, its mechanical approach to human nature and others (cf. De Haan & Vos, 2003), RA is often still used as a basis to account for fraud (e.g. Duffield & Grabosky, 2001; Marcum, 2011) and Internet fraud especially, as empirically, it is a good fit (i.e. the postulates of RA are fulfilled). The internet is not policed optimally, partly because there is an issue of jurisdiction (both geographically and organisationally; Wall, 2007), and partly because cyber policing is difficult field to master. Additional issues the police face are due to the Internet's quickly changing nature and lack of governmental resources levied at the problem. The successful offenders seem to be exceedingly well versed in the intricacies of the Internet infrastructure, while the authorities are often left to fend for themselves, when it comes to IT proficiency (Northrop, Kraemer, & King, 1995). This leaves the Authorities playing a permanent game of catch-up with slightly better informed criminals (Broadhurst, 2006; Wall, 1998). Additionally, the pools both of likely offenders and of likely victims are big and growing bigger. The location is not well policed, the people are willing and the con artists are ready. Even so, there is a question that needs to be answered: why? Why do people comply with scams, in effect allow themselves to be scammed? And why do the same people respond to scams repeatedly?

To date, most research in this field has attempted, to some extent successfully, to explain why fraud happens and which psychological or social factors motivate the offenders to commit it. For example Duffield and Grabosky (2001) report that while there is little doubt that psychological factors have a bearing on the choice to commit fraud they are markers of tendency, not actual fact – not all greedy people break the law and not all dishonest people commit fraud. Not much research, however, has been done on which factors have a bearing on making somebody a likely victim. In his theoretical

paper Rusch (1999) summarizes social psychological factors that the scammers employ in order to make scams harder to resist. Some of these factors (and others) are described in more depth and used in analysis in Chapter 3 (cf. p. 70) of the present Thesis. Shadel and Pak (2007) have focused on the victims in their report on the psychology of fraud and have emphasized the effect of social influence techniques on scam compliance. This too, will be analysed in more detail in Chapter 3 (cf. p. 72) of the present Thesis.

There is a general consensus among researchers that in many types of crime the victim plays an active role in the process (Shadel & Pak, 2007, p. 52; Titus, 1999; Wolfgang, 1957) and this is certainly true for fraud, as after all, the prospective victim has to respond to a fraudulent offer and not just passively stand on the side-lines of a scam. In that respect fraud can be construed as a business transaction – the process or the outcome is illegal, but at the same time the con artist becomes a seller and the prospective victim a buyer of a service or a product. In fact it makes sense to treat scams as marketing offers and the scammer as a salesman, because that is who he is – he sells dreams of riches and happy endings, hope of escape from a dreary two-bit life, indulgence and attention. He sells you a metaphorical broken car with a missing engine making you believe it runs on air. It is a hard sell, but the scammers manage, making their work an exercise in excellent marketing strategies. The claim that scams can possibly be considered as illegal marketing offers is in line with previous research findings (Cukier, Nesselroth, & Cody, 2007; Fischer, Lea, & Evans, 2012; Lea, Fischer, & Evans, 2008; Naylor, 2007). This allows our investigation to create a potential starting point into accounting for scam compliance by incorporating findings from consumer psychology and analyse whether the psychological factors that inform legitimate buying also influence scam compliance. Marketing research methodology and concepts have, in the past, been shown to successfully inform the analysis of social decision making (Kotler & Zaltman, 1971), so applying this approach to scams is not

unprecedented. There are a number of factors that we will pay special attention to. They are briefly listed below.

1.4.2 Online decision making

First, we need to make informed assumptions about how people reach decisions in general and how they could, conversely, make them in the context of Internet scams. As stated before, there is a large body of evidence showing that people generally do not behave rationally when it comes to personal gain. One of the possible decision making techniques they could employ is to use mental short-cuts, or heuristics as they are called (Gigerenzer, 2002; Groarke & Tindale, 2008; Munro, 2009; Paine, 2009; Rubinstein, 1997). Use of heuristics in scam compliance will be discussed further in Chapter 5 (cf. p. 180) of the present Thesis.

There is, however, less information on how rationality is impacted (if at all) by the transition to an online context. Is it safe to disregard the element of *virtuality* in considering people's attitudes towards risk and risky decisions? If that were the case, that would allow us to use a substantial pool of research that was conducted in the concrete world and use it as a starting point for our investigation. To investigate this point, we decided to use prospect theory (Kahneman & Tversky, 1979), and examine whether its findings would still hold in an online setting. There are some strong arguments for this choice, and some strong arguments against it. The main arguments for picking this study are that it was ground-breaking and the first of its kind. It has had a profound impact on the way we perceive decision making and risk preferences. The results have been checked and re-checked countless times. It is a good foundation to build on. The main arguments against picking this study are (again) that it was ground-breaking and the first of its kind. It is thirty years old, making it slightly dated. It was originally published in an economic journal, although it is, in essence, describing

psychological phenomena, leading to some inter-disciplinary confusion. Focusing on the original premise of the article (i.e. in different situations people respond to risk differently) will offer us a chance to circumvent some of this confusion. The replicability of this classic behavioural economic experiment in an online setting will be the topic of Chapter 2 of the present Thesis (cf. p. 44).

1.4.3 Influence of affective states

Visceral influences (i.e. factors that influence behaviour that stem from drive and affective states, emotions and cravings), have been shown to strongly impact rational decision making (Loewenstein, 1996). Individuals with unfulfilled visceral desires are likely to focus on that aspect of themselves – for example hungry peoples thoughts are dominated by food (Ditto, Pizarro, Epstein, Jacobson, & Macdonald, 2006; Kuijer, de Ridder, Ouwehand, Houx, & van den Bos, 2008); lonely people actively seek companionship (Cacioppo, Fowler, & Christakis, 2009; Whitty & Buchanan, 2012b, pp. 8, 11); materialistic individuals focus on getting funds regardless of the risks or societal norms (Goldsmith & Clark, 2012). Under a strong enough visceral influence attention is exclusively focused on desire to exclusion of everything else. There is only a little cognitive processing involved as the individual thinks: "I want it and I want it NOW". Ditto et al. (2006) have shown that individuals sometimes tend not to think past the consequences of fulfilling their desires. In addition to that, visceral factors are linked to abandoning self-control as the decision process bypasses the rational self, even though an individual might still believe that they are making a perfectly informed and balanced decision (Langenderfer & Shimp, 2001; Loewenstein, 2000). Scammers have certainly caught on to these facts in the past, as have advertisers (Johnson & Myatt, 2006; Sartori, 2006; Youn, Sun, Wells, & Zhao, 2001). Visceral influences on scam compliance will be further examined in Chapters 3 (cf. p. 70) and 5 (cf. p. 145) of the present Thesis.

The Elaboration Likelihood Model (Cacioppo, Petty, Kao, & Rodriguez, 1986; Petty & Cacioppo, 1986), can be thought of as a superset of the theory of visceral influences. It postulates that one of two routes is employed by an individual to reach a decision. The central route appeals to rationality and reasoning and the peripheral route employs emotional triggers (Rusch, 1999). A scammer would, out of necessity, try to engage the victim's peripheral route (Cukier et al., 2007; Dyrud, 2005; Oyesanya, 2004) as it is unlikely that an individual would fall for a scam if they were told it was a scam designed to fleece them. There is some research supporting the idea that the online setting as a format of message delivery combines central and peripheral routes to persuasion to a good effect. SanJosé-Cabezudo, Gutiérrez-Arranz, and Gutiérrez-Cillán (2009) have shown that individuals responded better to web pages that advertised through a peripheral route as opposed to the ones advertising through the central one. Web pages were delivered through the World Wide Web which is by itself considered to be a part of the central route to persuasion (as it is full of factual content).

1.4.4 Impulsivity and self-control

According to both some criminological and psychological theories the inability to control one's impulses can lead to impaired decision making and errors in judgement (Bayard, Raffard, & Gely-Nargeot, 2011; Gottfredson & Hirschi, 1990; Loewenstein, 1996; Reyna & Farley, 2006). The General theory of crime (Baron, 2003; Gottfredson & Hirschi, 1990; Holtfreter, Reisig, & Pratt, 2008) posits that low ability for self-control leads both to offending (e.g. Tittle, Ward, & Grasmick, 2003) and becoming a victim (Piquero, MacDonald, Dobrin, Daigle, & Cullen, 2005). According to the general theory of crime, criminals are seen as individuals who, when given the opportunity, will jump at the opportunity to increase their wealth or satisfy their urges regardless of morals. Strong social bonds have been shown to mitigate this behaviour, but not abolish it (Wright, Caspi, Moffitt, & Silva, 1999). In a similar vein prospective fraud victims with

low self-control would be less likely to question the outcome of an enticing offer in order to satisfy their needs.

The concept of self-control, when defined as the ability to control and shape one's actions (Kanfer & Karoly, 1972; Muraven & Baumeister, 2000; Nadel, 1953) implies that individuals have a certain amount of willpower to draw on (Gailliot et al., 2007) and that willingness to act varies according to the individual and the situation (e.g. children might play in the park for hours right after they were "too tired" to do chores). In the respect that willpower underlies the ability to exert self-control, this idea is historically and philosophically well-grounded in the tripartite classification of the mind (i.e. cognition, affection and conation/willpower; Hilgard, 1980), first described in full by Mendelssohn (1755) and further elaborated by Kant (1892/1951, p. 1). The concept that willpower plays a significant part in human behaviour has later appeared numerous times in early psychological literature (e.g. McDougall, 1908, p. 27) and is in line with current research findings (Gailliot & Baumeister, 2007; Gailliot et al., 2007). From the early theoretical texts (James, 1890a, pp. 13, 29, 89-90; 1890b, pp. 486, 529-530, 560, 562-565) to more recent empirical research, the level of self-control has been found to be a strong predictor of diverse set of behaviours, regardless of whether it is seen as a trait or as a state. For example, when it comes to suppressing unwanted thoughts (Wegner, Schneider, Carter, & White, 1987) or delaying gratification in order to avoid punishment (Logue, 1988; Metcalfe & Mischel, 1999). The level of self-control has also been found to be a predictor of successful dieting (Kuijer et al., 2008), temporal discounting (i.e. the value of the rewards pushed further in time is diminished; Green, Fry, & Myerson, 1994; Logue, 1988) and decrease in physical fitness (Muraven, Tice, & Baumeister, 1998). Finally, there has been some research published that shows the level of self-control as a significant factor predicting victimization (Holtfreter, Beaver, Reisig, & Pratt, 2010a; Holtfreter, Reisig, Leeper Piquero, & Piquero, 2010b;

Loewenstein, 1996). The influence of self-control on scam compliance (as a type of victimization) will be further empirically tested in Chapters 3 (as a personality trait; cf. p. 70), 4 (as a personality trait; cf. p. 121) and 5 (as a cognitive state; cf. p. 155) of the present Thesis.

1.4.5 Social influence and persuasion

Various persuasion and influence techniques have been shown to influence individuals' decisions in the concrete world, bypassing their rationality. Individuals are likely to respond to assertions of somebody who presents themselves as an authority figure as demonstrated by Cialdini (2001) in many of his studies. The same assertion can be made in psychotherapy, where it is vital for a positive outcome of the therapy for the therapist to be an authority figure to the patient (Berne, 1973, 1975; Cornett, 1988; Soth, 1986) and for scams, where scammers have been known to appear in guises of various authority figures in order to reassure the victim (Cukier et al., 2007; Dixon, 2005; Shichor, Doocy, & Geis, 1994; Zuckoff, 2005). Another persuasive technique the scammers have used in the past to make things they are offering seem harder to get (i.e. scarce); and the harder an item is to get, the higher the possibility of an individual wanting it (Eisend, 2008; Kramer & Carroll, 2009; Suri, Kohli, & Monroe, 2007; Tan & Chua, 2004).

In addition to the need to comply with requests from authority figures, individuals might also feel the need to conform with their in-group, as demonstrated, for example, by Deutsch and Gerard (1955), Asch (1956); and Cialdini and Goldstein (2004). The willingness to succumb to social pressure could be motivated by specific information received from the in-group or by the need to fit in and follow the in-group norms (Deutsch & Gerard, 1955; Sassenberg & Jonas, 2007). The impact of social influence on behaviour was demonstrated in various social settings, from adolescent

substance abuse (Petraitis, Flay, & Miller, 1995), to computer mediated communication (Sassenberg & Jonas, 2007) and consumer behaviour (Simpson, Griskevicius, & Rothman, 2012; Wood & Hayes, 2012). The influence of authority, scarcity, social influence and other factors on scam compliance will be investigated empirically in Chapter 3 of the present thesis (cf. p. 72).

1.4.6 Personality traits

There is a relative abundance of personality studies (discussed in more depth in Chapter 4, cf. p. 119) with offenders as participants, using mostly the NEO Personality Inventory (Costa Jr & McCrae, 1995; McCrae & Costa, 1987), correlating personality domains with pathological types of personality – for example psychopathy was shown to be positively predicted by neuroticism and negatively by conscientiousness in a study by Decuyper, De Fruyt, and Buschman (2008). A meta-analysis conducted by Miller and Lynam (2001), who compared 59 studies looking at anti-social behaviour, showed that agreeableness and conscientiousness negatively predicted anti-social behaviour. Some comparative research has been conducted on personality traits across criminal offenders and general population. Samuels et al. (2004) have conducted personality testing, using NEO-Personality Inventory (McCrae & Costa, 1987) on individuals with a history of criminal arrests and have shown that offenders scored statistically significantly higher than the general population in angry hostility (a facet of neuroticism) and excitement-seeking (a facet of extraversion), while they scored lower than the general population in trust, straightforwardness, compliance and modesty (facets of agreeableness) and dutifulness (a facet of conscientiousness). Herrero and Colom (2008) compared the general population and male prison inmates using the sensation seeking model developed by Zuckerman (1994) and the Eysenck Personality Questionnaire (EPQ; Eysenck & Eysenck, 1969) showing that offenders scored higher in all three facets of sensation seeking; and psychoticism and neuroticism in EPQ.

Agnew, Brezina, Wright, and Cullen (2002) demonstrated negative affect to be a significant predictor of deviant behaviour.

The studies mentioned above have focused on the personality traits of offenders, while we are interested in the personality traits of victims, that is, which personality domains inform scam compliance. Extensive literature search on personality traits of victims has yielded only a few empirical results, for example Caspi et al. (1997) had shown strong links between negative emotionality and victimisation, but there is a strongly supported theory that states that offenders and victims share common traits (Gottfredson, 1981; Lauritsen, Sampson, & Laub, 1991; Piquero et al., 2005). Thus, personality traits that are pronounced in offenders (listed above) are thought also to be pronounced in victims of crime, which allows us to use offender studies as a starting point, at least for formulating hypotheses.

There is some additional research available on sub-domains of the five factor model (or stand-alone personality traits as some researchers see them) and victimisation. Low self-control as a personality trait has been linked to victimisation in several studies (e.g. Holtfreter et al., 2010b; Langenderfer & Shimp, 2001; Piquero et al., 2005; Schreck, 1999), as has impulsivity (Lynam & Miller, 2004) and one of its facets - sensation seeking (Hansen & Breivik, 2001; Horvath & Zuckerman, 1993; Klonsky, 2007). Personality traits correlating with scam compliance will be discussed in-depth in the Chapter 4 (cf. p.117) of the present Thesis.

1.4.7 Risk preferences

Online shoppers cite perception of risk as one of the strongest factors influencing their decisions whether or not to conduct transactions online (Athiyaman, 2002; Benbasat, Gefen, & Pavlou, 2008; Bhatnagar, Misra, & Rao, 2000; de Rosa, Bocci, & Saurini, 2006; Mahmood, Bagchi, & Ford, 2004; Mariani & Zappalà, 2006).

Mechanisms that lower the perception of risk (such as visceral influences and routes to persuasion, as mentioned above) are often included in fraudulent offers. For example scammers present themselves as authority figures, whom people are likely to trust and comply with (Fischer et al., 2008b, pp. 6, 26; Rusch, 1999). Individuals in general (and online) are generally not good at assessing the trustworthiness of another person as shown by Green (2007). In a study by DePaulo and Rosenthal (1979), individuals were good at detecting non-verbal cues that somebody was lying, but were not good at understanding their underlying motives (i.e. they knew not to trust someone, but did not know why). Later research by DePaulo (1994) has shown that individuals were not better than chance at detecting a skilled person lying. Scammers are generally highly educated (e.g. Dyrud, 2005) and good at what they do. Additionally, their use of the Internet as a delivery vehicle for scams allows them to obfuscate cues that would help individuals assess their trustworthiness (Green, 2007). That insures that the odds of correctly assessing trustworthiness of an online scam by the prospective victim are low. In addition to directly deceiving, scammers also often appeal to common sets of values like altruism, or religious views (Cukier et al., 2007). Several of these mechanisms are empirically investigated in Chapters 3 (cf. p. 72) and 5 (cf. p. 145) of the present Thesis. While Chapter 3 deals with general trust enhancing mechanisms and their applicability to scams, Chapter 5 focuses on one specific scam type (i.e. online auction fraud) and factors that increase scam compliance in that setting.

1.5 Stages of scam compliance

According to previous research fraudsters proceed in stages. For example, Shadel (2012, p. 29) describes those stages as the front, the drive, the close and the load, that is the initial contact where the fraudsters employ various techniques to gain trust and plausibility, the drive, where they force the potential victim into complying with their demands and offer incentives. The final two stages are the close where the

scammers actually obtain funds from the victim; and the load where the scammers quickly scam the victim again. Cukier et al. (2007) describe the stages of falling for an advance fee fraud scheme (i.e. a scheme where the potential victim is asked to pay a number of fees in advance in order to secure a later payoff) as the initial promise and building up of the relationship, the convincing of the potential victim that they are participating in a straightforward transaction (this is done through tailoring of the fraud to the potential victim through gathering of their personal information and manipulating their perception of the scammer) and the final stage of closing the transaction to the detriment of the victim.

Correspondingly, becoming a victim of fraud, while not a perfectly parallel, can also be construed as a staged process according to some previous research (Cukier et al., 2007; Shadel & Pak, 2007, p. 52; Titus & Dover, 2001), where the potential victims first find a fraudulent offer to be plausible (i.e. trustworthy), then respond to it with private information (e.g. full name, address, telephone number, credit card information …), and finally lose utility (e.g. money, real-estate …) to the fraudster.

It is reasonable to assume that different types of psychological mechanisms will have a bearing across the three stages of scam compliance. Attitudes towards risky prospects will have a bearing on perceived plausibility of a scam. There is evidence from consumer psychology showing that lowered perception of risk increases the likelihood of purchase of a desired item (Lynch, Kent, & Srinivasan, 2001; Olivero & Lunt, 2004; Penz & Kirchler, 2006) and thus attitudes towards risky choices should have a bearing on compliance with illegitimate marketing offers (i.e. scams). This approach will be further explored in Chapter 2 of the present thesis.

Disclosing personal information to a scammer can be explained by several psychological factors, for example social influence, authority, lack of self-control and

others mentioned in the present Chapter. These and other factors will be empirically tested in Chapter 3 of the present Thesis. Furthermore, the personality traits of the potential victims should inform the decision to respond to scams, as well as find them plausible. This hypothesis will be further explored in Chapter 4 of the present Thesis.

Finally, the decision to offer funds in exchange for a fraudulent offer logically depends on the compliance with the previous two stages of scam compliance as well as with the ability to exert self-control and correctly assess the risks involved in compliance with a fraudulent offer. This hypothesis will be empirically tested in Chapter 5 of the present Thesis.

1.6 Alternative Theories

In this Section, we reflect briefly on some of the approaches that we did not choose to follow up in this Thesis. The scope of this Thesis and our bounded rationality preclude us from listing all the psychological theories that could have a bearing on scam compliance, thus we will list only a few theories that that could feasibly inform it and list some of the reasons why we chose a different path.

1.6.1 Consumer behaviour model

Consumer behaviour has been extensively researched, employing many diverse theoretical underpinnings (for an overview of some of them, please cf. Wänke, 2008). Consumer theory is in some cases applicable to the phenomena of scam compliance, especially if we construe scams as illegitimate marketing offers. Some of the theories that go into current consumer behaviour models are potentially applicable in explaining scam compliance, for example satisficing purchasing behaviour (Klein, 1989; Simon, 1957), where the decision to purchase certain goods hinges on the deal not being perfect, but good enough. At a stretch this could be applied to scam compliance, where the potential mark may be aware that the transaction is not everything they may want,

but would still assess it as beneficial to them. This was, to some extent, shown by Fischer et al. (2008b, p. 29) where their respondents self-reported of being aware of scams in general but were not familiar with the scam that they were engaged in. However, the consumer behaviour model as a whole is highly general and can become a kitchen-sink theory, offering large amount of detail, but little predictive power. As a whole it does not offer sufficient precision to be applicable to our research. Nevertheless, elements of it are used where appropriate: for example, we have discussed consumer decision making in Chapter 2, while the purchasing models are taken into account both in Chapters 2 and 5 of the present Thesis.

1.6.2 Theory of reasoned action

There is a well-researched theory that postulates that a person's behaviour will be predicted by their attitude towards it and their construal of attitudes their in-group might have towards that behaviour (Ajzen, 1991; Fishbein & Ajzen, 1975). The two factors (i.e. norms and attitudes) are weighted depending on individual preferences and personality, that is, if someone does not care strongly for opinion of others, then the theory postulates that the normative influence on their behavioural intentions will be weak (Miller, 2005). While this theory of reasoned action (TRA) has been used in the past to define some aspects of consumer behaviour, we argue that it is not detailed enough when it comes to actual compliance. TRA does include concepts that we employ extensively in the present Thesis, for example, of persuasive communication (Fishbein & Ajzen, 1975). But the theory as a whole is more concerned with the process of attitude change and less with the mechanisms employed to elicit particular behaviours.

1.6.3 Emotional response models

There is some research available (Eisenberg, 2000) showing that individuals in some cases act in accordance with their emotions, rather than according to their rational

forethought. Generally speaking, a number of emotional mechanisms have been shown to play a role in human behaviour. For example, Eisenberg (2000) demonstrated that empathy related responses (such as sympathy or distress) are likely to determine whether an individual will exhibit prosocial or antisocial behaviour. Smith and Ellsworth (1985) comprehensively showed that a diverse emotions were highly related to individual cognitive appraisal of a given situation. It would thus not be unreasonable to infer that the level of scam compliance would also be impacted by an emotional state. Furthermore, Cukier et al. (2007) postulate that scammers employ various mechanisms (e.g. archetypes and specific writing styles) designed to elicit a strong emotional response. It would thus make sense to look at one of the theories of emotions in conjunction with scam compliance. To a certain extent, we did that – in Chapter 3 of the present Thesis we test some of the social psychological mechanisms designed to elicit emotional response. In Chapter 4 we discuss an impact of emotional responses, in conjunction with various personality traits (e.g. impulsivity), on scam compliance. Furthermore, William James' (1890a) tripartite structure of psychological processes into those of affection, cognition and conation lies at the heart of the concept of self-control, the theme that holds the present Thesis together. To consider conation (of which self-control is a particular case) is to automatically recognize that affect and cognition may also have a role to play. We have not, however, focused specifically on direct impact of emotions on scam compliance in the present Thesis. Most of research on scams mentions emotions in passing, but while Rusch (1999) postulates that emotional state plays a role in compliance (through the alternative routes to persuasion), Duffield and Grabosky (2001) claim that emotional state is more a statement of tendency not fact. While emotional response in decision making is an interesting research venue, we felt

that it was warranted to look at it as an essential ingredient of other theories (as e.g. those tested in Chapter 3) and not as an isolated phenomena.

1.7 Summary

The present thesis draws from a wide variety of psychological phenomena in an effort to construct a viable, albeit partial, theory of scam compliance. It focuses on the victims of scams and traits and characteristics that make them more likely to become victims while taking the scam compliance stages into account. In Chapter 2 of the present thesis we conduct a preliminary investigation into the viability of the Internet research into decision making by using a classic behavioural economic experiment in a virtual setting, and consider its applicability in informing scam compliance. In Chapter 3 we move from decision theory towards social psychological factors that influence susceptibility to persuasion in conjunction with Internet scams. We develop a scale of scam compliance, and with it, assess factors that influence all three stages of scam compliance. From external factors informing scam compliance, we move to internal ones in Chapter 4, where we focus on personality traits of prospective victims, borrowing from well-established personality scales in conjunction with specific scales that measure personality traits that have been previously shown to inform scam compliance. In Chapter 5 we return to measurement of risk in conjunction with a specific type of Internet fraud (i.e. online auctions) and mechanisms that increase the appeal of that type of scam.

While all the factors and theories listed in the present Chapter should inform scam compliance and its' three stages, there is a factor that underlies or could, to a certain extent, inform all of the mentioned factors The ability to exert self-control, either as a personality trait or a cognitive state impacts an individuals' ability to rationally assess risks and their susceptibility to other social psychological factors and persuasive

techniques. As previously mentioned in this Introduction (and later, in the empirical Chapters of the present Thesis) the ability to control ones' own actions and stop oneself from acting on impulse or irrationally, impacts human behaviour in diverse areas of our endeavours. It is thus reasonable to assume that this ability will play a major part in scam compliance too. As a consequence, the ability to exert self-control will be empirically analysed throughout the present Thesis.

Chapter 2: Transferring risk preference studies into online settings

2.1 Introduction

The present experiment is the initial step in an investigation of Internet scam compliance. It investigates how choice under uncertainty is affected by the presentation of choices over the Internet, as a preparatory step to using the Internet technology to study how uncertainty may affect the decision to comply with a scam.

We make choices under conditions of uncertainty every day (Gigerenzer, 2002, p. 166). Should a person buy a particular used car? Should they invest in a hedge fund? Lack of complete information and time as well as cognitive constraints are considered to be one group of factors that may explain why we are forced to take chances when we make decisions (James, 1890b; Simon, 1956; 1957, p. 532). We make uninformed decisions with uncertain outcomes (i.e. gambles) in many situations every day, and this does not change when we are facing a scam.

2.1.1 Rational choice and scams

Falling for a scam is easy. There is ample opportunity to receive a fraudulent communication either via telephone, post or the Internet (Dyrud, 2005; Titus, 1999) and the odds are stacked in the scammer's favour. There is an abundance of scams (as for instance demonstrated by SCAMSEEK project; Patrick, 2006), scammers (National Consumer League's Fraud Center, 2009; Ultrascan Advanced Global Investigations, 2010), and potential victims (in this case anyone using any such means of communication). Although the demographics of scam compliance (i.e. the extent to which a person complies with the scammers' demands) are not entirely clear, the UK Office of Fair Trading estimated that losses to scams in UK alone, in 2007, amounted to three £3.5 billion (Lea et al., 2008). Ultrascan Advanced Global Investigations (UAGI) reported in 2008 and 2010 that advance fee fraud (AFF) over the Internet was on the

rise (Ultrascan Advanced Global Investigations, 2008, 2010). AFF involves scammers inviting victims to part with sums of money in return for the promise of substantial future gain. A good example of AFF are Nigerian scam letters, also called the 419 letters, named after the article of the Nigerian criminal code that deals with fraud. UAGI claim to have tracked three hundred thousand individual scammers in 2009, with the number of offenders growing at five percent annually (Ultrascan Advanced Global Investigations, 2010).

As explained in Chapter 1, in order to increase scam compliance, the offenders, perhaps unwittingly, apply various psychological mechanisms designed to disrupt rational decision making processes, for instance those described by the theory of visceral influences (Loewenstein, 1996), the elaboration likelihood model (i.e. routes to persuasion; Cacioppo et al., 1986; Cukier et al., 2007; Petty & Cacioppo, 1986) and behavioural economic theories of choice. This chapter will focus on the last of these.

From an economic perspective, one of the most prominent theories that could inform us about scam compliance is prospect theory (PT; Kahneman & Tversky, 1979; Tversky & Kahneman, 1992). PT is an extension, modification and critique of expected value (EV) theory, which is itself the specialised arm of rational choice theory (RCT) that applies to choice under uncertainty. RCT (as summarized by, for example, Becker, 1962; Becker, 1976, p. 131) is considered to be the most influential theory of choice in economics, and one that has also been applied widely in other social sciences (Becker & Murphy, 2000, pp. 3 - 5 ; Robbins, 1932). It assumes that people will act optimally (i.e. in a rational manner) when faced with a personal utility enhancing choice. Acting in a rational manner, in this case, is defined as a decision that increases subjectively expected utility (Marshall, 1910, p. 78; Ramsey, 1931; Savage, 1954). For example, an (economics) application of RCT principles would be for a person to lend funds to a

relative and charge the relative a ten percent interest rate for the privilege, as opposed to keeping the money in a bank (with a lower interest rate), thus increasing their personal expected gain (i.e., utility) at some future date.

Becker (1976) expanded RCT into other social science domains and claimed that no matter what kind of behaviour we are observing, the decisions people make will be subject to weighing the probability of potential individual losses or rewards. An example given and experienced by Becker himself is of a person running late for an appointment, driving to a busy High Street, and trying to park their car (Harford, 2006). They can either park in a no-parking zone, and possibly have to pay a fine, or park in a public car park and pay a (smaller) fee with certainty. If the chance of paying a fine is small enough or the fine itself is small, then the rational decision would be, according to Becker, to park in a no-parking zone.

It thus appears that RCT is applicable to decision making in scams from two perspectives:

(a) The potential victim's viewpoint (Fischer et al., 2008b), in that an individual facing a scam has to pick between two choices: an unknown chance of gaining a large amount of utility, although it is necessary to invest a set amount of funds first, or else, a certainty of getting nothing, but also losing nothing. Those who decide to invest in a scam generally at the very least lose their initial investment (Duffield & Grabosky, 2001).

(b) The viewpoint of the scammer, where there is an incentive to keep scamming, as the risk of getting caught is very low, with a large potential gain in utility. This is especially true when focusing upon scams that involve the Internet (Wall, 2005), because in a virtual setting, it is hard to track offenders, with the

individual amounts stolen sometimes being very small (i.e., micro-crime), and generally not considered by the victim to be worth prosecuting (Wall, 2008). In addition the costs of sending a fraudulent message over the Internet are negligible. Scammers who are not prepared to use the Internet are criminally negligent (Danner, 2000) .

For all its influence, RCT has been criticised from various perspectives. From the methodological viewpoint small samples were usually used in many experiments and experimental design was lacking (Shapiro & Green, 1994). From the sociological perspective RCT is seen as too individualistic and as failing to take group action into account (e.g. Srubar, 1993). Behavioural economists have criticized RCT for only being applicable in ideal circumstances (Gigerenzer & Goldstein, 1996; Simon, 1956) and because it does not take individual psychological factors into account (e.g. Prospect Theory; Kahneman & Tversky, 1979).

Prospect Theory (PT; Kahneman & Tversky, 1979) posits that individuals do not always choose according to the postulates of RCT. Kahneman and Tversky (1979) argue that individuals systematically put higher emphasis on outcomes that are certain against outcomes that are merely probable regardless of pay-out, when they stand to gain (Highhouse & Yuce, 1996; Kahneman & Tversky, 1979; Laibson & Zeckhauser, 1998). Conversely, individuals put a higher emphasis on outcomes that are probable as opposed to outcomes that are certain, when they stand to lose a set amount of utility. Both of these postulates violate rational choice. In the parking example above, Kahneman and Tversky (1979) might argue that individuals would park in a no-parking zone, not because they would carefully balance potential gains and losses of each outcome and then reach a rational decision, but because they hope they will not have to pay (i.e., lose) anything at all, regardless of the possibility. In the context of scams, the

scammer familiar with PT would for instance know never to tell the mark (i.e. potential victim) at the onset that an initial investment is required, only revealing that fact once the mark is hooked (i.e. the victim by this stage believes that they will gain a large amount of utility). Once a victim makes an initial investment, the sunk cost fallacy comes into play (i.e. they feel they have to stay the course in order to recover the investment, regardless of how much more they still need to invest; Arkes & Ayton, 1999; Arkes & Blumer, 1985).

PT demonstrates violations of rational choice, when individuals are facing risk. Risk is also one of the factors informing scam compliance (as demonstrated by Fischer et al., 2008b, pp. 7, 9, 24, 26). PT is well documented (for example Chateauneuf & Wakker, 1999; Tversky & Kahneman, 1992), it has been widely used in theoretical research on decision making under uncertainty (Birnbaum & Chavez, 1997; Laibson & Zeckhauser, 1998; Trepel, Fox, & Poldrack, 2005), and its findings have been successfully reproduced in the past (Chateauneuf & Wakker, 1999; Trepel et al., 2005 among many others). The fact that attitudes towards risky choices are a significant factor in scam compliance and the in-depth theoretical support of PT makes this theory a good starting point for our empirical investigation. Accordingly, the study to be described in this Chapter will investigate whether the key predictions of Prospect Theory about the attitudes towards risky choice still hold when the choice items are presented over the Internet.

But, some caveats are in order. First, PT was not developed to test for scam compliance specifically. This is not a problem in itself as PT describes attitudes towards risky prospects, which scams undoubtedly are. A bigger issue is that although individual PT items describe attitudes towards particular risky choices, an extensive literature search has not uncovered a combination of these items being used as an attitude scale.

To date, the experiments that supported PT postulates were based on giving people a number of choices between uncertain outcomes. They have shown that individual preferences were consistently in line with PT predictions. Since the PT paradigm comprises a series of items, designed to measure attitudes towards specific risky choices, we might expect to be able to use these combined items as a psychometric scale of attitudes towards risk. However, it is only if such attitudes have some generality across decisions that they would be useful for explaining individual differences in susceptibility to scams. A scale constructed from the PT items would be comparable with the scales suggested by Pennings and Smidts (2000) who tested the validity of econometric and psychometric scales in measuring attitudes towards risk of Dutch farmers and MacCrimmon and Wehrung (1990) who developed an attitude scale measuring personality traits of risk-taking executives. The reliability and validity of such a scale, based on the items originally used to establish PT, will be tested in this Chapter.

The second challenge when adapting PT postulates to investigate Internet scams is the fact that PT was developed in an era when Internet use was not widespread, and the original experiment was conducted using pen and paper methods. Since most scams take place over the Internet (Langenderfer & Shimp, 2001) our experimental design should ideally reflect that, both in the delivery method and the eventual modification of the original PT survey. Is this change of medium a concern? On the one hand, choosing to depart from pen and paper and instead using the Internet certainly provides us with quick and convenient access to a large pool of participants. On the other hand, can we assume that the Internet mode of delivery will satisfactorily reproduce pen and paper findings? Fortunately, the extant research on this topic is reassuring , since many other experiments have established a high degree of comparability and validity of findings using these differing modes of delivery (Buchanan & Smith, 1999b; Gosling, Vazire,

Srivastava, & John, 2004; Schmidt, 1997; Smith & Leigh, 1997). Nonetheless, the question needs to be asked in the context of the specific investigation planned.

We are left with two broad research questions:

(a) Could Prospect Theory (Kahneman & Tversky, 1979) be adapted in a way that would enable us to apply its premises and predictions to predict Internet scam compliance from an economic perspective? Since it has already been suggested that scams can be seen long-odds gambles (Fischer et al., 2008b) and PT looks at exactly that type of gamble, we only need to modify the PT survey in a way that would reflect the virtual setting. To do this, we introduced a variant of the PT questionnaire in which the questions used virtual tender, that is to say, forms of money that are specific to the Internet (see literature review for a detailed explanation). There is a school of thought claiming that moving to a less concrete form of money should change people's behaviour towards it, and in particular might make their choices less competent (for summary see Lea & Webley, 2006). In other words, when faced with virtual tender, individuals are less likely to accurately perceive risk and thus become more scam compliant. Since the line between virtual and concrete tender is becoming increasingly blurred with more widespread adoption of e-commerce (Prinz, 1999), we believe that this question warrants further empirical investigation.

(b) Could the findings of PT be reproduced if they are delivered over the Internet, and by corollary, could we take other paper-and-pencil research and apply it to inform Internet scams? There is a substantial amount of research available on this general subject (e.g., Donovan, Drasgow, & Probst, 2000; Naus, Philipp, & Samsi, 2009). Postulating that there will be a high similarity in responses between pen and paper and Internet based research in the case of Prospect

Theory makes intuitive sense, as the introduction of a computer based testing (CBT) methodology has not been shown to have an impact in other research (Buchanan & Smith, 1999b; Carlbring et al., 2007; Chuah, Drasgow, & Roberts, 2006; Gosling et al., 2004). However, this claim also awaits further empirical investigation.

To summarise, the present study is a preliminary investigation into the transferability of Kahneman and Tversky's prospect theory methods to the study of a contemporary issue of significant social and economic import (i.e., scams) in an Internet setting.

2.2 Method

2.2.1 Participants

Our respondents for this study were 1st year undergraduate students from the School of Psychology, University of Exeter. 180 students were contacted via email and asked to participate in an online survey in exchange for course credits. Their results were to be compared with those obtained by Kahneman and Tversky (1979, p. 264-265) who used Israeli students for their Main survey, making the two populations broadly comparable.

2.2.2 Materials

The experiment compared the results of three questionnaires. Data from two of them (Internet and Internet virtual) were obtained experimentally while the available response data for the third questionnaire (paper) were acquired from the Kahneman and Tversky (1979) article and used as a standard for comparison.

The Internet questionnaire was an online reconstruction of the original Prospect Theory questionnaire developed by Kahneman and Tversky (1979), consisting of 15 2-

outcome Items, divided into three sections, investigating separate violations of rational choice: *the certainty effect* – individuals avoid risk (i.e. *risk aversion*) in conditions of gain; *the reflection effect* – individuals prefer riskier choices (i.e. they are *risk seeking*) when facing a loss; and *the isolation effect* – individuals make choices in isolation regardless of the previous levels of personal utility.

The Internet virtual questionnaire was again delivered online but introducing virtual tender in place of typical money. The full text of the survey is included in Appendix 2.

The Internet and Internet virtual questionnaires were delivered as part of an online survey which also included demographic data and three exploratory questions about perceived risk online.

The Internet questionnaire consisted of 15 items, each of which offered the participant a choice between two gambles. These were taken from Kahneman and Tversky (1979) with some clarification of wording and other changes to make them suitable for the intended participants. A control item was added from Tippet (2007). The changes from paper questionnaire (Kahneman & Tversky, 1979) included adapting the monetary values to a UK setting by converting 1979 Israeli pounds to 2009 UK pounds (using a conversion factor of 1:3). The offer of a vacation in two items was also adapted to reflect a change of setting from Israel to UK. The paper study offered a chance to win a vacation in parts of Europe, which is not as desirable to UK students as it perhaps was to Israeli students (UK students prefer to travel to United States as opposed to other EU destinatinations for cultural and historic reasons; Francis, O'Leary, Morrison, & Usda, 2000). Examples of all these changes are shown in Table 2.1.

Table 2.1
Examples of Item Changes Between the Paper and Internet Questionnaire

Item	Paper item	Adaptation (Internet)
7	6000 with probability .45	45% chance to win £2000
3	-4000 with probability .80	80% chance to lose £1300
5	50% chance to win a three week tour of England, France, and Italy	50% chance to win a three-week tour of Florida and the Caribbean
10	Consider the following two-stage game. In the first stage, there is a probability of .75 to end the game without winning anything, and a probability of .25 to move into the second stage. If you reach the second stage you have a choice between (4,000, .80) and (3,000). Your choice must be made before the game starts, i.e., before the outcome of the first stage is known.	Consider the following two-stage game. In the first stage, there is a probability of 75% to end the game without winning anything, and a probability of 25% to move into the second stage. If you reach the second stage you have a choice between: NOTE: Your choice must be made before the game starts, i.e. before the outcome of the first stage is known. Please state your preference. 80% chance to win £1300 £1000 for sure

Note. Item number is derived from the Kahneman and Tversky (1979) article. Paper item values are in Israeli pounds.

In the Internet virtual scale monetary values were further adjusted by a ratio of 1:10, because receiving a gift voucher worth £2000 is not believable. Comparison between questionnaires is still possible, however, as the size of the prize should not influence the decision making process, as long as the relative difference ratio in utility between two item outcomes remains the same - according to Expected Utility Theory (Neumann & Morgenstern, 1944). This rule was not followed in one case - item 10 (Kahneman & Tversky, 1979, p. 271) as direct comparison between the Internet and Internet virtual questionnaires would then not be possible. The question stayed exactly the same in the two versions and was used as a control. Examples of these further changes are shown in Table 2.2.

Table 2.2
Examples of Item Changes Between the Internet and Internet Virtual Scales

Internet Scale Item	Modification (Internet virtual)
45% chance to win £2000	45% chance to win Amazon.co.uk gift voucher worth £200
80% chance to lose £1300	80% chance to incur an unexpected charge of £130 by your credit card company
50% chance to win a three-week tour of Florida and the Caribbean	50% chance to win a three-week tour of Florida and the Caribbean in an online draw

2.2.3 Experimental Design

2.2.3.1 Independent variables

There were two independent variables in the present experiment in addition to the demographic factors (gender, age and a proxy for class background). Delivery signified the type of delivery of the present surveys and it consisted of two levels – paper denoted gamble outcomes from of the original experiment conducted by Kahneman and Tversky (1979) and Internet denoted the results obtained from the present data.

Currency was a two level variable that denoted the type of currency used in the questionnaires (virtual – use of regular currency; and virtual – use of virtual payment methods).

2.2.3.2 Dependent variables

There were three dependent variables in the present experiment, derived from the items highlighting the PT effects originally proposed by Kahneman and Tversky (1979), that is certainty effect, reflection effect and isolation effect. Three sub-scales were computed from the means of the items representing the three effects. The reliability and validity of using the PT questionnaire as a psychometric scale is reported

in the Results (cf. Section 2.3.1, p. 56). The full PT questionnaire and its modifications are listed in Appendix 2.

2.2.4 Design

There were three questionnaires with varying levels of data available. Data from the paper questionnaire only provided percentages of respondents deciding on a particular item outcome. Data gathered from Internet and Internet virtual questionnaires were recoded for that part of the analysis to reflect this state of affairs and enable us to conduct a like-for-like comparison.

2.2.5 Procedure

The experiment was delivered online. It consisted of four sequential parts:

1. Introduction to the experiment – including a brief explanation of the experiment and our rationale for using it; assurances of anonymity; and a request for permission to use the data in the analysis.
2. The main questionnaires (Internet and Internet virtual)
3. Demographics and general section
4. Debriefing – thanking the participants, asking for their e-mail addresses (so the students could claim course credits, if they so wished), again reassuring them that the identifying data would be kept separate from their responses, it would be confidential and their privacy would not be abused.

The study was available for 35 days and most of the participants completed it in the first few days that it was ‘live’.

2.3 Results

The response rate was 47%. There were 84 respondents, with a mean age of 19

years and 10 months; 68 (81%) were female and 16 (19%) were male. They were, on average, from wealthier families (42% of them had grown up in houses with 4 bedrooms, 15% in houses with 5 bedrooms and 6% in houses with more than 5 bedrooms). All of them had bought merchandise over the Internet at least once and 78% of them thought that online shopping is safe. Detailed demographic data from the paper study was unavailable.

2.3.1 Validation and factorisation of the Prospect Theory questionnaire

We tested whether the Kahneman and Tversky items could be used psychometrically, to assess individuals' degrees of risk preference. Reliability analysis was first run on the data. Note that although the suitability of Cronbach alpha for binary data is contested, the weight of current opinion is that it is suitable for such uses (Revelle & Zinbarg, 2009; Sijtsma, 2009; Templin, 2007). However, Internet questionnaire proved to be unreliable when considered in that way with Cronbach α below acceptable levels (α = .38, α_s = .37). Removing individual items from the questionnaire did not significantly improve reliability. The three component effects of PT as described by Kahneman and Tversky (1979) also offered low individual reliability scores (Certainty effect assessed by items 1-8: α = .10, α_s = .11; Reflection effect assessed by items 9-12: α = .34, α_s = .33; Isolation effect assessed by items 13-15: α = .27, α_s = .28). Factor analysis of Internet questionnaire results suggests a different grouping of items from the one put forward in prospect theory. That is, there might be other psychological factors influencing the respondents' decisions when facing risky choices.

2.3.1.1 Factor Analysis of the PT questionnaire

The experimental data were screened for univariate outliers and the missing data were excluded listwise. The factor structure of the 15 PT items was examined. Several

factorability criteria were used. A full correlational matrix is reported in Appendix 2. The Kaiser-Meyer-Olkin measure of sampling adequacy was .502, just above the recommended value of .5. Bartlett's test of sphericity was significant ($\chi 2_{105} = 138.26$, $p = .016$). The analysis yielded six factors with Eigenvalues greater than 1, but one of the factors had no communalities above .3. Some items did not load on any of the factors with communalities above .3. A full table of factorial loadings with communalities is listed in Appendix 2. Table 2.3 contains results of the factor analysis containing only items and factors with loadings above .3.

Table 2.3

Factor Loadings and Communalities of Prospect Theory Questionnaire Items, based on a Principal Axis Factoring with Direct Oblimin Rotation (n = 84)

	1	2	3	4	5
Item 01 [CE]	.502				.430
Item 02 [CE]	.473			.313	
Item 04 [CE]					.417
Item 07 [CE]	.377				
Item 08 [CE]	.461		.353		
Item 09 [Refl]	.648				
Item 10 [Refl]		.349			
Item 11 [Refl]		.366		.324	
Item 12 [Refl]		.487			.304
Item 13 [Iso]				.643	
Item 14 [Iso]			.639		
Item 15 [Iso]		.597			

Note. Abbreviations in brackets denote apriori classification of the Item: CE - Certainty Effect; Refl - Reflection Effect; Iso - Isolation Effect
Factor Loadings of < .3 were suppressed

Negatively keyed items were recoded prior to analysis. Principal Axis Factoring was used as we assumed that a certain part of the variance would not be explained by the PT items. Direct Oblimin rotation was used, as we assumed that certain factors will share variance.

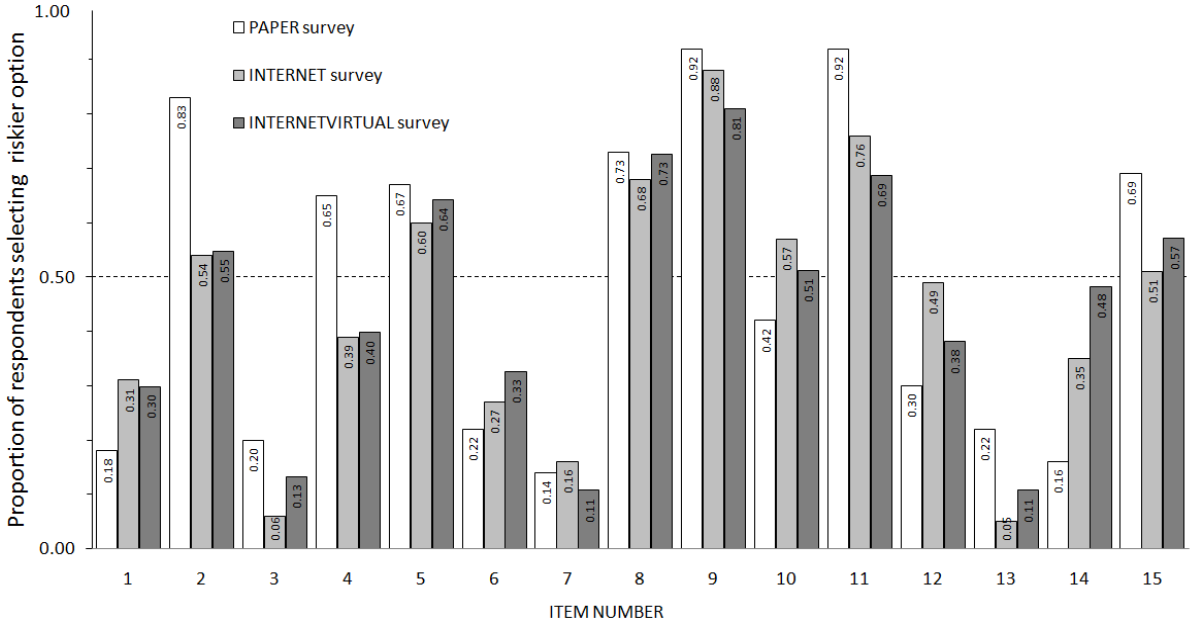
2.3.2 Delivery method and currency comparison analysis

Paper survey data provided for analysis was incomplete as Kahneman and Tversky (1979) only provided the percentages of respondents deciding on a particular outcome for each 2-choice item. Data from the Internet and Internet virtual surveys were recoded to the same form to allow comparison. Analysis showed high similarities in responses between the surveys in most items. Figure 2.1 shows percentages of respondents deciding on the riskier choice in each item, for the three types of survey. The riskier choice in each case is defined as the option with higher variance. In items 1-8 and 13-15 the riskier option also offers higher or equal expected values (EV), while in items 9-12 the EV is higher in the less risky option. A full table of EV and variance for each outcome in all items is included in Appendix 2.

The Kahneman and Tversky (1979) article does not list an exact sample size or the frequencies of responses to the individual gambles, precluding us from doing Chi-Square tests across individual items. Daniel Kahneman was contacted and asked about the sample sizes, but he told us that he did not have the original response data anymore and was thus unable to help.

Figure 2.1

Comparison Across Responses to Individual Items in Paper, Internet and Internet Virtual Surveys



There were high similarities between the three questionnaires. There were only two of the 15 items in which the direction of preference observed in the present study differed from that reported by Kahneman and Tversky (1979). In item 4 more Internet and Internet virtual respondents chose the less risky outcome and in item 10 more Internet and Internet virtual respondents chose the riskier outcome, the reverse of Kahneman and Tversky's result in both cases. Both items represent the same question, but inverted from winning to losing (item 4: 20% chance to win £1300 / 25% chance to win £1000 and item 10: 20% chance to lose £1300 / 25% chance to lose £1000 in Internet survey). Although Kahneman and Tversky (1979) postulate that under conditions of loss an individual should revert from risk averse to risk seeking behaviour, this trend, while present, was not as clear in our reconstruction of their experiment. It seems that respondents feel that £1000 is a substantial enough sum and they feel no need to increase risk by 5% in order to get 30% more money.

Across items, the mean probability of choosing the riskier option did not differ significantly between the paper and Internet surveys (paired samples t-test across items,

$t_{14} = 1.02$, $p = .324(ns)$). Furthermore, the bi-variate correlation across items between the paper and Internet questionnaires was highly significant ($r_{14} = .85$, $p<.001$), showing high similarity between the two surveys. This finding is in line with psychological research in this field claiming that moving to computer-based testing has a low impact on results (Carlbring et al., 2007; Chuah et al., 2006; Donovan et al., 2000; Schmidt, 1997; Smith & Leigh, 1997).

2.3.3 Comparison analysis of currency preferences

To control for order effects two versions of the present survey were used with differing order of questionnaires, one with Internet items before Internet virtual items and the other with Internet virtual items before Internet items. No order effects were found between the two groups (i.e., Internet, then Internet virtual and Internet virtual, then Internet scales) receiving the different questionnaires, so their data were amalgamated for analysis.

Because individuals' preference data were available for both the Internet and Internet virtual questionnaires, these two conditions could be compared in more detail. Since PT proved to be unreliable as a psychometric scale, instead of subscales, individual items were used to measure the impact of virtualisation on risk preferences.

A repeated measures 2x15 ANOVA with factors currency (regular and virtual) and 15 items from Prospect Theory was run on the experimental data. The main effect of currency ($F_{1, 73} = 0.475$, *ns* (p = .493)) was low and not significant telling us that there are no statistically significant differences between the two surveys overall. Comparing individual items produced a significant effect ($F_{14, 1022} = 7.973$, $p<.001$), telling us that there was a significant difference between individual questions. The interaction of currency*item was not significant ($F_{12.432, 907.549} = 1.065$, *ns* (p = .387), using Huyhn – Feldt correction to minimize the effect of deviation from sphericity),

showing that there were no significant differences between Internet and Internet virtual questionnaires in the items that attract stronger preferences for the high risk outcome. Respondents deciding on one option in an individual item in Internet questionnaire often chose the same outcome in Internet virtual questionnaire (see Table 2.4). The biggest differences in preferences between the Internet and Internet virtual were found in item 10, but even there the differences in EV and variance of the two outcomes were small.

Table 2.4
Percent of Respondents Picking the Same Option in Internet and Internet Virtual Questionnaires

Item	Respondents picking the same option [%]
1	77
2	73
3	85
4	65
5	79
6	83
7	81
8	81
9	82
10	55
11	71
12	60
13	89
14	66
15	68

From this we can claim, with a reasonable degree of certainty that the two surveys were highly comparable. They also led us to assume that the modifications to the items were appropriate. The same overall general trends can be observed in all three questionnaires.

2.3.4 Analysis of covariance between the Internet and Internet virtual questionnaires with gender as a co-variant

The respondents were picked from the pool of first year psychology students at

the University of Exeter, making their gender a potential issue, since the majority of psychology undergraduates were female. A repeated measures 2x15 ANCOVA with factors currency (Internet and Internet virtual) and item (15 items from PT), with gender as a co-variate was run on the experimental data. The main effect of currency ($F_{1, 72}$= 0.017, $p = .895(ns)$) was low and not significant, showing the same trends as previous analysis of variance. Comparing individual items produced a significant effect ($F_{11.774, 847.704}$= 2.762, $p = .001$, (H-F)), again showing high similarity between the two analyses. The interaction of currency*item was not significant ($F_{12.606, 907.641}$= 0.399, $p = .968(ns)$, (H-F)), demonstrating no significant difference in the analysis when gender was introduced as a co-variate.

2.4 Discussion and conclusion

The present research provided a preliminary investigation into the application of Prospect Theory to the Internet scams. As such, it replicated and developed past research by Kahneman and Tversky (1979) and Fischer, et al. (2008b). The original PT questionnaire was modified to suit an online environment and we sought to establish that attitudes towards risky prospects can be transferred across the digital divide. In other words, we wanted to create a psychometric scale of risk preferences that would then help us inform scam compliance. Unfortunately we were unable to successfully factorize a reliable scale that would be derived from PT, although we were able to successfully demonstrate transferability of traditional pen and paper surveys onto the Internet. Additionally, we were successful in showing that using virtual currency has no effect on risk preferences of individuals.

We sought to establish whether people make similarly risky choice regardless of the medium being pen and paper or the Internet. Comparison of responses across the paper and Internet questionnaires showed similar trends in all but two items (item 4 and

item 10), where a slight trend reversal between paper and Internet / Internet virtual questionnaires was present. This reversal suggests that when the difference in EV between the two gamble outcomes were relatively low (£10 in items 4 and 10 in the Internet questionnaire) the variance of responses is higher. Regardless of those two items, the similarity of responses to most items across the paper and Internet questionnaires suggest that transferring PT from pen-and-paper to an Internet based experimental design did not significantly influence the results. As mentioned previously, these findings were in line with other research done on the impact of computer based testing (CBT) on experimental design (Buchanan & Smith, 1999b; Chuah et al., 2006; Donovan et al., 2000; Gosling et al., 2004; Naus et al., 2009).

In addition to the high comparability of paper and Internet questionnaires, people's attitudes towards risky choices when these choices are placed into a virtual setting also appeared to be similar: analysis of variance showed no significant differences between the Internet and Internet virtual questionnaires. Whilst we were not specifically investigating scams in the present study, this is a pertinent finding. Internet scams are formally virtual long-odds gambles (Fischer et al., 2008b) and comparison of responses in the Internet and Internet virtual questionnaires shows them to be highly similar. It is therefore reasonable to hypothesise that people will respond similarly to scams offering prizes in either virtual or concrete currencies. We are thus fairly confident that our further research into Internet scams will complement existing research into fraud in general. This preliminary finding helps us bridge the digital divide.

2.4.1 Theoretical and practical applications of our findings

Past research has suggested that when people were dealing with money as virtual tender, they may have become less effective decision makers (Lea & Webley, 2006).

This might lead them to become more scam compliant. Since we varied the types of tender between conditions, the present design allowed us to revisit this issue. Contrary to expectations, Internet and Internet virtual questionnaire analysis results were highly similar, suggesting that people's responses to risky choices involving virtual tender were similar to their responses involving decisions featuring concrete money. In practical terms this means that people's scam compliance can be expected to be impacted in the same way as other decisions when individuals face risky prospects, that is making them more risk seeking in conditions of gain and more risk averse in conditions of loss (Kahneman & Tversky, 1979). Our prediction that people will become more scam compliant with the introduction of virtual tender and as a corollary be more scam compliant when facing Internet scams as opposed to other types of scams, thus received no support.

Economic theory suggests that RCT is applicable only in an ideal situation (i.e., when an individual has sufficient time, data and cognitive capacity to make an informed decision; Simon, 1957). In all other cases, when people are facing a decision where they have to choose quickly, with insufficient data, behavioural economists have argued that people make decisions according to a loose set of rules based on previous experience, intuition, guessing, common wisdom and individual preferences (i.e., heuristics; Gigerenzer, 2002; Gigerenzer, Hertwig, & Pachur, 2011). A closer look at our results has shown more unexplained variability in responses when there was a significant amount of calculation involved, for instance in item 12 (0.1% chance to lose £2000 / 0.2% chance to lose £1000). This is not altogether unexpected, since it takes a certain amount of skill and an ability to do quick mental arithmetic to decide which of the two outcomes in said item were more favourable for the respondent even in expected value terms. It is not unreasonable to assume that individuals do not actually calculate the preferred outcome, but use a more intuitive approach. In the context of Internet scams,

this finding could indicate that individuals would be more scam compliant if the scammer presents them with hard-to-distinguish choices containing an over-abundance of similar data. This is in fact what some scammers do – in some advance fee fraud scams, for instance, they send so much similar material to the mark for signing, that the power of attorney form, giving the scammer the control over all the victims' assets, is lost in the pile of received documents (Dyrud, 2005). The use of simple heuristics in informing scam compliance warrants further investigation and will be one of the topics in Chapter 5 (cf. p. 145) of the present Thesis.

From the outset we were mindful of the differing purposes of the PT questionnaire as Kahneman and Tversky (1979) originally developed it, and our own purposes, and possible issues that may arise from these differing goals. One concern was the reliability of the scale. An extensive literature search on the use of prospect theory as an attitude scale led us to conclude that no reliability analysis of the scale has been published before. We should make it clear that we are not stating that prospect theory itself is unreliable. Absence of reliability analysis is perhaps not surprising, as the original prospect theory paper (Kahneman & Tversky, 1979) is considered to be purely theoretical and the items included were meant to demonstrate that individuals' decision making violates rational choice, and not to be used as a psychometric test which is more akin to its purpose in the present study. We were aware of other scales that measure individual risk preferences (Grable & Lytton, 1999; Tanaka, Camerer, & Nguyen, 2006; Weber, Blais, & Betz, 2002), but none suited our primary purpose which was to measure attitudes towards risky prospects and not magnitude of perceived risk or risk preferences in specific domains. For example, Grable and Lytton's (1999) 13 item Financial Risk Assessment Scale is a psychometric test, with acceptable reliability (Grable & Lytton, 1999; Yang, 2004), but focuses mainly on the perception of risk, not attitudes towards it. Tanaka, et al. (2006) have done extensive testing of responses under

risk, but have mainly focused on the time-discounting choices in risky conditions. While there is no disputing that time is a significant factor in decision making processes, it is not the subject of this Chapter; furthermore, the reliability analysis for that scale was unavailable. Weber et al. (2002) present a reliable psychometric scale measuring risk preferences in different domains. While the scope and specific measures derived from their research were not suitable for this Chapter (they measure risk preferences in specific domains and none of them are connected with fraud victimization), we used some of the scales they compared their scale to (e.g. sensation seeking scale by Zuckerman, 1994) to construct our own scale in Chapter 3 (cf. p. 81). The first two scales mentioned above have two additional drawbacks – they approach risk from an economist's perspective, with little attention to psychological factors and they measure levels of risk, rather than observing people's behaviour when facing risky choices. Given our focus upon psychological influences, the PT approach seemed best suited to the present line of enquiry.

While there is no denying that low reliability of the prospect theory items is a curious and significant issue, investigating it is not the main purpose of our research. The factor analysis of Internet questionnaire results suggests that additional psychological factors could influence behaviour under risky conditions, for instance social psychological factors (like social influence or susceptibility to persuasive techniques; which are the subjects of Chapter 3 of the present Thesis, cf. p. 70), personality traits (cf. Chapter 4, p. 117) or self-control (cf. Chapter 5, p. 145). It should also be noted that our sample size (n=84) was too small to get conclusive results from factor analysis. We repeated the study a year later and amalgamated the responses ending up with a sample size of 116, but a repeated factor analysis and reliability testing yielded similar results.

Although it was not possible to match populations exactly, given the lack of demographic information provided in the original study, the following general points are worth noting. First, women generally behave differently from men under conditions of risk (e.g. Garbarino, Slonim, & Sydnor, 2011; Garbarino & Strahilevitz, 2004), and our sample of undergraduate psychology students was predominantly female (as is the case everywhere in Europe; Olos & Hoff, 2006). One might anticipate that gender could be a potential issue, but controlling for gender did not alter the pattern of results, so this was unlikely to be a factor in the present dataset. It should also be noted that some other authors have found significant differences in assessing risk when respondents' age has been taken into account (Yang, 2004). Although we cannot be sure of an age match, in both our study and that of Kahneman and Tversky (1979), students were used, and the mean age was likely to be lower than that of the general population, although Israeli students were possibly older on average than UK students in our sample due to compulsory three year conscription into military service when Israelis turn 18 (i.e. when they finish high school). The present younger population is certainly better acquainted with online environments and virtual payment methods than the general population (George, 2004; Pastore, 2000). The results of this study should therefore be applied to the general population with caution.

A potential methodological issue of the study would involve the type of rewards offered through gambles – although the wording in the Internet virtual survey was changed to emulate virtual environments, this still does not change the fact that even the rewards offered in the Internet and paper surveys were still *virtual* in a sense. That is, there is no real pot of gold at the end of the prospect-theory rainbow in either case. Making the rewards or losses real in the sense that people receive real amazon.co.uk vouchers at the end of the survey would overcome this argument, but would incur significant added research costs. It is important that it should be conducted in the future,

however, since the impact of virtual vs. real rewards in the testing of respondents' responses has been well researched and in some cases differences have emerged as a function of reward type (Holt & Laury, 2002; Kachelmeier & Shehata, 1992; Smith & Walker, 1993). Within the experimental economics literature, in particular, the use of real monetary outcomes have been very strongly advocated (see review in Hertwig & Ortmann, 2001).

2.4.2 Conclusion

From this experiment we can conclude with reasonable confidence that: (a) usage of the Internet as a delivery tool will not affect standard results on risk preference and (b) our response to scams will not be influenced by the *virtuality* of the offered reward. We can further infer that: (c) individuals respond to virtual offers very similarly to concrete ones, and (d) the likelihood of being scammed in a virtual setting is very similar to the likelihood of being scammed anywhere else, without taking into account that that we are far more likely to be targeted over the Internet (e.g. Wall, 2005). We might also conclude that the use of PT for researching risk preferences in our context is not advisable – a better solution would be an adaptation of already existing psychometric scales, such as the ones used by Weber et al. (2002). Another solution would be to create a new scale that would be developed to be psychometrically reliable and valid, which is what we did in Chapters 3 (cf. p. 80) and 5 (cf. p. 159).

This research provides us with a necessary first step in research into the role of decision making in compliance with Internet scams, and confirms the findings of already existing research (e.g., Abdellaoui, 2008; Bhatnagar et al., 2000; Chateauneuf & Wakker, 1999) postulating that risk is a significant factor in violations of rational choice. Since people's attitudes towards virtual risky choices are similar to the ones in a concrete world and in any gamble, we may now move forward to investigate other

similarities between scams and other economic, marketing and psychological phenomena, and the mechanisms underlying people's behaviour towards them. As already mentioned in the introduction to this Chapter, psychological factors have been shown to have an impact on scam compliance – their role will be examined in more detail in the next Chapter of the present thesis, where we will move from behavioural economics theory on risky choices onto psychological theories of risk perception and its influence on behaviour.

Chapter 3: Psychological factors influencing scam compliance

3.1 Summary of previous Chapters

We have introduced the theoretical underpinnings of scam compliance in the Introduction - scams can be seen as illegitimate marketing offers (Fischer et al., 2008b), which opened the door for considering scam research from a marketing perspective. Scam compliance can be viewed as a decision under risk (cf. p. 44) and perception of risk is one of the factors informing scam compliance (cf. p. 6). Attitude towards risk is, however, only one of the factors informing scam compliance. Since we can look at scams as marketing offers (Fischer et al., 2008b; Langenderfer & Shimp, 2001), we can base our further investigations on marketing research, specifically, on factors that influence compliance in (legal) economic transactions. In the present Chapter, we construct a scale of social-psychological factors that inform susceptibility to persuasive techniques scammers use.

3.2 Introduction

One way to look at human interaction is to define it as a game of trading. We sometimes trade hard work for a sense of accomplishment (Cropanzano & Mitchell, 2005; Lyubomirsky, King, & Diener, 2005; Wright & Staw, 1999), goods for currency and beliefs for persuasive or enticing arguments (Cacioppo et al., 1986; McGuire & Papageorgis, 1961; Nelson & Oxley, 1999). This viewpoint has been thoroughly researched by scientists from different disciplines – psychotherapy, where, for instance, transactional analysis is based on the analysis of a behavioural model of exchange or *transaction* of stimulus and response (e.g. Berne, 1973; Steiner, 1974), economics, where the term *economic imperialism* is used to describe the push of economists into other social sciences (e.g. Becker, 1993; Lazear, 2000) and psychology, from communication theory (cf. Craig, 1999; for attempts at systematization), routes to

persuasion (Cacioppo et al., 1986; Petty & Cacioppo, 1986) and social exchange theory (i.e. all human relationships are subjected to cost – benefit analysis and comparisons to alternatives; Blau, 1964, pp. 88 - 97; Rook, 1984; Thibaut & Kelley, 1959, pp. 10 - 13, 63; Wayne, Shore, & Liden, 1997) - to name but a few.

From this perspective, the mechanisms influencing scam compliance are exactly the same as with any other interaction. 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 et al., 2007). Scammers use various mechanisms to achieve this goal, for instance *fairy tale archetypes* – an example would be a *damsel in distress*, where a supposed widow of a former Nigerian dictator appeals to you to help her recover some of her dead husband's funds offering you a monetary reward roughly equivalent to half a medieval kingdom if you help her (Cukier et al., 2007). Another example would be use of 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 of degree between scams and many other human interactions is that we generally enter scams under false pretences. That is to say that we believe 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).

3.2.1 Factors influencing scam compliance

Previous research (e.g. Cukier et al., 2007; Fischer et al., 2008b; 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. Most salient ones are listed below.

Liking & similarity (Cialdini, 2001) - individuals are more likely to respond favourably to others when they believe they are liked or that their attitudes are similar (Cukier et al., 2007; Hensley & Duval, 1976; Rusch, 1999; Silvia, 2005). Therefore, scam offers that are worded in way that would elicit an illusion of being similar should make individuals more susceptible to scams. A practical demonstration of this mechanism would be an excerpt from an email recently received by the Author (reproduced as received):

> *"Hello Dear,*
>
> *[…]*
>
> *Not actually that you are the best with my intellectual grading but I was driven to contact you from the innermost being. And that was my main reason for getting to you.*
>
> *[…]*
>
> *I decided to WILL/donate the sum of $1,500 000 (One million, five hundred thousand dollars) to you for the good work of humanity and also to help the motherless and less privilege and also for the assistance of the widows.I wish you all the best and may the good Lord bless you abundantly and please use the funds well and always extend the good work to others.." (A. H. Sies, personal communication, June 15th, 2009)*

Here, the scammer attempts to convince the author that they believe in his humanitarian spirit and his contribution to humanity.

Trust and authority (Cialdini, 2001) – In some cases, individuals will be likely to comply with requests from authority figures - for example, when the potential falsehood of interpersonal communication is hard or impossible to determine, individuals might try to 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 authenticity of the drug. Another example of influence of authority on behaviour would be that individuals are generally more likely to pay taxes when they trust tax authorities (Murphy, 2004). In scams, the perpetrators are sometimes likely 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 an ample research showing that people are susceptible to social influence (cf. Chapter 1, p. 34 for a general overview). In diverse cultures (i.e. not only English speaking ones), it has been shown that individuals were likely to construct their self-worth through comparison with others in their group (Markus & Kitayama, 1991). In criminology, one of the ways crime rates can be explained is by the attitudes that society has towards crime (i.e. individuals can be more likely to commit crimes, if they believed 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). Research by Bearden, Netemeyer, & Teel (1989) suggests that high susceptibility to social influence leads to purchasing decisions based on the sellers' preferences, which,

when it comes to scams, leads to prospective marks complying with the requests from scammers to their detriment.

Risky behaviours - 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. In addition, see Section 4.2.3 on impulsivity in Chapter 4, p. 122). This process is called *sensation seeking* (Fischer, Kubitzki, Guter, & Frey, 2007; Zuckerman, 1994). Zimmermann (2010) has linked sensation seeking with harmful, risky and irrational behaviours, like for example promiscuous behaviour and criminal activity (Horvath & Zuckerman, 1993). Sensation seeking has also been shown to be 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 causing self-injury (Klonsky, 2007).

It should be noted that some research points to the conclusion that sensation seeking is not the only meaningful factor influencing the frequency and severity of risk taking behaviours (or perhaps not a factor at all; Shapiro, Siegel, Scovill, & Hays, 1998; Siegel et al., 1994) – in one experiment, female adolescent participants were asked to keep a diary and describe their (risky and safe) weekly behaviours, and note the reasons for indulging. The findings showed that in addition to 'traditional' risky behaviours like drugs and sex, they also practised other behaviours not traditionally included in the definition (e.g. shoplifting, cheating on exams or driving without their seatbelts on). The reasons given were mostly goal oriented (i.e. enhancing personal utility) or personal needs oriented (i.e. relieving stress), thus not motivated by sensation seeking (Shapiro et al., 1998).

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 et al. (2008b) 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 have treated scams as a kind of gamble.

Self-control (lack of) (cf. Thaler & Shefrin, 1981) is a strong predictor in criminology, from the perspective of both the offender and the victim. General theory of crime (Gottfredson & Hirschi, 1990) 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 et al., 2010a; Tittle et al., 2003). Holtfreter et al. (2010b) 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.

In criminology, low self-control has been shown to be a strong factor influencing rational choice in individuals (Carter, 2001; Nagin & Paternoster, 1993) making the marks an easier prey 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 (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, 1998a) and scammers seem to be aware of this mechanism, if perhaps not the theory behind it. For a more in-depth look into self-regulation, please consult Chapter 5 of this thesis. Listed below are two examples of scams that employ mechanisms that lower self-control.

"Christopher James Chambers
Attorneys at Law
Lagos Island ,Ikoyi
Tel: +234 8038 467727

Office of Attorney General:

[...]
Call me directly upon receiving this mail: +234 8038 467727
***Get back to me it is urgent**, is looking forward to hearing from you." (C.J. Chambers, personal communication, 3rd of December 2010)*

and

" Abogado De Justicia
Dear Client,
[...]
At the moment, Lady Augusta Hermina Sies is still very sick and unable to speak very much. All my client need now is your prayers and well wishes to get well from the sickness.I will require the following information below to process the release of the funds and notification to the bank.
[...]
I would immediately notify you once the bank has approved the funds.
[...]
Sr Daniel Juan(Abogado De Justicia)
Phone Number: 0034-687-665-538" (D. Juan, personal communication, 15th of June, 2009)

Both examples use time constraints as an effective technique of lowering self-control (i.e. ego-depleting; for more in depth discussion of ego-depletion cf. Chapter 5, p. 155). Research has shown both that perception of time is distorted when ego-depleting techniques are used (Vohs & Schmeichel, 2003), thus making self-regulation harder, and that temporal constraints are a stressor that effectively reduces the capacity for self-regulation (Muraven & Baumeister, 2000).

Illusions of superiority and control - individuals are in some cases likely 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 – in academic performance, where, for example, 87% of Stanford MBA students reported themselves to be better than the median (Zuckerman & Jost, 2001). The same study researched self-perceived popularity among students and has shown that individuals consistently rated themselves as more popular than their peers. Another well-known example of illusory superiority effect is found 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 - 93% of polled Americans thought that they were above the median).

In addition to illusory superiority, individuals are likely to judge their future prospects too positively in some cases. This is the so called optimism bias (Lovallo & Kahneman, 2003). Some individuals might 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 – Research has shown individuals to be more likely to respond positively to marketing offers when they believed that the goods on offer are either scarce or unique (Folkes, Martin, & Gupta, 1993; Kramer & Carroll, 2009; Suri et al., 2007). Previous research has shown that the ability for

rational decision making can be lowered under such conditions (Eisend, 2008; Fischer, Greitemeyer, & Frey, 2008a; Fischer, Schulz-Hardt, & Frey, 2008c). In scam research, Langenderfer and Shimp (2001) have shown that many scam offers utilize that phenomenon to great effect. Scarcity has been researched in regular marketing too, 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, offers that appear to be tailored to the person, or seem to be unique opportunities, or appear to be time time-constrained should elicit higher scam compliance.

Consistency and commitment – Research has shown individuals to be more 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 have been shown to be likely to return to a certain brand once they have chosen it, even if there might be 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 respond to an offer (preferably without initially requiring any payment) would be more likely to get the mark to react in a second instance, when there usually is a request for money.

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), which postulates that individuals are likely to 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).

3.2.2 Scam Compliance

All of the above mentioned mechanisms are likely to inform scam compliance. We hypothesize that potential victims (i.e. marks) will respond favourably to scammers who appear to be similar to them and appear to be authority figures, offering them items or services that seem rare or unique. Marks will also be susceptible to in-group pressure and will have a high-risk preference combined with a lower ability to control their impulses. Once they will start complying, they will feel obligated to continue to do so, even to their own detriment. Throughout this process they will believe that they are in control of the situation.

3.3 Introduction

Past empirical work has shown the influence of particular psychological factors on decision making processes in general (for a thorough overview cf. Kahneman, 2011) and scam compliance in particular (e.g. Fischer et al., 2012; Rusch, 1999), however an extensive literature search has not uncovered any scales that would deal with scam compliance in particular, using all the factors mentioned above. In the present experiment, we will first construct and factorize a set of scales of social psychological factors expected to influence lifetime scam compliance (i.e. whether respondents exhibited any compliance at any point in their lifetimes) and then investigate whether scores on those scales are correlated with self-reported scam compliance in various fraudulent scenarios. Lifetime compliance is a logical first step in measuring victimization, as we wanted to ensure that there would be enough variability in the gathered data for in-depth analysis. Scam compliance in general is not particularly common according to existing research (Dyrud, 2005; Fischer et al., 2012; Lea et al., 2008) and lifetime compliance will give us the highest rates.

3.4 Method

3.4.1 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).

3.4.2 Experimental design

3.4.2.1 Dependent variables

Dependent variables were derived from 45 items that were a part of the scenarios questionnaire containing 14 typical fraudulent scenarios listed in Table 3.1 (each with 3 2-outcome type YES / NO questions. They are listed in Table 3.2). 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). A full list of scenarios with their descriptions is included in the Appendix 3.

Table 3.1
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 3.2
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 – any plausible (whether the respondents found any scenario likely to be responded to); any gave info (whether the respondents ever divulged personal information in any of the scenarios); any lost money (whether the respondents 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 (comparable to plausible, cf. Table 3.2). 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 on defence mechanisms (Freud, 1937, p. 83) which demonstrates how 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 3.2).

3.4.2.2 Independent variables

There were 9 independent variables (IV) in this experiment in addition to the demographic data (gender, age, and a proxy for class background).

Susceptibility to Persuasion (StP) was a composite score (computed from the means of target items) of the full scale measuring social psychological factors influencing scam compliance. StP contained 30 items divided into 8 subscales corresponding to the factors described in the introduction to this Chapter. 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). Initial items are listed in Table 3.3.

Responses 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”.

Table 3.3

Items on Initial Version of Susceptibility to Persuasion Scale

Liking and Similarity (Liking)
I like people who share similar values, ideas or beliefs with me
I do not like people who oppose my beliefs
My friends beliefs and attitudes are similar to mine
My friends do not like most of the things I like*
Trust and Authority (Authority)
I trust in legal authorities to sort my situation if I was defrauded
The law will not protect me from becoming a victim of fraud*
I feel safe and legally protected when buying goods from authority figures
I trust in information offered to me by authorities
Social Influence (Influence)
I am easily persuaded to do things by my friends
My friends do not easily influence me*
I often follow the crowd, even when that is not in my best interest
I do not follow fashion trends*
Risky Behaviours (Risky)
I often play it safe*
I often drive faster than the speed limit
When taking a chance on something, I often think of what could be won rather than lost
I don't like taking chances*
Lack of Self-Control (Self-Control)
I can easily control my actions*
I find it hard to restrain myself from buying things that interest me
I only buy things when I really need to*
I cannot easily stop myself from making rash or impulse purchases

Note. Continued on the next page.

Table 3.3 (Continued)

Items on Initial Version of Susceptibility to Persuasion Scale

Illusions of Control and Superiority (Illusions)
I often find I am less in control of situations than I thought
I often control situations leading to a desired outcome*
I often find myself in situations where I think I am winning but I lose out in the end
Scarcity & Uniqueness of scam offer (Scarcity)
I often buy things that are of limited availability
I do not mind waiting around for more deals to arise*
Things which are unique or rare interest me a lot
Need for Consistency (Consistency)
I like things to stay the same
I am not very organised
I often follow a strict schedule*
I am often late to meetings despite planning to be on time

Note. * Indicates that the item is reverse scored.
Instructions: "In answering the question, you are given a scale from 1 - 7. Answering 1 suggests that you strongly disagree and that the statement is not an accurate description of yourself, whereas 7 would indicate that you strongly agree with the statement and it best describes you and/or your behaviour. Please select the button that you feel would be most fitting to yourself for every question. All the answer are anonymous and you are free to not answer any questions you might find uncomfortable."

3.4.3 Design

To control for order effects the items in the relevant sections 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’.

3.4.4 Procedure

The survey was delivered online, and consisted of five sequential parts (the full text of the survey is listed in Appendix 3):

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 (see Table 3.3).
3. Scenarios listed in Table 3.1 with questions listed in Table 3.2. 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.

3.5 Results

Out of 249 respondents who completed the questionnaire, 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.

3.5.1 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).

3.5.2 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, responded, lost out). 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 gifts 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 (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 3.4. Note that full descriptions of scenarios are included in Appendix 3.

Table 3.4
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 3.5.

Table 3.5
Reliability Testing on Scenarios

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

3.5.3 Susceptibility to Persuasion scale construction and validation

Reliability testing of the subscales of StP showed poor (α_s = .134) to good (α_s = .741) reliability. Three factors were reliable from the onset (authority, social influence and low self-control). Full results are listed in Table 3.6

Table 3.6
Reliability Testing on Initial Version of Susceptibility to Persuasion Scale (n = 284)

Factor	Cronbach α	α_s
Susceptibility to Persuasion Scale (overall)	.730	.718
Liking and Similarity	.353	.391
Trust and Authority	.619	.630
Social Influence	.700	.706
Risky Behaviours	.539	.557
Low Self-Control	.755	.741
Illusions of Control	.525	.526
Scarcity & Uniqueness of fraudulent offer	.124	.134
Need for Consistency	.461	.469

3.5.3.1 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 cases per variable.

The factor structure of the 30 StP 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 ($\chi^2_{453} = 1617.80$, $p < 0.001$). Overall reliability of the StP 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 will share variance. Initial eigenvalues showed that the first factor explained 14% of the variance, the second and third factor 8% of the variance, the fourth and fifth factor 6% of the variance, the sixth factor 5% of the variance and the seventh factor 4% of the variance. The seven factor solution (of subscales with eigenvalues > 1) was further examined using both varimax and direct oblimin rotations of the loading matrix. The solution explained 50% of the variance. There was little difference between the analyses using different rotations, so direct oblimin was used in the final analysis. Factor loadings for full StP scale are listed in Table 3.7.

Table 3.7

Factor Loadings and Communalities Based on a Principal Axis Factoring with Oblimin rotation for 30 Items from Susceptibility to Persuasion Scale (n = 284)

	Cont	Risk	Auth	Illu	Lik	Infl	Cons
I like people who share similar values, ideas or beliefs with me. [LIKING]					.672		
I do not like people who oppose my beliefs. [LIKING]					.530		
My friends beliefs and attitudes are similar to mine. [LIKING]					.637	.359	
My friends do not like most of the things I like.[R] [LIKING]		.357				.513	
I trust in legal authorities to sort my situation if I was defrauded. [AUTH]			.708				
The law will not protect me from becoming a victim of fraud.[R] [AUTH]			.385				
I feel safe and legally protected when buying goods from authority figures. [AUTH]			.743				
I trust in information offered to me by authorities. [AUTH]			.728				
I am easily persuaded to do things by my friends. [INFL]	.368			.353		.578	
My friends do not easily influence me.[R] [INFL]						.720	
I often follow the crowd, even when that is not in my best interest. [INFL]	.441	.322				.454	
I do not follow fashion trends.[R] [INFL]	.467					.371	
I often play it safe.[R] [RISKY]		.741					
I often drive faster than the speed limit. [RISKY]		.315					
When taking a chance on something, I often think of what could be won rather than lost. [RISKY]	.339	.303				.302	
I don't like taking chances.[R] [RISKY]		.733					
I can easily control my actions.[R] [SELF-CONTROL]	.354					.331	.347
I find it hard to restrain myself from buying things that interest me. [SELF-CONTROL]	.796						
I only buy things when I really need to.[R] [SELF-CONTROL]	.761						
I cannot easily stop myself from making rash or impulse purchases. [SELF-CONTROL]	.785						
I often find I am less in control of situations than I thought. [ILLU]		.331		.483			.490
I often control situations leading to a desired outcome.[R] [ILLU]						.422	.334
I often find myself in situations where I think I am winning but I lose out in the end. [ILLU]				.679			
I often buy things that are of limited availablilty. [SCARCITY]				.700			
I do not mind waiting around for more deals to arise.[R] [SCARCITY]							
Things which are unique or rare interest me a lot. [SCARCITY]				.444	.347		
I like things to stay the same. [CONSISTENCY]		.634					
I am not very organised. [CONSISTENCY]							.793
I often follow a strict schedule.[R] [CONSISTENCY]							.676
I am often late to meetings despite planning to be on time. [CONSISTENCY]							.668

Note. Factor loadings < .3 are suppressed.
The text in brackets denotes which apriori scale each item was assigned to.
[R] Denotes that items were reverse coded.

Internal consistency for each of the subscales was examined using Cronbach's alpha. The initial reliability scores for each of the subscales have already been reported

in Table 3.6. Substantial increases in reliability were achieved through elimination of several items. Three of the factors were unreliable even after elimination, so they were excluded from the final analysis. The final results of reliability testing are reported in Table 3.8, showing moderate to high reliability in the remaining four factors.

Table 3.8
Reliability Testing of modified Susceptibility to Persuasion Scale (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

Another factor analysis was run on the retained items, to confirm the four factor solution. Principal Axis Factoring with direct oblimin rotation was again used. All Pearson correlations across the subscale items were 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 with a cross-loading above .32. The factor loading matrix for this final solution is presented in Table 3.9.

Composite scores 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.

Table 3.9

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
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

Low self-control explained most of the variance (27%). Individuals with high scores in this factor are likely to have a difficulty controlling their impulses. Influence of authority explained 15% of the variance. Individuals with high scores in this factor are likely to be influenced by authority figures and are more likely to trust them. Consistency explained 13% of the variance; individuals with high scores in this factor feel very strong need for consistency and structure. Finally, social influence explained 10% of the variance. Individuals with high scores in this factor are likely to be influenced by their peers and social circle. The solution explained 65% of the overall variance. The reliable and factorised Susceptibility to Persuasion scale is listed in Table 3.10.

Table 3.10
Items and Factors on the validated Susceptibility to Persuasion Scale

Trust and Authority (Authority)
I trust in legal authorities to sort my situation if I was defrauded
I feel safe and legally protected when buying goods from authority figures
I trust in information offered to me by authorities
Social Influence (Influence)
I am easily persuaded to do things by my friends
My friends do not easily influence me*
I often follow the crowd, even when that is not in my best interest
Lack of Self-Control (Self-Control)
I find it hard to restrain myself from buying things that interest me
I only buy things when I really need to*
I cannot easily stop myself from making rash or impulse purchases
Need for Consistency (Consistency)
I am not very organised
I often follow a strict schedule*
I am often late to meetings despite planning to be on time

Note. * Indicates that the Item is reverse scored.
Instructions: "In answering the question, you are given a scale from 1 - 7. Answering 1 suggests that you strongly disagree and that the statement is not an accurate description of yourself, whereas 7 would indicate that you strongly agree with the statement and it best describes you and/or your behaviour. Please select the button that you feel would be most fitting to yourself for every question. All the answer are anonymous and you are free to not answer any questions you might find uncomfortable."

3.5.4 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.

Table 3.11

Logistic Regression Models for Universal Scam Compliance

	Model 1: Any Plausible (n = 236)			Model 2: Any Gave Info (n = 235)			Model 3: Any Lost Money (n = 235)		
Variables	*b*	S.E.	Wald	*b*	S.E.	Wald	*b*	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**
Any Plausible				.58 [1.78]	0.31	3.47*	-.32 [0.72]	0.38	0.77
Any 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 χ^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 < 0.1; ** p < 0.05; *** p < 0.01

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 cut off 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 3.11.

Table 3.12
Goodness of Fit for Logistic Regression (Model 1) - Any 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 (as it provided the optimal balance between false positives and misses).

Overall goodness of fit for Model 1 was 57.9% (cf. Table 3.12). 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 Chapter).

Table 3.13
Goodness of Fit for Logistic Regression (Model 2) - Any 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 (as it provided the optimal balance between false positives and misses).

Model 2 had a better predictive value (goodness of fit was 63.8%; cf. Table 3.13) 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.

Table 3.14
Goodness of Fit for Logistic Regression (Model 3) - Any Lost Money (n = 235)

Observed	Predicted		
	Not Lost Money	Lost Money	Correct [%]
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 (as it provided the optimal balance between false positives and misses).

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 3.14) 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.

3.5.5 Scam compliance in individual scenarios

Results from Section 3.5.2 (Probability of Scam Compliance; see Table 3.4) showed that scenarios with the highest compliance rates across the board were free Internet gifts and fraudulent auctions, closely followed by merchandise scams. A series of binary logistic regressions were run to predict levels of scam compliance in free Internet gifts schemes and fraudulent auctions.

3.5.5.1 Scam compliance in free Internet gifts schemes

Collinearity diagnostics on the present data were run previously (cf. Section 3.5.4) and the independent variables were the same in both analyses. Dependent variables in our models were gift plausible (whether the respondents considered the Internet free gifts scheme plausible), gift gave info (whether they divulged personal information to such a scheme) and gift lost money (whether they lost money to it). The results of the regressions are comparable to the results in Section 3.5.4. Gift plausible model was not significant, with a modest predictive value (Nagelkerke pseudo $R^2 = .03$).

Model gift gave info was significant at the $p < 0.1$ level, after 8 outliers were

removed (Hosmer and Lemeshow $\chi^2_{275} = 14.45$, p = .071) with a moderate predictive ability (Nagelkerke pseudo $R^2 = .22$). Significant regressors in this model were authority (b = .502, S.E. = .223, Wald $\chi^2 = 5.04$; p = .025), and gift plausible (b = 1.35, S.E. = .412, Wald $\chi^2 = 10.73$; p = .001).

Model gift lost money was not significant, after 13 outliers were removed (Hosmer and Lemeshow $\chi^2_{275} = 2.03$, p = .980). Significant regressors of the model were social influence, low self-control and gift gave info.

3.5.5.2 Scam compliance in fraudulent auctions

Dependent variables in our regression models were auction plausible (whether the respondents considered Internet fake auction scheme plausible), auction gave info (whether they divulged personal information to such a scheme) and auction lost money (whether they lost money to it).

Models auction plausible and auction lost money model were not significant, with no significant regressors after removal of outliers.

3.5.6 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) were listed more than once (2 Respondents).

3.6. 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 (Table 3.11), with mixed results when it came to compliance in individual scenarios (cf. section 3.5.5).

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 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-contemporaneus. 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 to 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.

Analysis of scam compliance in Internet auctions yielded no significant results, although compliance rates were high (cf. Table 3.4). This result could be influenced by the nature of our DV's as, again, response rates might be spread through a number of years and thus the results would not mirror up-to-date compliance rates.

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.

3.7 Introduction

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 (separate) data used in the analysis in Chapter 4.

3.8 Method

3.8.1 Participants

Our respondents for Study 2 were recruited from the Internet in three waves. After pruning out incomplete responses a sample of 429 participants remained. Data for Study 2 of the present Chapter were gathered at the same time as the data that were used in Chapter 4 analysis. For a more in-depth description please consult Section 4.3.1 (p. 124).

3.8.2 Experimental design

3.8.2.1 Dependent variables

Dependent variables were derived from 45 items that were a part of the modified scenarios questionnaire (cf. Study 1) containing 9 typical fraudulent scenarios, amalgamated from the National Consumer League's Fraud Center white paper on fraud trends (2009), the Office of UK Fair Trading report on psychology of Scams (Fischer, Lea, et al., 2008), and respondent-reported scams from Study 1.

Bivariate correlations were run on scenarios from Study 1 and five fraudulent scenarios were removed as they explained no additional variance. 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 as a manipulation check. Full description of the modified scenarios is included in Appendix 4. Table 3.15 contains the list of modified scenarios.

Table 3.15
List of Modified Scenarios

Variable	Description
Fake Cheque	Fake cheque
Phish	Phishing
419AFF	419 Nigerian Scams (Advance fee fraud)
Auction	Internet auctions
Lottery	Lottery scams
Lonely Hearts	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 3.16.

Table 3.16
Items on Modified 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. * Lost Out was accompanied by: "The amount lost can be (very) small."

Likely and other likely were measured on a Likert-type scale, from 1 = “extremely unlikely”, 2 = “unlikely”, 3 = “neither likely, nor unlikely”, 4 = “likely” to 5 = “extremely likely”. Experienced, responded and lost out were 2-outcome YES / NO type questions. From the above, four binary variables were constructed: all likely (how likely is it that any of the modified scenarios are fraudulent), any experienced (has the respondent experienced any of the modified scenarios), any responded (has the respondent responded to any of the modified scenarios) and any lost (have they lost money to any of the modified scenarios in the past three years).

3.8.2.2 Independent variables

There were 5 independent variables (IV) in this experiment in addition to the demographic data (gender, age, class background, IT knowledge, relationship status, education and occupational status).

The Susceptibility to Persuasion (StP) scale was a composite score (computed from the means of target items) of the scale that was validated and factorised in Study 1 of this Chapter. The validated StP contained four scales (with three items each) measuring social psychological factors (authority, influence, self-control and consistency) influencing scam compliance (listed in Table 3.10). 4 sub-scales were computed from the means of the items representing the four StP factors. Factor analysis of Study 2 data confirmed the existence and validity of these factors (cf. Table 3.17). StP exhibited moderate internal reliability of .727 (α_s = .735, n = 429, 12 items). The four sub-factors exhibited moderate to good internal reliability, ranging from .581 to .803 (see Table 3.18).

Table 3.17

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 3.18

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
Overall	.727	.735

3.8.2.3 Design

To control for order effects the items within the Susceptibility to Persuasion scale and modified scenarios were randomised. 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.

3.8.3 Procedure

The survey was delivered online, and consisted of five 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. Modified 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 that outright that they were looking at scams.
4. Susceptibility to Persuasion Scale.
5. Three other scales used in Chapter 4 analysis (cf. Section 4.3.2.2, p. 126 for details). 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'.

3.9 Results

Demographic and other details of the sample are given in Chapter 4 (p. 129). Here, we refer only to the results on the relation between the Susceptibility to Persuasion Scale and reported scam compliance.

3.9.1 Predicting scam compliance in Study 2

In order to predict overall scam compliance, two binary logistic regressions were run. We evaluated the bivariate Pearson correlations between the subscales of the StP 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). Model lost out did not yield any useful results as there were only twelve respondents in this study who had lost money to any of the modified scenarios in the past three years – this did not provide us with enough variance to conduct analysis. The other two regression models are reported in Table 3.22.

Overall goodness of fit for Model 1 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 3.20). There was less than 1% difference between the goodness of fit of Model 1 and the null hypothesis model. Modified scenarios 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.

Table 3.20
Goodness of Fit for Logistic Regression (Model 1) - Any 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 (as it provided the optimal balance between false positives and misses).

Table 3.21
Goodness of Fit for Logistic Regression (Model 2) - Any 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 (as it provided the optimal balance between false positives and misses).

Model 2 had a better predictive value (goodness of fit was 89.5%; cf. Table 3.21) 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 give away sensitive information as were those who found modified scenarios plausible. All subfactors of StP were significant regressors in Model 2, 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 modified scenarios were universally low which precluded us from measuring scam compliance in individual fraudulent

scenarios.

Table 3.22

Logistic Regression Models for Universal Scam Compliance in Modified Scenarios (Study 2)

	Model 1: Any Plausible (n = 380)			Model 2: Any Responded (n = 343)		
Variables	*b*	*S.E.*	Wald	*b*	*S.E.*	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***
Any 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 χ^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 < 0.1; ** p < 0.05; *** p < 0.01

3.10 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 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 manipulating scam compliance by running an experiment where complying with scams would be a part of the experimental design (e.g. a method used in Chapter 5 of the present Thesis). However, 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 StP scales.

3.11 General Discussion

3.11.1 Initial findings relating to the demographic factors

The present experiments give us some overall insight into scam compliance – 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 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). Results, however, hint at the fact 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 (cf. Chapter 5, p. 167).

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 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 it is assumed that this claim arose from employment of common sense, not empirical data. Another explanation for our findings could be put down to operational experience – younger generations are more ICT savvy and informed, but might not have had as much real world experience with scams as older individuals had. 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 , as for example, they do little to preserve it, if mechanisms that are perceived to be trust-enhancing are employed (Joinson et al., 2010). A study by 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 lost money to scams, 15 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).

3.11.2 Social Psychological factors influencing scam compliance

The present experiment 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 et al., 2010b). 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 the scammer to present themselves as a reputable stockbroker (harsh tactics) who sells 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 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).

Analysis yielded no significant correlations between social influence and individual scenarios in Study 2, showing that in general scam compliance social influence is a predictor while in individual scenarios this influence is weakened. This is probably due to social influence being a predictor of all scam compliance, that is to say it is not associated with any scams in particular. Aggregating responses to all scams gave our analysis more observed power and thus enabled us to see this fact.

Educational level was a significant predictor of responding to scams in Study 2 (cf. Table 3.22), 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 individuals have been shown 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 et al., 2008a).

The granularity of responses in Study 1 allowed for a more detailed study of scam compliance in specific scenarios. Because of their high compliance rates, Internet free gifts / lotteries / sweepstakes; and fraudulent Internet auctions were picked. Authority was the only significant predictor in the free gifts response model (excluding plausibility) with a modest predictive value demonstrating that individuals in our sample are more likely to respond to offers of free gifts or lottery winnings when they come from a source that is perceived as trusted. When it comes to losing money to free gifts schemes, social influence and lack of self-control were the significant predictors.

Authority and low self-control were predictors of compliance in fake auctions. However, the model itself had low predictive value and was not significant. Since compliance rates in Internet auctions were high in Study 1, we decided that this scenario (in conjunction with the lack of self-control which appears repeatedly as a significant predictor in the present analysis) bears further investigation and will be the topic of Chapter 5 of the present Thesis (cf. p. 145). Lack of self-control as a stand-alone trait in conjunction with scam-compliance also bears further investigation and will feature both in the Chapter 4 (cf. p. 117) and (as previously mentioned) in the Chapter 5 (cf. p. 145) of the present Thesis.

Chapter 4: Personality and Internet fraud

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

4.1 Summary of previous Chapters

Our investigation so far has shown that findings from conventional research are applicable to virtual phenomena (cf. p. 62). We have also shown that a number of social psychological factors (such as social influence, influence of authority, self-control and others; cf. p. 109) inform overall and time-specific scam compliance. Building from our previous findings, the present Chapter empirically investigates the influence of personality traits on scam compliance.

4.2 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

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

involvement in conventional activities (Hirschi, 1969). Furthermore (according to CT), 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.

4.2.1 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 et al., 2006).

4.2.2 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 et al., 2008) while reducing the effect of demographic factors such as gender and income (Holtfreter et al., 2010b; 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, 1998b). 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 et al., 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. (2010b). Both scales have been validated and tested for reliability with good results. Items on the BSCS are listed in Appendix 4.

4.2.3 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. 132).

4.2.4 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.

4.3 Method

4.3.1 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.

4.3.2 Experimental design

4.3.2.1 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 (cf. Chapter 3, p. 81). A full list of scenarios with their descriptions is included in Appendix 4. Five questions were asked after the description of each scam scenario. They are listed in Table 4.1.

Table 4.1
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 4.1 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 et al., 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 3.1, p. 81; and Table 4.4 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.

4.3.2.2 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 4.2). 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 4.3 for full results).

The brief self-control scale (BSCS; Holtfreter et al., 2010b) 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 4.3 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. 132; 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 4.2). 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 4.3 for full results).

Table 4.2
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
Agreeableness	.725	.731
Neuroticism	.748	.750
Openness / Imagination	.742	.742
Conscientiousness	.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 4.3
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
Agreeableness	.784	.784	.772	.776
Neuroticism	.705	.705	.722	.722
Openness / Imagination	.657	.657	.628	.630
Conscientiousness	.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

4.3.2.3 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.

4.3.3 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).

4.4 Results

4.4.1 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 4.4.

Table 4.4

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 4.5.

Table 4.5
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

4.4.2 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 4.2). 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.

4.4.3 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 4.2 (cf. p. 128). The reliability of the modified scale (low to good) was reported in Table 4.3 (cf. p. 128). Items that were kept in the scale are listed in Table 4.6.

Table 4.6
Remaining Items on Modified UPPS Impulsive Behaviour 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 4.6), loading into the predicted factors (see Table 4.7 for the factor loadings).

Table 4.7

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

4.4.4 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 4.8.

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 4.9.

Table 4.8
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]				
Conscientiousness	-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 4.9
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 4.8), 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).

4.5 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 et al., 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 et al., 2012).

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). Self-regulatory failure is discussed more in depth in Chapter 5 (cf. p. 155).

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. This finding reflects that further research was indeed required as suggested in Chapter 3 discussion (cf. p. 112). Low self-control has been previously linked to mainstream criminological theories (Gottfredson & Hirschi, 1990; Hirschi, 1969) and errors in

judgement (cf. p. 75). 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 and will be one of the topics in Chapter 5 (cf. p. 155) of the present Thesis.

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 et al., 2002; Titus et al., 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.

Chapter 5: Risk and online scams

5.1 Summary of previous Chapters

Our investigation so far has shown that findings from conventional research are applicable to virtual phenomena (cf. p. 62). We have also shown that a number of social psychological factors (such as social influence, influence of authority, self-control and others; cf. p. 109) and a number of personality traits (such as openness, extraversion and impulsivity; cf. p. 137) inform scam compliance. Building on previous findings, the present Chapter investigates the influence of risk preferences and the ability to exert self-control on scam compliance.

5.2 Introduction

Taking risky choices is a part of our daily lives (Douglas & Wildavsky, 1982). Our decisions span from banal and voluntary (e.g. attempting mountain climbing and possibly risking injury), to more serious, for example should we vaccinate our children and risk a small chance of them dying from complications (Slovic, 1987; Slovic, Fischhoff, & Lichtenstein, 1982). In the context of this Thesis, the questions we pose are not about life and death directly, but there is little doubt that risk perception plays a significant role in the purchasing decisions of individuals – particularly online, as many consumers find online shopping to be a new experience (although the number of online shoppers is growing; Yoh, Damhorst, Sapp, & Laczniak, 2003), and new experiences tend to be perceived as risky (Arnett, 1994; Kelley, Schochet, & Landry, 2004). Another reason to claim that individuals perceive online shopping as not entirely safe would be to look at vendor choices – individuals will be more likely to shop in online stores that receive positive reviews from other shoppers (and are thus "safer"), even if the products there, are more expensive (Kumar & Benbasat, 2006). When individuals perceive shopping at online stores to be safe, they are more likely to make an initial purchase

there (Mahmood et al., 2004) and are more likely to return (Reichheld & Schefter, 2000) . In this respect there is not much difference between brick-and-mortar (term first used in 1992 to refer to stores located in concrete buildings as opposed to virtual ones; Merriam-Webster, 2005) and online consumers (Farag, Schwanen, Dijst, & Faber, 2007). In both cases perception of risk plays an important role in the decision making process (Benbasat et al., 2008; Bhatnagar et al., 2000; Liebermann & Stashevsky, 2002; Lokken et al., 2003; Mahmood et al., 2004; Soopramanien & Robertson, 2007).

In this chapter, we will focus on fraudulent Internet offers, specifically, fraudulent online auctions. There is a substantial body of research showing that a number of factors (such as value, location, feedback, materialism and failure of self-regulation) influence regular purchasing decisions leading us to postulate that these factors will also play a role in compliance with Internet scams.

5.2.1 Perception of risk and scams

There is a line of thought that consumer fraud in general could be construed as an illegal marketing offer (Lea et al., 2008), as it is constructed as adverts are – in the sense that it contains all the ingredients of the marketing mix (i.e. the four P's of marketing - place, product, price, promotion; Borden, 1964; McCarthy, 1960), builds a relationship (which leads to better sales; Berry, 1983), employs routes to persuasion (defined in Chapter 1, cf. p. 31) and, eventually, is trying to *sell* something to the consumer (or the mark, in our particular case).

As mentioned in previous Chapters, there is not a lot of difference between deciding on buying a certain good and deciding to follow through on a scam. In both cases, we employ a number of heuristics (i.e. a number of loose ‘rules of thumb’ that have evolved to help us solve complex problems quickly; Gigerenzer & Goldstein, 1996; Simon, 1965; Tversky & Kahneman, 1974) to (among other things) gauge

whether a transaction is in our best interest and to judge how risky we perceive it to be (Kahneman, 2011, pp. 335, 138-139).

An example of a common heuristic would be the availability heuristic (Carroll, 1978; Tversky & Kahneman, 1973), where individuals predict the likelihood of an event happening (and by corollary the risk of an unfavourable outcome) by comparing it to how likely they are to bring to mind a similar occurrence (Schoemaker & Kunreuther, 1979).

In the context of a scam the availability heuristic would be reflected in a question of *how many people do I know, who have been scammed in a certain way –* and the answer would probably be *not many* as only a tiny percentage of people contacted by scammers lose money in the end (cf. p. 129), making a particular illegal offer seem not very risky.

Another example of heuristic processing would be the affect heuristic (Finucane, Alhakami, Slovic, & Johnson, 2000; Slovic, Finucane, Peters, & MacGregor, 2004), where we decide on obtaining particular goods on the basis of our emotions (i.e. how much we like the item, a particular offer or the vendor, do we feel drawn to it, etc.) and not on the basis of rational choice (i.e. *Do I need it? Does it fulfil my requirements, besides being pretty? Can I afford it?*; Kahneman, 2011, p. 139).

In the context of scams in general, the mark would react on the basis of positive emotional reaction towards an item being offered (i.e. *If I would really like to own a particular mobile phone, I am more likely to try and buy it, regardless of how shady an offer to me would be, as long as the price is right*).

One of the reasons we use heuristics is to avoid, or at least minimize, uncertainty and risk in our everyday interactions (Simon, 1965; Tversky & Kahneman, 1973). The

same logic is applicable in the context of consumer behaviour and fraudulent offers, for example familiarity with a particular brand alleviates perception of risk, that is one of the reasons why consumers prefer name brands (Park & Lessig, 1981). In the context of purchasing decisions, in the absence of full information about a product, individuals trust in the transaction if they trust the product's brand (Chaudhuri & Holbrook, 2001; Dellarocas, 2003). A fraudulent offer that is perceived as an ordinary one would be treated by an individual in exactly the same manner as any other offer, and trust in the brand would create a fake aura of legitimacy. Both heuristics mentioned in the previous paragraphs have a relationship to risk - they either aim to evaluate the risk of a present choice by comparing it to past recollections (familiarity heuristic) or they substitute the calm appraisal of risk for a gut feeling (affect heuristic). In the present research, we will aim to uncover whether heuristic processing takes place, when falling for a scam. Furthermore, our aim is to discuss whether heuristic processing actually contributes to higher compliance with Internet scams.

5.2.2 Risk factors in online scams

We have already discussed some of the arguments (cf. p. 117) that would lead us to infer that different types of scams would entail different levels and types of perceived risk (see previous Chapter for rationale on different factors influencing different types of offenders and their victims). Scams containing easily quantifiable risk factors are of particular interest to us in this Chapter.

5.2.3 Auction scams

Online auctions are quite a lucrative business for the providers of the platform (e.g. eBay has had a revenue of approximately $1 billion/month in 2011 from fees alone; eBay Financial, 2012), with annual revenues greater than GDP of more than 50% of world's nations (Hergert, 2009). The business is not that lucrative for the sellers since

there is a large amount of competition and a certain amount of price undercutting (Anwar, McMillan, & Zheng, 2006; Hasker & Sickles, 2010), but the buyers have some distinct advantages. First, they have copious amounts of choice (and thus lower seller margins; Anwar et al., 2006) that leads to buying more reasonably priced goods (Browne, Durrett, & Wetherbe, 2004; Kauffman & Wood, 2000; Moe & Fader, 2001; Senecal, Kalczynski, & Nantel, 2005). The buyers are also able to comparison shop, which is one of the important factors in online/offline shopping choice (Browne et al., 2004; Senecal et al., 2005).

The sheer volume of daily transactions on large online auction sites is telling. If we look at eBay, for example, they complete, on average, five hundred million auction sales per month (eBay Metrics, 2012). In comparison, the second largest UK Internet auction site *ebid.net* does not publicly reveal their data, but from what can be gathered online, their operation is orders of magnitude smaller. More transactions mean a greater chance of an individual encountering a fraudulent one and since substantial sums of currency change hands daily on auction platforms, they hold an interest both for consumers and scammers. By corollary, online auction sites, like eBay, offer a good research foundation in general (lots of buyers, scammers, metrics and already published tangential research) and for scam research in particular, as there is bound to be some fraudulent activity going on there.

There is, however, a consensus among criminologists that no firm incidence data on auction fraud is readily available, neither on its rate of being committed nor on its rate of being prevented by online auction sites (Smith et al., 2004, p. 13; Wall, 2005). We do have some indicators, though. The Internet auction scams (goods misrepresented or not delivered) represented approximately two percent of Internet scams in 2009, according to the American National Consumer League's Fraud Center (2009) with an

average loss of approximately £800 per "successful" scam. Although auction scams do not constitute a large percentage of Internet scams, the issue is with the definition, not with the incidence, as for example many auction scams include subverting payment in one way or another and fake cheque scams (employed in many auction scams) represented forty four percent of the online scam landscape in 2009 (National Consumer League's Fraud Center, 2009). Research has also shown that at the beginning of the century, forty one percent of online auction buyers had experienced difficulties in receiving goods bought on auction sites (Kauffman & Wood, 2000). It is reasonable to assume that there are many who try to commit online auction fraud – for reasons mentioned in previous chapters – for example availability of marks, ease of access, low chance of being caught and others (Wall, 2005, 2007). As stated before, the data on incidence of auction fraud, could only be inferred, since there are no firm numbers available.

We do, however, possess somewhat firmer data on factors influencing perception of risk in purchase decisions of online auction participants, specifically on eBay.

5.2.3.1 Feedback score as a trust cue

Every transaction on eBay can be evaluated by giving feedback to the other party. Sellers can receive negative, neutral, positive or no feedback (cf. eBay usage policy[2]), while buyers in a transaction can only receive positive or no feedback. Overall number of feedbacks is displayed next to each username wherever it appears on eBay pages. Percentage of positive feedbacks is displayed below the username in auction pages or by clicking on the feedback score.

[2] http://pages.ebay.co.uk/help/feedback/howitworks.html

Feedback score (i.e. the percentage of positive feedbacks) and the number of feedbacks play an important role in establishing credibility and trust in an online shopping process (Diekmann & Wyder, 2002; Hergert, 2009). Feedback score is important both in establishing trust (Resnick, Kuwabara, Zeckhauser, & Friedman, 2000; Resnick & Zeckhauser, 2002; Utz, Matzat, & Snijders, 2009) and in setting the price of an item (i.e. sellers with lower feedback scores have to lower their prices; Bapna, Jank, & Shmueli, 2008; Hergert, 2009; Lee, Im, & Lee, 2000). As a corollary, individuals are willing to pay a premium on an item, if the seller's feedback score is high enough (Ba & Pavlou, 2002). We can infer from this, that a non-perfect feedback score is both a risk factor in itself and a possible influence on other risk factors (such as price or location).

In the context of an online auction scam, where at the onset the buyer does not know whether they are facing a legitimate transaction or not, a high feedback score should play a significant role in the determination of whether they are facing a scam and the decision on whether it makes sense to continue with the transaction.

5.2.3.2 Cross cultural factors

Geographical proximity plays an important role in establishing trust in online commerce, with individuals being more likely to engage in a transaction if the seller is near them or at least in the same country (Hergert, 2009). At the same time, the border effect (i.e. the perceived possible impact of different taxes and import duties on an auction item price; Maier, 2010), plays a role in establishing price disparity.

Country-of-origin effects play a role in a global market – consumers from more developed countries (like the U.S. or U.K.) are less likely to buy products originating from countries that are perceived to be less developed (e.g. China; Verlegh & Steenkamp, 1999), while Chinese consumers avoid items originating from Japan,

regardless of the perceived quality of these items (although there are possibly socio-political reasons for that, not developmental ones; Klein, Ettenson, & Morris, 1998). There is research showing that in an online marketplace, the country of origin concept is equivalent to the seller's location (Hu & Wang, 2010) – this also makes sense, because in a global economy, a majority of brand products is manufactured in Asia, regardless of the origin of the brand (e.g. Apple has almost no manufacturing plants in the US – most of the parts for their product catalogue are manufactured in China and Taiwan; Skapinker, 2011), making the seller's location more salient than where the item was produced in the first place.

In the context of online auctions, the seller's country of origin plays a significant role in price setting (Hu & Wang, 2010) and the consumer's decision to participate in auctions in the first place (Verlegh & Steenkamp, 1999). For example, consumers are reluctant to purchase items from sellers located in China, even if the goods are slightly discounted compared to the U.S. or U.K.(Hu & Wang, 2010).

5.2.3.3 Price

Stakes influence risk perception in any transaction (Kahneman, 2003). The amount itself plays a role in risk perception only in relative terms, depending on the impact of the item price on personal utility (i.e. an individual who is wealthier would not be as likely to perceive high price as risky by itself; Neumann & Morgenstern, 1944, p. 162).

Several considerations should be taken into account when talking about the price of an item. Uncommonly low price could be perceived as risky by some individuals (i.e. they might believe that an offer is *too good to be true*; Dodds & Monroe, 1985). At the same time a reasonably priced item should lower the perceived risk, since, in general, the perceived benefit is inversely correlated with perceived risk (i.e. the more an

individual believes to be gaining, the likelier they are to ignore the risk of something going wrong; Alhakami & Slovic, 1994; Finucane et al., 2000)

Additionally, we need to examine the relationship between value and item price. Perceived value is a major determinant of an object price (Chang & Wildt, 1994), product choice (Zeithaml, 1988) and purchasing behaviour (Zhan & Alan, 2003). Value of an item is itself a multifaceted construct - it could either have an (subjective) emotional value (e.g. Young & Feigin, 1975) or an (objective) practical value to the consumer (e.g. Zhan & Alan, 2003). Perceived value of an item could be seen as a function of price (i.e. if it is discounted or cheaper than sticker, it is valuable; Zeithaml, 1988). It could be seen as a function of utility (i.e. *if it does its job well*, or *if it optimally fulfils my needs*, then *it is valuable*; Zeithaml, 1988). Furthermore, perceived value could be dependent on higher price (i.e. *you get what you pay for*; Dodds & Monroe, 1985) and finally, perceived value could be a function of getting more for less (Hauser & Urban, 1986). Examples include buying a barber's razor instead of a disposable one because even though the latter is cheaper, it is not as reusable; or buying second hand designer clothes on eBay as they increase social status for a fraction of the regular price.

In the context of a scam, an experienced scammer would construct an offer that would present itself as a very good value – in an auction scam a brand name object would be presented which would carry a significant price that would be subsequently reduced (but not too much, as then perceived value might actually decrease). Furthermore, the item in question would be presented as flawed in a way that has absolutely no impact on its desirability (e.g. *unwanted gift* or *brand new without tags*) thus making it value for money.

5.2.3.4 eBay-specific risk factors

There are several factors influencing risk perception that are eBay specific. They

are mostly described in the eBay fraud advisories (freely available on www.ebay.com), which are written by eBay security personnel, who keep abreast of the latest attempts to subvert the eBay auction system.

An offer to conclude business outside of eBay is one such factor. This approach enables the seller to avoid paying various eBay/Paypal fees, but also voids buyer protections that are a part of the eBay system. While this is certainly against eBay policy, the motivation for eBay sellers is clear – avoiding numerous (small) fees in every transaction, but the motivation for the scammer is even stronger – avoid being chased by eBay. In either case the consumer is the one who is left without any kind of protection if they agree to conclude the business outside of eBay.

5.2.4 Phishing

Phishing is a type of fraud delivered over electronic communication (e.g. e-mail, or instant messaging), where an individual misrepresents themselves as a trustworthy person of authority and attempts to entice the mark to divulge sensitive personal data, such as passwords or credit card information ("Phishing," 2011). The term first appeared in a NNTP newsgroup in 1996, and was first used in print two years later in Wall Street Journal.

A specific type of phishing is the so-called *spear phishing* (Schultz, 2005) where a specific organisation or an individual is targeted (Egelman, Cranor, & Hong, 2008; Jagatic, Johnson, Jakobsson, & Menczer, 2007). An example of the difference between the two types would be two emails, one containing plain text saying that this is the system administrator of an email system, asking you to change your password online, the other would contain the logo of University of Exeter, saying that this is Kieron Bird (*n.b. system administrator of University of Exeter in 2012*) asking you to change your password online. Both emails would lead you to a web page where you would be asked

to enter your details.

From the viewpoint interesting to us, phishers employ several psychological mechanisms to insure compliance - they exploit lack of complete information about the offer, forcing the mark to decide on the basis of signals they can decrypt. This is in accordance with the *signal theory* (Zahavi, 1975) that was originally postulated in biology, but has since been shown to be applicable to online communities and virtual identity (Donath, 1999; Donath & Boyd, 2004). Since individuals might judge trustworthiness of a person through the trust they place on the contents of the message, when there is lack of information about the person (Selin, 2006), they assume that a person speaking from the position of authority is trustworthy *per se* (Siegrist & Cvetkovich, 2000). Spear phishing emphasizes the mechanisms mentioned above by giving (false) information identifying the scammer as a person of authority in the specific in-group.

In the context of a scam, a well-crafted offer should include references to information pertinent to the target and it should appear to be delivered by a trustworthy source. In the experiment described in the present Chapter, we simulated a spear-phishing attack and presented it as if it was coming from the Exeter Student Guild. This was done with their full permission (see correspondence in Appendix 1).

5.2.5 Attitudes influencing risk perception

We have been discussing traits that could influence decision making when facing a scam in the previous Chapters. But there are also a number of cognitive states or attitudes that could influence those same decisions.

5.2.5.1 Self-regulation

The term self-regulation refers to the ability of an individual to control their

behaviours, emotions and thoughts in order to ensure that their long-term goals (e.g. not living under a bridge; not owning 3 of anything, when one would suffice; or not returning from a vacation to find that their home has been repossessed) are still attainable (Alberts, Martijn, Greb, Merckelbach, & de Vries, 2007; Baumeister et al., 1998b; Vohs & Baumeister, 2010, p. 3).

In this respect, it is argued that self-regulation is a cognitive resource that diminishes with use (Bandura, 1996; Baumeister et al., 1998b). In a certain sense, it can be likened to a muscle, which temporarily weakens through repeated use and cannot optimally fulfil its function again until it is sufficiently rested (Muraven & Baumeister, 2000). In addition, much like training a muscle, repeatedly exerting self-control improves the individual's self-regulation ability (Converse & DeShon, 2009).

This weakening of self-regulation or the state of self-regulatory fatigue or ego depletion as it is also called (Joireman, Balliet, Sprott, Spangenberg, & Schultz, 2008; Vohs & Schmeichel, 2003) makes it more likely for a person to commit judgement errors – individuals become more passive when ego-depleted (Baumeister et al., 1998a), they cannot effectively control time (Vohs & Schmeichel, 2003), their intelligence scores are temporarily lowered (Schmeichel, Vohs, & Baumeister, 2003) and they are more likely to cheat to achieve monetary gain (Mead, Baumeister, Gino, E. Schweitzer, & Ariely, 2009).

Since falling for a scam can be seen as an error in judgement (Fischer et al., 2012) it may be that individuals who are experiencing high levels of self-regulatory fatigue would be more likely to be more scam compliant. They would find fraudulent offers more attractive and would be more willing to ignore signals identifying them as such. They would also focus on hedonic aspects of an offer (e.g. how much utility they would gain) instead of its veracity (Loewenstein, 1996; Overby & Lee, 2006; Wang,

2006).

5.2.5.2 Materialism

The Oxford English Dictionary defines materialism as a lifestyle based on material interests with an emphasis on possessions to the detriment of spiritual values ("Materialism," 2011). Empirical research has demonstrated that materialism as a value indeed has detrimental effects on other societal and personal values (Burroughs & Rindfleisch, 2002; Kasser & Grow Kasser, 2001; Kasser & Ryan, 1993; Keng, Jung, Jiuan, & Wirtz, 2000). In addition, our (consumer) culture is defined by the need to attain goods (Belk, 1984, 1985; Richins & Dawson, 1992) and express self-worth through material possessions (Belk, 1988).

In the context of consumerism, materialism plays a significant role (Belk, 1985) – materialistic consumers' lives revolve around material possessions (Belk, 1984; Richins & Dawson, 1992), their contentment is based on the goods acquired and possessed (Richins & Dawson, 1992), and their identity is dependent on what they own (Belk, 1988). Materialism has also been shown to impact consumer decision making, causing consumers to make irrational decisions. They, for example, buy goods they cannot afford and sink into debt (Watson, 2003). They also ignore their financial or personal circumstances in pursuit of higher social status (Goldsmith & Clark, 2012). Although materialistic consumers believe each time that they will increase their well-being by acquiring new possessions, their overall happiness constantly decreases (Belk, 1985; Burroughs & Rindfleisch, 2002; Richins & Dawson, 1992).

In the context of auction scams, it is reasonable to infer that an individual who scores higher in materialism would be more likely to ignore any present risk factors (mentioned above) in the pursuit of obtaining an item they desire.

5.2.6 Impact of risk perception on online scams

From the review of research listed above, we can make the following predictions:

We predict that the individuals in a state of self-regulatory fatigue will be more likely to be more scam compliant (i.e. they will ignore the signals that a particular online offer is fraudulent). While there is not much research available on self-regulation and scam compliance, there is some evidence indicating that self-regulatory fatigue influences consumer choices, specifically in an ecommerce setting, where the level of ego depletion has been shown to be the strongest influence on shopping decisions (LaRose & Eastin, 2002) and impacts future shopping decisions (Mukhopadhyay & Johar, 2009). As a corollary self-regulation should influence scam compliance too.

We also predict that individuals who score higher in materialism will be more likely to accept a fraudulent offer, as they will be more likely to ignore any warning signs such an offer might exhibit, in the pursuit of material goods.

There are a number of factors (such as price, country of origin and feedback score) influencing risk perception and the decision to accept a fraudulent offer. These factors are either specific to the medium (the Internet; e.g. reputation systems) or source (e.g. eBay). We predict that a hierarchical matrix of risk factors will emerge. That is to say that individuals who will find an offer risky will do so for a (combined) number of reasons, not just one.

Finally, we also predict that individuals will employ heuristics to decide whether a fraudulent offer is appealing to them.

In order to test these hypotheses we constructed an online auction equivalent and manipulated it.

5.3 Method

5.3.1 Participants

Our respondents for this study were undergraduate students from the University of Exeter. Approximately 2500 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). We divided the respondents into two groups (for the purposes of random assignment to the ego-depletion condition) according to the first letter of their surnames (A-M and N-Z). We received 180 responses (combined).

5.3.2 Experimental design

5.3.2.1 Independent variables

There were ten independent psychological variables in this experiment, one manipulated experimentally, the others measured correlationally. In addition, demographic data were collected.

Ego-depletion was a between-groups independent variable with two levels (High – participants who performed an ego-depleting task with high cognitive load; and Low – a group of participants who performed a low cognitive load task). The specific cognitive task and instructions were adapted from Baumeister et al. (1998a). The video required for the task can be accessed from Baumeister and Tice Social Psychology Lab (Baumeister & Tice, 1988). It is an approximately 7 minute long mute video clip of a woman being interviewed. Every few seconds a word that is not connected to the interview is flashed on the screen. Participants are either told to ignore the words and, even if they read them, to forget them immediately (high cognitive load condition) or

they receive no instructions about the words (low cognitive load condition). A manipulation check variable (manipulation check) was used as a co-variate in the following analysis.

ED baseline was a composite score based on the scores from the action control scale, developed by Kuhl (1981). The specific scale, measuring ego-depletion (or orientation as Kuhl defines it) was adopted from Babin and Darden (1995). Initially the scale contained 20 items, but after reliability testing, 11 were removed, yielding adequate reliability score of .733 (α_s = .732, n = 95, 9 items). Full removal procedure with interim reliability scores was recorded in a Table in Appendix 5. ED baseline is a [1..9] variable, where a score of more than 4 indicates a state of self-regulatory fatigue. This scale was needed to establish the level of ego-depletion actually achieved by experimental manipulation.

Materialism was a composite score (computed from the means of target items) of the full materialism scale adopted from Richins and Dawson (1992). Additionally, three sub-scales were computed from the means of the items representing the three materialism scale factors: acquisition centrality, happiness and success. Factor analysis of our data confirmed the existence and validity of these factors. The whole materialism scale exhibited good internal reliability of .837 (α_s = .838, n = 130, 18 items). The three factors exhibited moderate to good internal reliability, ranging from .673 to .775 (see Table 5.1).

Table 5.1
Reliability testing of Materialism Scale

Factor	Cronbach α	α_s
Materialism (Overall)	.837	.838
Acquisition Centrality	.775	.778
Happiness	.673	.670
Success	.759	.759

Risk perception scale (RPS) was a composite score of a previously untested scale. After exploratory factor analysis (cf. p. 172), four factors were uncovered: feedback, location, value and eBay specific items. There were thirteen Likert-type items in the whole scale (listed in Table 5.4).

5.3.2.2 Dependent variables

There were four dependent variables in this experiment. Appeal (how appealing does the participant find a fraudulent offer) and buy (would the participant buy an item on offer if they had the funds available) were measured in the doctored auction. The third DV was purchase (how likely participants were to purchase tickets to a non-existent Spring Ball through a link in a phishing email) and fourth DV was trust (how much do participants trust the Exeter Student Guild). Appeal and Buy were the responses to Likert type items with seven levels, while purchase and trust were the responses to a Likert type items with five levels.

5.3.3 Design

To control for order effects items in the action control scale, materialism scale and RPS, items were randomized within scales. All participants answered exploratory and general questions (contact details, entering a raffle or participating for student credit, etc.) at the end of the survey (full questionnaire can be found in the Appendix 5). Demand characteristics were controlled for by adding an open text type variable at the end of the questionnaire, asking participants to tell us what the experiment was about. Those participants who would be able to describe the real purpose of the experiment would be removed from further analysis at this point. However, there were no respondents who failed the demand characteristics manipulation check in this sample. Exploratory factor analysis, a series of ANCOVA and multiple regressions were all run on the data.

5.3.4 Procedure

The survey was delivered online, and consisted of 11sections:

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 section, containing questions about age, gender, IT proficiency (IT), relationship status, educational level, Country of residence and occupational status.
3) General section, containing questions about familiarity with online shopping (shopping) and eBay, four items derived from Prospect Theory on the basis of results described in Chapter 2 (PT Items 01, 03, 09 and 12; cf. p. 243; Kahneman & Tversky, 1979) and three exploratory questions whose answers were used in the creation of a fake auction. The text of the questions is in table 5.2 below.
4) Materialism scale.
5) Self-regulation task.
6) Manipulation check (three multiple choice questions about the self-regulation video), listed in Table 5.3.
7) Auctions – participants were presented with 4 screenshots of eBay auctions. In each of them the name of the seller was changed to preserve anonymity, but that was the only change in three of the screenshots. The fourth screenshot has been extensively doctored (cf. Figure 5.1), to hint at it being fraudulent. The changes included:
    a. The picture of the item on auction was removed. Replacement text was misspelled.
    b. The auction item was listed as an unwanted gift, but more than 10 were

listed as available.

c. The time to end of auction was set as 20 minutes.

d. The seller's feedback score was set at 99.4%.

e. The auction item location was listed as LONDON, LONDON (Instead of a specific city and country; e.g. London, United Kingdom).

f. The description of the item was changed to be as generic as possible.

g. The auction item was the answer to the first fake auction item (OfferX, see Table 5.2).

h. The price of the item was set at 75% of the value of CostX, also determined from a fake auction item (see Table 5.2).

After every screenshot of an auction two questions were asked – "How appealing do you find this offer?" on a scale of 1..7; and "If you had the funds, how likely would you be to buy the above item" on a scale of 1..5. The doctored auction had an additional set of risk perception scale items attached to it, listed in Table 5.4.

8) Action control scale

9) A screenshot of a fictional Exeter Student Guild email (cf. Appendix 5, p. 282) was presented to the participants with accompanying text stating that we were investigating glitches in the University email system and were wondering whether they recalled receiving this email (surprisingly one participant in our experiment recalls getting this email, although it had in fact never been sent). The (screenshot of the) fictitious email invited students to participate in a (non-existent) Spring Ball and purchase tickets (only £3.50 if you pre-book now!) through the link provided in the email. There were 6 items in the follow-up; they are listed in Table 5.5. Note that before launching the experiment, we got the written permissions from both from School of Psychology ethics board and

Exeter Student Guild.

10) The last interactive section, where we asked for preferences (either a draw for amazon.co.uk or student credits), participant email and a demand characteristics check (i.e. a question about what kind of experiment the participants thought they had just participated in).

11) Debriefing (full text is in Appendix 5).

Figure 5.1
Doctored eBay Auction

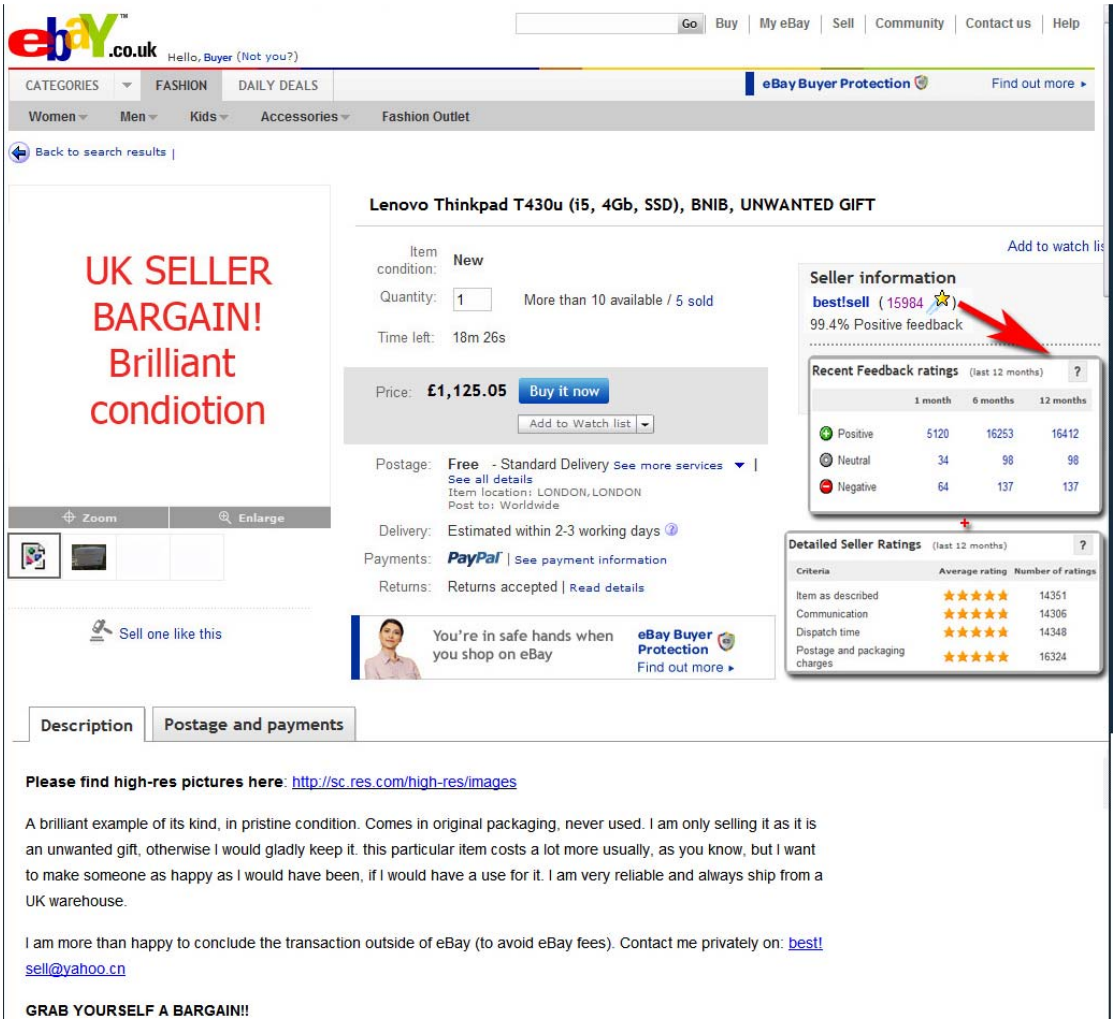


Table 5.2
Fake Auction Items

OfferX	Think about an item you've been thinking of buying lately, but you are slightly worried about its cost. Describe it in 50 characters or less in the field provided (What is it, manufacturer, if you have one in mind, model if applicable, special features if you are looking for any...). You can find a few random examples below.
CostX	How much would you reasonably expect to have to pay for this item (just enter numbers here, we'll ask about currency later)?
Currency	In what currency is the price above?

Table 5.3
Manipulation Check Items

Did the woman on the interview ever laugh with her mouth open?
Yes, in the first half of the interview.
Yes, in the second half of the interview.
Yes, she laughs with her mouth open twice.
No, she does not laugh with her mouth open at all.[a]
Did the woman in the interview touch or scratch her face in the interview?
Yes, she touched her face with her right hand.
Yes, she touched her face with her left hand.
Yes, she touched her face twice, with her left and right hand.[a]
No, she did not touch her face.
Did the woman in the interview ever touch her knees under the table?
Yes, she touches them at least once.[a]
Yes, she touches them at least twice.[a]
No, her hands are above the table throughout the interview.
No, she keeps her hands under the table all the time, but does not seem to be touching her knees.

NOTE

[a] Denotes the correct answer.

Table 5.4
Items on Risk Perception Scale

Seller feedback is lower than 100%.
Seller has a lot of negative individual feedback.
Seller's location is unclear (London, London).
Delivery time is very long, for an item located in UK.
Shipping from UK Warehouse, with a listed Chinese (.cn) email.
Possibility of hidden costs (unexpected customs charges or other taxes).
An unwanted gift, but 2 already sold with more than 10 available.
Text in the main picture is misspelled.
An offer to conclude business outside of eBay.
Despite claiming to be a private seller, this person conducted more than 16,000 transactions on eBay.
The BuyItNow price is much lower than expected.
Only 18 minutes before end of auction.
There is no photograph of the item.

Note. The question asked was: "Please look at the listing again. Did you feel any of the facts listed below to be alarming? How alarming? If you didn't spot the particular fact, simply indicate that you did not find it alarming (at the time). Please answer on a scale of 1 to 4"

Table 5.5
Items on Exeter Student Guild Spear-phishing Email questionnaire

I am going to attend this event.
I will look for this email in my inbox later.
In general, I enjoy the informal wording of emails from student guild.
I think it is good that the student guild does not rely on third parties anymore, when it comes to payments.
I trust the Exeter student guild.
I would purchase my tickets through the link provided in the email.

Note. The text of the question was: "Please use the rating scale below to describe how much do you agree with the following statements. Answer on a scale of 1 to 5 , with 1 being disagree completely and 5 agree completely.

5.4 Results

Out of 180 respondents who answered the questionnaire, 50 were excluded. They either did not complete it or they misunderstood the instructions in the doctored auction section and described an object that would generally not be sold in an auction (e.g. plane tickets). Out of the remaining 130 participants 31 (24%) opted for course credits, 72 (55%) opted for a raffle for an amazon.co.uk voucher and the remaining 27

(21%) did not express a preference.

5.4.1 Demographics

All participants were undergraduate students at the University of Exeter. Most of the respondents (90%) were aged between 18 and 21. 94 (75%) were female and all of them had shopped online in the past three years (with 63% shopping online frequently or very frequently). 80 (62%) participants had used eBay before. There was a difference between the high and low cognitive load groups - 50 (39%) participants were in the low group and 80 (61%) in the high cognitive load group. This trend of unequal groups held true even before exclusions (the distribution of surnames in this sample determined the group sizes, not the difficulty of the task).

5.4.2 Manipulation check

Out of the remaining 130 participants, none got all the answers in the manipulation check right. There was one manipulation check question that none of the participants answered correctly, leading us to assume that the question rather than the answers was problematic, thus we removed this question from further analysis. Of the remaining two manipulation check questions, 96 (74%) of participants in both groups answered at least one of them correctly and 24 (19%) answered both correctly.

5.4.3 Scale construction and validation

5.4.3.1 Materialism

Exploratory factor analysis was run on the materialism items revealing the previously established factor structure (Richins & Dawson, 1992), with good reliability across the board (see table 5.1). Factor loadings are listed in Appendix 5.

5.4.3.2 Action Control Scale (ED baseline)

Reliability analysis was run on the initial scale (with 20 items), yielding low

results (α = .545, α_s = .525, 20 items, n=90). The initial reliability test yielded lower results than in previous instances: α = .61 reported by Bagozzi, Baumgartner, and Yi (1992) and α = .71 reported by Babin and Darden (1995);. After gradual removal of 11 items, the overall reliability was good (α = .733, α_s = .732, 9 items, n=95). Items that were kept in the scale are listed in Table 5.6.

Table 5.6

Remaining Items on Action Control Scale

01	If I had to work at home I would often have problems getting started I would usually start immediately*
03	When I have a lot of important things to take care of I often don't know where to start It is easy for me to make a plan and then stick to it*
05	When I have to do something important that's unpleasant I'd rather do it right away* I avoid doing it until it's absolutely necessary
06	When I really want to finish an extensive assignment in an afternoon it often happens that something distracts me I can really concentrate on the assignment*
07	When I have to complete a difficult assignment I can concentrate on the individual parts of the assignment* I easily lose my concentration on the assignment
09	When it's absolutely necessary that I perform an unpleasant duty I finish it as soon as possible* it takes a while before I start on it
10	When I've planned to do something unfamiliar in the following week it can happen that I change my plans at the last moment I stick with what I've planned*
11	When I know that something has to be done soon I often think about how nice it would be if I were already finished with it I just think about how I can finish it the fastest*
14	When I have a hard time getting started on a difficult problem the problem seems huge to me I think about how I can get through the problem in a fairly pleasant way*

Note. * Action Oriented Response

Instructions: "Please consider each situation and the response options given. Please pick the response alternative that would complete the sentence as it would best describe yourself"

Item numbers correspond to the initial item numbers in the ACS adopted from Babin and Darden (1995).

Next, we ran exploratory factor analysis on all items to confirm the single factor structure. The Kaiser-Meyer-Olkin measure of sampling adequacy was .59, above the recommended value of .5. Bartlett's test of Sphericity was significant ($\chi^2_{190} = 339.93$, $p < .001$). Principal Axis Factoring was used with Oblimin rotation. Results yielded a five factor matrix with all items that were kept after reliability testing (cf. table 5.6) loading in the first factor (see Appendix 5 for the factor matrix). Varimax and Oblimin rotations yielded similar results.

Since exploratory factor analysis yielded one strong factor and reliability testing confirmed it, we kept only the 9 items from Table 5.6 and re-ran the factor analysis to confirm whether the remaining items still measured the one initial factor postulated by Kuhl (Babin & Darden, 1995; Kuhl, 1981). Out of 9 items, 5 were significantly correlated at least .3 with another item and 9 were correlated at least .28 with another item. The Kaiser-Meyer-Olkin measure of sampling adequacy was .72, above the recommended value of .5. Bartlett's test of sphericity was significant ($\chi^2_{36} = 169.05$, $p <0 .001$). Factor analysis using Principal Axis Factoring with Oblimin rotation yielded three factors that were moderately correlated between each other (cf. Appendix 5) leading us to postulate that it is safe to use the action control scale as a single factor scale.

The ED baseline (that was derived from action control scale) score was tested for normality of distribution within each of the cognitive load groups, Shapiro-Wilk test showing non-significant results (high: p = .087, n = 60; low: p = .097, n = 37), allowing us to infer that responses were normally distributed when taking their level of ego-depletion into account.

5.4.2.3 Risk Perception Scale

The experimental data were screened for univariate outliers. The minimum amount of data for factor analysis was satisfied, with a final sample size of 130 with 10 cases per variable in the risk perception scale (Tabachnick & Fidell, 2005, p. 613) .

The factor structure of the 13 risk perception scale items was examined. Several factorability criteria were used. Out of 13 initial items, all were significantly correlated at least .3 with another item and 9 were correlated at least .5 with another item. The Kaiser-Meyer-Olkin measure of sampling adequacy was .81, above the recommended value of .5. Bartlett's test of sphericity was significant ($\chi^2_{78} = 454.86$, $p < 0.001$). All communalities were above .27, with 12 items above .35 and 9 above .5. Overall reliability of the risk perception scale was .856 ($\alpha_s = .853$). The four factors exhibited moderate to good internal reliability, ranging from .633 to .808. Full results are listed in table 5.7, below.

Table 5.7
Reliability Testing of Risk Scale

Factor	Cronbach α	α_s
Risk Scale (Overall)	.856	.853
Feedback	.756	.760
Location	.808	.806
eBay specific	.772	.771
Value	.633	.634

All items were properly recoded prior to analysis. Principal Axis Factoring was used as we assumed that a certain part of the variance would not be explained by the RPS. Direct Oblimin rotation was used, as we assumed that certain factors will share variance. Initial eigenvalues showed that the first factor explained 34% of the variance, the second 10%, the third factor 7% and the fourth factor 5% of the variance. Four factor solution was further examined using both varimax and direct oblimin rotations of

the loading matrix. The solution explained 56% of the variance and was settled on because of its previous theoretical support (Tabachnick & Fidell, 2005, p. 646). There was little difference between the analyses using different rotations, so direct oblimin rotation was used in the final analysis.

Internal consistency for each of the factors was examined using Cronbach's alpha. Initial alphas have already been reported in Table 5.7. All items were kept in the final analysis, as reliability was good and would not have been significantly increased by removing any items. The factor loading matrix for this final solution is presented in Table 5.8.

Table 5.8
Factor Loadings and Communalities Based on a Principal Axis Factoring with Oblimin Rotation for 13 items from Risk Scale (n = 130)

	Location	Feedback	eBay	Value
Seller feedback is lower than 100%		0.863		
Seller has a lot of negative individual feedback		0.747		
Seller's location is unclear (London, London)	.500		-.483	
Delivery time is very long, for an item located in UK	.729			
Shipping from UK Warehouse, with a listed Chinese (.cn) email	.759		-.438	.544
Possibility of hidden costs (unexpected customs charges or other taxes)	.861			.499
Text in the main picture is misspelled			-.514	
An offer to conclude business outside of eBay			-.854	
Despite claiming to be a private seller, this person conducted more than 16,000 transactions on eBay			-.708	
An unwanted gift, but 2 already sold with more than 10 available	.470		-.650	.675
The BuyItNow price is much lower than expected	.453			.856
Only 18 minutes before end of auction				.566
There is no photograph of the item			-.433	.436

Note. Factor loadings < .43 are suppressed

Scales were created for each of the four factors, based on the mean of the items with primary loadings on each factor. Higher scores indicated awareness of a particular risk factor.

Location explained most of the variance (34%) indicating that the perceived seller's location is a strong determinant of risk perception (i.e. people find unclear item location to be the biggest determinant of their shopping decisions). Feedback score explained 10% of the variance, indicating that for individuals with higher scores in this factor, lower seller feedback scores will be a detractor in the shopping process. Items specific to eBay explained 7% of the variance indicating that individuals with high scores in this factor are possibly attuned to some peculiarities of eBay and are possibly familiar with their security guides. Value explained 5% of the variance indicating that while perceived value plays a role in risk assessment, other conditions need to be met in order for an individual to buy. Simply believing something to be an excellent deal is often not enough.

5.4.4 Self-regulation

A one-way univariate ANCOVA, with auction appeal as dependent variable (DV), the two groups with varied cognitive load (ego-depletion) as independent variable (IV) and manipulation check cumulative score as a co-variate showed that there was no reliable effect of self-regulatory fatigue on the appeal of the offer in the doctored auction $F_{1,81} = 0.505$, ns ($p = .480$). A further univariate ANOVA with appeal (DV) and ego-depletion (IV), showed that manipulation check as a co-variate did not influence the results, with $F_{1,106} = 1.285$, ns ($p = .26$), indicating that there was no link between the appeal of a fraudulent offer and the state of self-regulation.

To establish the effectiveness of the self-regulation task, a one-way univariate ANCOVA was run with ego-depletion (IV), ED baseline (DV) and manipulation check

as a co-variate. The main effect $F_{1, 73} = 0.44$, ns ($p = .507$) was non-significant, indicating that there was no apparent influence of self-regulation task on the self-regulation level of participants.

The Pearson bivariate correlation between appeal of the doctored auction and ED baseline was low and non-significant ($r_{97} = .08$, ns) indicating that those high in self-regulatory fatigue did not find the auctioned item more appealing than the control group. Appeal of the doctored auction was high across all participants (mean: 4.78, SE: 2.09) regardless of the level of the self-regulatory fatigue.

A one-way MANCOVA, with trust (DV), purchase (DV), ego-depletion (IV) and manipulation check (co-variate) showed that there was no reliable effect of ego-depletion state on the decision to purchase tickets to a fictitious dance (purchase) with $F_{1,91} = 1.721$, ns ($p = .193$), indicating that the self-regulatory fatigue had no effect on purchasing decisions in this case. The main effect of self-regulatory fatigue on trust in the Exeter University Student Guild was also insignificant with $F_{1, 91} = 0.393$, ns ($p = .532$).

Participant self-reported level of self-regulatory fatigue (i.e. ED baseline score that was derived from action control scale) that was measured before the self-regulation task also showed no significant effect on either purchase, with $F_{9,76} = 0.632$, ns ($p = .766$) or trust, with $F_{9,76} = 1.949$, ns ($p = .057$). This and other results in this section demonstrated that regardless of effectiveness of our experimental manipulation, the level of self-regulatory fatigue had no influence on any of our dependent variables.

5.4.5 Perception of risk, materialism, self-regulation and appeal of the doctored auction

Respondents found the doctored auction more appealing than the other (non-doctored) auction offers (means: offer1 = 2.53; offer2 = 1.47; offer3 = 1.82; doctored

auction appeal = 4.78) indicating that we made the doctored auction more appealing than others. By corollary appeal of the doctored auction was not normally distributed (it was negatively skewed). On a scale of 1 to 7 where 1 was unappealing and 7 was very appealing, 73% of respondents scored a 4 or more and 28% scored it as (maximum) 7. 13% of participants have scored the appeal of the doctored auction as (the minimum) 1. To test for the difference between the auctions a non-parametric related samples (Friedman) test was performed that showed that the four auctions differed. A Wilcoxon test showed that the appeal of the doctored auction was significantly ($p < .001$) greater than the appeal of the other three randomly picked auctions presented in the present experiment.

A bi-variate Pearson correlation between appeal and risk perception scale showed a moderate and significant negative correlation between risk factors and appeal of an auctioned item, with $r_{106} = -.287$, $p = .003$, indicating that consumer preference is moderately influenced by perception of risk, that is to say that the more risky they perceive the transaction to be, the less appealing the auctioned item becomes.

In order to run multiple linear regression, the DV has to be normally distributed (Tabachnick & Fidell, 2005, p. 79). Appeal of the doctored auction was moderately negatively skewed, so according to Tabachnick and Fidell (2005, pp. 86 - 89) a square root transformation is appropriate. The formula used to compute the variable was: 8 – sqrt (8-appeal). A series of multiple regressions were run with the transformed and untransformed appeal as the DV. Results of the multiple regression on the appeal (untransformed) can be found in Appendix 5. There were no qualitative differences between the two analyses, that is to say that both analyses identified the same variables as significant predictors.

Multiple linear regression was employed to determine which factors (measured

by materialism, risk perception scale and action control scale) influence scam compliance in an auction setting and to what extent. In addition to the above factors, demographic factors (age, IT experience, gender, online shopping experience and familiarity with eBay) were entered into the equation, to measure their influence on transformed appeal of fraudulent offer. No clear outliers were present, so none were removed from the analysis. Homoscedascity was examined via several scatterplots and these indicated an adequate consistency of spread through the distributions.

The correlations amongst the factors were examined. Male gender was moderately positively correlated to IT experience ($r_{92} = .33$, $p = .001$). Acquisition centrality was highly positively correlated to frequency of online shopping ($r_{130} = .40$, $p < .001$), to happiness ($r_{92} = .44$, $p < .001$) and to success ($r_{92} = .39$, $p < .001$). Happiness was highly positively correlated to success ($r_{92} = .48$, $p < .001$). The correlations between the factors used in the regression and appeal (Transformed) were small to moderate and all but two were statistically insignificant (feedback: $r_{92} = -.275$, $p = .004$; eBay specific items: $r_{92} = -.301$, $p = .002$).

A hierarchical method was used for the entry of the predictor variables. The independent variables were entered in four blocks (demographics, materialism, risk perception scale, action control scale). Gradually, least significant predictors were removed from subsequent regressions, until only significant ones remained. Beta weights and regression coefficients for the sequence of regressions are reported in Table 5.9, while model statistics are reported in Table 5.10.

The final regression analysis produced an R of .343, $R^2 = .117$ and an adjusted R^2 of .100 ($F_{2, 103} = 6.850$, $p = .002$) with two significant predictors of scam compliance – eBay specific factors and feedback. The stronger predictor of the two was eBay specific ($\beta = -.25$ $p = .001$), closely followed by feedback ($\beta = -.20$, $p = .004$).

Table 5.9

Regression Coefficients and Beta Weights of Variables Included in the Hierarchical Regression Analysis to Predict Appeal (transformed) of a Fraudulent Offer (n = 130)

		b	SE b	β	t
Step 1	Age	-.02	.12	-.02	-0.15
	Gender	.01	.16	.01	0.06
	IT Knowledge	-.12	.11	-.12	-1.06
	Online shopping experience	-.10	.09	-.12	-1.03
	eBay familiarity	.05	.13	.05	0.43
	Acquisition Centrality (Materialism)	.15	.10	.19	1.49
	Happiness (Materialism)	-.13	.10	-.16	-1.29
	Success (Materialism)	.12	.08	.18	1.46
	Action orientation Scale	.05	.03	.19	1.68*
	Feedback (Risk Perception)	-.15	.07	-.21	-1.94*
	Location (Risk Perception)	-.06	.09	-.08	-0.65
	eBay Specific (Risk Perception)	-.21	.08	-.31	-2.44**
	Value (Risk Perception)	.10	.11	.13	0.91
Step 2	IT Knowledge	-.08	.11	-.08	-0.76
	Online shopping experience	-.07	.09	-.09	-0.77
	Acquisition Centrality (Materialism)	.15	.10	.18	1.48
	Happiness (Materialism)	-.10	.10	-.12	-1.01
	Success (Materialism)	.08	.08	.12	1.00
	Action orientation Scale	.04	.03	.18	1.68*
	Feedback (Risk Perception)	-.11	.07	-.16	-1.56
	eBay Specific (Risk Perception)	-.23	.08	-.33	-2.74*
	Value (Risk Perception)	.02	.10	.02	0.18
Step 3	Acquisition Centrality (Materialism)	.12	.08	.15	1.53
	Action orientation Scale	.05	.03	.20	2.00**
	Feedback (Risk Perception)	-.14	.07	-.20	-2.02**
	eBay Specific (Risk Perception)	-.21	.08	-.31	-2.65**
	Value (Risk Perception)	.01	.10	.01	0.11
Step 4	Feedback (Risk Perception)	-.14	.07	-.20	-2.08**
	eBay Specific (Risk Perception)	-.17	.06	-.25	-2.68**

Note: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 5.10

Model Statistics for the Hierarchical Regression Analysis to Predict Appeal (Transformed) of a Fraudulent Offer (n = 130)

	Variables entered	R^2	R_{adj}^2	F	ΔF
Step 1	Age, Gender, IT Knowledge, Online shopping experience, eBay familiarity, Acquisition Centrality (Materialism), Happiness (Materialism), Success (Materialism), Action orientation Scale, Feedback (Risk Perception), Location (Risk Perception), eBay Specific (Risk Perception), Price (Risk Perception)	.25	.14	3.516**	1.266
Step 2	IT Knowledge, Online shopping experience, Acquisition Centrality (Materialism), Happiness (Materialism), Success (Materialism), Action orientation Scale, Feedback (Risk Perception), eBay Specific (Risk Perception), Price (Risk Perception)	.21	.13	4.737**	1.161
Step 3	Acquisition Centrality (Materialism), Action orientation Scale, Feedback (Risk Perception), eBay Specific (Risk Perception), Price (Risk Perception)	.19	.14	5.434**	1.755
Step 4	Feedback (Risk Perception), eBay Specific (Risk Perception)	.12	.10	6.850**	6.850**

Note: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.001$

Further, stepwise, multiple regression analysis was conducted with individual items from the two factors in an effort to pinpoint which eBay specific items influenced scam compliance. It produced an R of .348 and R^2 of .143 ($R^2_{adj} = .123$, $F_{1, 89} = 5.951$, $p = .017$) with "Seller feedback is lower than 100%"($\beta = -.243$, $p < .017$) and "Text in the main picture is misspelled" ($\beta = -.251$, $p = .014$) as the only two significant predictors of the appeal of the doctored auction.

There was a strong positive correlation between the appeal of the doctored auction and the expressed intent to buy the item on offer (buy; i.e. "If you had the funds, how likely would you be to accept the above offer right now?"), with $r_{108} = .692$, $p < .001$, indicating that individuals are more likely to buy (if they had the funds) an object they find appealing.

Multiple linear regression was employed to isolate the factors (measured by the risk perception scale) that influence a decision to buy an object offered in a fraudulent auction (with funds not being an issue; i.e. buy). There was a small difference in the strength of predictors, but no difference in the predictors themselves from the previous analysis – final regression analysis yielded R of .497, R^2 of .247 ($R^2_{adj} = .231$, $F_{1, 89} = 10.626$, $p = .002$), with the "Seller feedback is lower than 100%" ($\beta = -.345$, $p < .001$) and "Text in the main picture is misspelled" ($\beta = -.304$, $p = .002$) as the strongest predictors in order listed.

5.4.6 Materialism, ego-depletion, trust and phishing

Out of 130 participants, 17 (13%) indicated that they would attend the fictional Spring Ball, with 21 (16%) undecided. 37 (29%) said that they would look for the email later, with 16 (12%) undecided. 71 (55%) participants trust the Exeter Student Guild, with 17 (13%) undecided. Finally, 50 (39%) indicated that they would be willing to buy tickets through the link provided in the fraudulent email, with 23 (18%) on the fence.

The intent to purchase tickets to a non-existing Spring Ball through a phishing email did not significantly correlate with the full materialism scale or the action control scale. The only moderate correlation, significant at $p < .1$ was between the intent to purchase tickets and acquisition centrality ($r_{86} = .197$, $p = .069$).

There were no significant correlations between trust in the Exeter Student Guild

and materialism or self-regulatory fatigue.

5.5 Discussion

Results of our study show (to a degree) that level of ego-depletion (in this experiment) does not play an important role in scam compliance. Note that our manipulation check was only partially successful (cf. Section 5.4.2, p. 167). While the cognitive load task made a small, statistically insignificant impact on the level of ego-depletion as measured by the action control scale (2.3% difference between groups), neither manipulated (by the cognitive load task) nor self-reported (by the action control scale) ego-depletion was an important factor either in the level of appeal of a fraudulent offer, the decision to make a purchase or the likelihood of falling for a phishing email. It is possible that the self-regulation task was not appropriate for this experiment or particular population, since it demonstrably has had no effect on the final results. It should be noted that we collected the self-reported scores on the action control scale (Kuhl, 1981), after the respondents engaged in the cognitive load task. This was partially done to measure the effectiveness of the cognitive load task. That is, if the action control scale scores showed higher level of self-regulatory fatigue in the high load condition that would show that the chosen task was effective. However, the differences in the level of self-regulatory fatigue across groups were insignificant.

The responses in the action control scale were normally distributed (indicating that we have a reasonable spread of ego-depletion states). Our analysis showed that the action control scale scores had no statistically significant correlation with scam compliance although there was a clear trend of fatigued individuals finding the fake auction more appealing. One could argue that the first step in falling for a fraudulent offer (i.e. increasing scam compliance) is finding that offer appealing. Previous research has shown that *fatigued* individuals find it harder to resist tempting offers (Fischbach &

Converse, 2010), are likely to shop impulsively (Faber & Vohs, 2010) and can be governed more by affect than rational thought (Carver & Scheier, 2010; Loewenstein, 1996). In this sense the results of the present study show a clear influence of ego-depletion on scam compliance, leaving us with the indication that the self-regulation task that was chosen is not the perfect candidate in the present context.

The self-regulation (video) task used in our experiment has been used before in different contexts (e.g. emotional control; Bauer & Baumeister, 2010; impulsivity; DeWall, Baumeister, Stillman, & Gailliot, 2007; willpower in conjuction with blood-sugar levels; Gailliot et al., 2007; manipulation of cognitive processing abilities; Schmeichel et al., 2003). We should point out, however, that two experimental components are lacking or missing in many of these cases. Researchers seldom did a comprehensive manipulation check (e.g. asking about the difficulty of following the instructions, but not checking whether they were followed; DeWall et al., 2007; no manipulation check; Gailliot et al., 2007; asking about the perceived difficulty of the task, but not checking whether it was performed effectively; Schmeichel et al., 2003); and researchers did not usually measure initial state of self-regulation (this was not done in any of the articles mentioned above). The omission of a robust manipulation check puts the effectiveness of this manipulation task under question. It would obviously be desirable to test the efficacy of this often-recommended method of inducing self-regulatory fatigue more fully. However, the purpose of the present Thesis is to investigate scam compliance, and given that the results from action control scale shared no correlation with our measures of compliance, we feel entitled to merely note the problem with the Baumeister – Tice video task while drawing the main conclusion that ego-depletion is not a major factor in scam compliance.

One possible reason for the lack of an ego-depletion effect on scam compliance

in this case would be that the measured task (i.e. fake auction) did not require much cognitive processing immediately and thus self-regulatory fatigue did not come into play (i.e. most of the participants knew that they were dealing with fraud and did not really have to think about their decisions). Previous research indicates that simplistic tasks diminish the effect of self-regulatory fatigue since cognitive processing is mostly used only for complex tasks (DeWall, Baumeister, & Masicampo, 2008). In essence, for this claim to hold water in our case, the offer should appear unappealing to most of our respondents. This was not the case – most respondents found the fraudulent offer more appealing, than non-manipulated offers, leading us to infer that while self-regulatory fatigue had no effect on scam compliance, this does not mean that individuals who are not ego-depleted are protected from scams.

Self-regulatory fatigue also had no effect on scam compliance in a phishing context, indicating that ego-depleted individuals are not more likely to follow a fraudulent link in a phishing email. Contrary to previous research (which shows that fatigued individuals are more likely to indulge themselves; e.g. Baumeister & Heatherton, 1996; Fichman, Koestner, Zuroff, & Gordon, 1999; Shmueli & Prochaska, 2009) ego-depleted individuals were also not more likely to attend the non-existent Spring Ball.

Materialism overall had no effect on scam compliance in the context of auction fraud or phishing. We found no evidence to support our prediction that a previously desired object, combined with a heavily discounted price would allay any suspicions of fraudulent activity. This prediction was based on the claim that material possessions are of pivotal importance to a materialistic individual (Belk, 1988; Goldsmith & Clark, 2012). There was a comparatively small, statistically insignificant trend for individuals with high scores in acquisition centrality to be more likely to purchase tickets to a non-

existent Spring Ball signifying that individuals who place material possessions in the centre of their identity are possibly more likely to fall for a phishing scam (they would be interested in getting a good deal on the tickets, while ignoring the clues that phishing was taking place), but the experimental support for this claim was weak. In the context of scam compliance, materialism does not appear to play a significant role, which opens up interesting new venues for research. For example, though not the most prevalent, the highest grossing Internet scams are the Nigerian 419 schemes (National Consumer League's Fraud Center, 2009), where the incentive offered is financial (i.e. money or gold) instead of material goods. This might be an indicator that at least some of the scammers also realize that an offer of a financial windfall is more attractive than an offer of goods, regardless of the appeal of those goods.

We found that appeal of a certain item is influenced by risk perception to some degree – the best single predictor of lessening appeal of a fraudulent auction scam was feedback score, closely followed by grammar check (i.e. “The text in the picture was misspelled”). None of the other specific risk items had a significant impact on appeal of an offer. As reputation systems have been shown to strongly impact consumer decisions in e-commerce (Norris, Ernan, & Ram, 2004; Resnick et al., 2000; Utz et al., 2009), it is unsurprising that they also impact consumer decisions when it comes to fraudulent auctions. In practical terms, a scammer should take care of their feedback score if they wish to effectively scam individuals.

A quicker and less taxing solution than establishing an online reputation for scammers would be identity theft (i.e. misrepresenting themselves as a well established seller and adopting their online reputation, for example through a phishing scam; Davinson & Sillence, 2010; Steyn, Kruger, & Drevin, 2007). This technique is prevalent in eBay fraud (Egelman et al., 2008), hinting at the fact that scammers are already

taking the necessity of maintaining high feedback scores into account when committing auction fraud. The two predictors mentioned above (feedback score and proper spelling) explain a fraction of the overall variance. This hints at existence of other predictors that were not taken into account in the present analysis.

When we compare the appeal of an auctioned item with the intention to buy it, the analysis yields the same two significant predictors mentioned above, but the amount of variance explained by them is different (i.e. the two predictors explained almost twice the amount of variance in the decision to buy, than in the appeal of the item), leading us to infer that appeal of an item draws more from visceral influences (Langenderfer & Shimp, 2001; Loewenstein, 1996), while the decision to buy is based more on rational choice (i.e. on item characteristics that are objectively measurable). Regardless of the dependent variable (i.e. the appeal of the doctored auction; or the intent to buy the item on offer), individuals used quick shortcuts to judge whether an offer presented to them was fraudulent - out of thirteen risk items, all hinting at the fact that the offer was fraudulent, all but two were ignored. This showed that heuristic processing was taking place - if the sellers' reputation was less than perfect or the text in the offer was misspelled, the appeal was lessened and individuals became less scam compliant regardless of any other factors present. This allows us to infer that simple heuristics were used instead of a careful consideration of an offer. Furthermore, heuristic processing might, in this case, lead to a higher scam compliance, as the absence of the two significant predictors could lure the consumers into a false sense of security. Further research is required to test for this hypothesis – for example by constructing nearly identical fake auction offers that manipulate one or both of the significant predictors from this experiment and comparing respondents' scam compliance between them.

Previous research into the appeal of items/goods/services without visual representation has shown that a picture of the goods on offer had no effect on the final price achieved at auction (Ottaway, Bruneau, & Evans, 2003). However, in a similar situation where the visual representation of the "goods" is of pivotal importance – online dating (Couch & Liamputtong, 2008; Hancock & Toma, 2009) customers are approximately seven times more likely to contact an individual who added a photograph to their profile (Humphreys, 2006) and in overwhelming majority (90% of the sample in the study by Whitty, 2008) decide on a potential partner on the basis of their looks. This finding is in line with more recent research which shows that posting a picture in an online auction does affect the price achieved in a situation where the buyers are uncertain about the quality of an item (Hou, Kuzma, & Kuzma, 2009). The nature of our experiment precluded us from showing a photograph of the auctioned item (we could not be sure of presenting the photograph of an item that the participant had in mind), raising concerns that the appeal of the item on offer will be lessened because we had not included a visual representation of the item. We controlled for that by adding two items in the risk scale ("There is no photograph of the item" and "Text in the main picture is misspelled"), and by stating in the description of the fake auction that the pictures were located off-site ("…Please find high-res pictures here : http://sc.res.com/high-res/images...". The link, however, being dead). We additionally stated in the accompanying text to the risk scale that the participants should assume that the link led to an accurate depiction of the auctioned item ("…Please assume that the (pictures) link above would lead you to photographs of exactly the item in the description, in perfect condition. …"). Overall results have shown that the appeal of the item was not impacted and that the absence of the photograph was not a significant predictor in the present regression. Nevertheless, further experiments would benefit from the inclusion of a photograph in the manipulated auction. This might be achieved by giving participants a

restricted, but substantial, pool of items to nominate as something they would like to buy.

The present analysis confirms the existence of specific factors that impact risk perception in a context that is directly relevant to scam compliance. Uncovering and presenting these factors presents us with a dilemma – on one hand we help the consumers avoid being scammed, but on the other we offer a boon to the scammers who then realize what optimizations their scams need in order to become more irresistible. The answer to this dilemma can be found in IT security studies, specifically in cryptography, where research has repeatedly shown that *security through obscurity,* i.e. making something secure by keeping the mechanism a secret; simply does not work. This was first postulated by Kerckhoffs (1883) in his second principle stating that [a military cypher] must not be required to be hidden and should not cause any inconvenience if it falls into the wrong hands. We believe, as do many other researchers (e.g. Anderson, 1994, p. 235; Anderson, 1996, p. 86; Lemos, 2011; Schneier, 2003, 2007; Swire, 2004) that the drawbacks of a system that open it to abuse are best overcome by open public debate and scrutiny.

Chapter 6: Conclusion

6.1 Summary

The present Thesis is concerned with Internet fraud and decision making processes that lead to increased scam compliance. In simpler terms, we are concerned with victims of scams and why they decide to fall for them in specific stages. Throughout the present Thesis self-control emerged as a strong predictor of scam compliance, regardless of the scam stage in which the individual finds itself. In the plausibility stage (i.e. believing that a particular scam will yield utility to the mark), the weakened ability for self-control can prevent an individual from correctly assessing the risks involved. This idea has received previous empirical support, for example, Ariely (2008, p. 111) postulates that self-control is weakened and leads to irrational decisions when individuals get emotionally invested in an offer. Furthermore, specific situations that individuals find themselves in can elicit a strong emotional response that can skew individuals' perception of plausibility (Lerner, Small, & Loewenstein, 2004; Summers & Duxbury, 2012). For example, somebody who is broke will be more likely to find a fraudulent offer plausible, simply because they need it to be. In the response stage of a scam, individuals with weakened self-control are more likely to act impulsively, without forethought of possible consequences of an action. This has been empirically shown in Chapter 4 of the present Thesis, where low premeditation proved to be a predictor of scam compliance. Furthermore, low self-control as a factor has been shown to be a significant predictor of scam compliance in empirical analysis both in Chapter 3 and 4 of the present Thesis. The final stage of scam compliance (i.e. losing utility to the scammer) has also been shown to be influenced by weakened self-control (cf. Chapter 3 of the present Thesis) in conjunction with compliance with previous stages of fraud, lending further support to the hypothesis that scam-compliance is a staged process.

In addition to self-control, we investigated which other psychological factors inform an individual's willingness to be scammed. In order for assessment of these factors and their impact on compliance to be viable, we sided with the notion that crime victims often facilitate the committal of a crime (Titus, 1999; Wolfgang, 1957). We are emphatically not engaging in victim blaming. That is, we are not saying that becoming a victim is the victim's own fault. We do, however, accept that the victim plays an active part in the process; either by living a lifestyle that exposes them to high risk situations (Godwin, 1998; Schneider, 2001a) or by acting in a way that allows the crime to commence or continue (Curtis, 1974; Felson & Messner, 1998). This is one of the reasons we decided to name the phenomena of becoming a victim of fraud scam compliance. All types of fraud require an element of compliance that is not necessarily present in other crimes. In the case of Internet fraud, the active role would correspond to answering an email or buying worthless stock, for example. Indeed, it is probable that the victim is entering into the fraudulent transaction unaware of its real purpose and thus while the prospective victims do enable (or facilitate) the scam to progress, it is hardly their fault that they are being scammed. Furthermore, psychological traits or states of an individual would have no impact on victimization only when it is accidental (e.g. somebody being wounded in a drive-by shooting while chatting with a friend on a street corner; or being randomly taken hostage in a local bank when walking in in the middle of a heist). Our investigation would be pointless if the prospective victim played only a passive part in the observed crime.

There is a reason why we decided to research scam compliance in Internet scams specifically. Internet usage has been rising globally over the past few decades (e.g. Buchanan & Smith, 1999a; Joinson, 1999) and the impact of computer mediated communication on the way we live and interact cannot be denied. With widespread Internet adoption, a need to revisit and to some extent redefine established concepts,

such as privacy (Joinson et al., 2010; Paine Schofield & Joinson, 2008), self-presentation (Toma & Hancock, 2010; Whitty, 2008); deception (Donath, 1999; Hancock, 2007) and crime (Dyrud, 2005; Pratt, Holtfreter, & Reisig, 2010) has arisen. The ability to effortlessly connect with a large pool of strangers has proven to be a boon both to scammers (Langenderfer & Shimp, 2001) and to researchers looking to access larger data samples and move away from the over-tested student population (e.g. Joinson, 1999; Krantz, Ballard, & Scher, 1997). All studies in the present thesis have been carried over the Internet and in some cases (Chapters 3 and 4) the data were also sampled from the general Internet population. In all cases we took into account the

specifics of conducting research over the Internet (e.g. Buchanan & Smith, 1999b; Reips, 2002b; Smyth et al., 2007).

In Chapter 2 we empirically tested whether the claim that there are no large discrepancies in the responses to psychological questionnaires across general and Internet populations (e.g. Buchanan & Smith, 1999b; Chuah et al., 2006; Joinson, 1999) also holds when it comes to a classic behavioural economics study. This claim held in our case, although we were unsuccessful in creating a reliable risk preferences scale that could then be applied to assess scam compliance. Nevertheless, our investigation in Chapter 2 confirmed that we can compare the results of existing research to our own in order to base our investigation on previous empirical findings. Additionally, previous research has shown that risk preferences play a significant role in offending (e.g. De Haan & Vos, 2003; Miller & Lynam, 2001; Samuels et al., 2004) and becoming a victim (e.g. Danner, 2000; Duffield & Grabosky, 2001; Shichor et al., 1994). This, in combination with our findings from Chapter 2 prompted us to construct and validate a new scale of susceptibility to persuasion in Chapter 3 that included risk preferences as one of the subscales; and used it to measure scam compliance.

In Chapter 3, we investigated which types of persuasive techniques might have a bearing on scam compliance. *A priori* techniques were derived from consumer and social-psychological research, following the notion that scams are in many ways similar to marketing offers (Fischer et al., 2008b): they contain the four P's of the marketing mix (McCarthy, 1960) and they use similar mechanisms to those used in effective advertising (cf. Chapter 3, p. 70). Scammers are excellent salespeople out of necessity and they employ a number of techniques that overcome the mark's reluctance to engage in a transaction where they will lose out in the end in one way or another. Indeed, the question is not whether the prospective victim perceives a certain transaction as risky –

they often know it is risky and in many cases they suspect that they are dealing with a scam (cf. Section 3.5.1, p. 86; Section 4.4.1, p. 129). They still push on with the transaction, however. It follows from these findings that scammers either employ mechanisms that decrease or subvert the mark's ability to assess risk correctly; or have to present their offers in a way that make them so enticing that the perceived risk does not matter. Thus, we were concerned with some of the factors that had an impact on the prospective victims' ability to act rationally under conditions of risk in our empirical investigation in Chapter 3. The reliable factors informing compliance were: social influence, compliance with authority, need for consistency; and lack of self-control. Conversely, in Chapter 5, we presented respondents with an offer that was so enticing that almost three quarters of them found it appealing regardless of clear indicators that it was fraudulent. It is beyond the scope of this Thesis to speculate whether the scammers are familiar with psychological underpinnings of the mechanisms they employ, but is clear that they do employ them (e.g. Cukier et al., 2007; Rusch, 1999).

Besides the content of scams and social psychological factors that have been shown to impact scam compliance, there are a number of personality traits that inform it. Stemming from the assumption of victim facilitation, personality traits of a prospective victim have a bearing on the extent of participation in a scam, at least in the response stage Most previous criminological research has focused on personality traits of offenders (cf. Section 1.4.6, p. 35), but there is evidence that offenders and their victims share common personality traits (i.e. level of self-control; Gottfredson, 1981) and lifestyle choices (Lauritsen et al., 1991). Our investigation in Chapter 4 into personality traits of scam victims to some extent confirmed this hypothesis and extended it. In the study in Chapter 4 the extent of compliance was found to be influenced by the following personality traits: openness, extraversion, self-control, premeditation, urgency and sensation seeking. An investigation conducted by McCrae

and Costa (1987) showed that offenders scored statistically significantly higher than the general population in some facets of neuroticism and extraversion, while they scored lower than the general population in specific facets of agreeableness and conscientiousness. Herrero and Colom (2008) showed that offenders scored higher than the general population in sensation seeking. Agnew et al. (2002) showed that acting under negative affect (comparable to urgency in our study) was a significant predictor of deviant behaviour. In the study in Chapter 4 lack of self-control has again proven to

be a strong predictor of scam compliance, a finding that was already demonstrated in Chapter 3.

6.2 Lack of self-control as the strongest predictor of scam compliance

The strongest predictor of scam compliance was impulsive behaviour – either through lack of self-control as a personality trait (in Studies 1 and 2 in Chapter 3, p. 93 and p. 106, respectively); or as a more transient state (cf. Chapter 5, Table 5.9, p. 174, where action control scale was a weak predictor in increasing the appeal of a fraudulent auction). Impulsive behaviour also manifested through lack of premeditation, sensation seeking and (negative) urgency (in Chapter 4, p.134). These findings are in line with previous self-regulation research, where Carver and Scheier (2010) showed that affective states influence the level of self-regulation and Faber and Vohs (2010) showed that ego-depleted individuals are more likely to shop impulsively. Furthermore, criminological research has shown the lack of self-control to be a significant predictor in delinquent behaviour and fraud offending in general (e.g. Holtfreter et al., 2010a; Holtfreter et al., 2008). A scam that would lower prospective victim's self-control would be an effective one.

6.3 Constructing an effective scam

A good way to study scam compliance would be to create a fictitious scam, with its construction based on our findings. This fictitious scam would be a worst case scenario as the combination of the effects contained in it would be hard to resist according to our investigation. Such a construct would allow us to give our recommendations (cf. Section 6.4) on lowering scam compliance in a worst case scenario, which occurs rarely, but it does occur. The closest existing scams that take into the account many of our postulates are the Nigerian letters (for a definition cf.

Section 1.3, p. 20 or Section 3.2, p. 70). An effective scam, according to our research is constructed in the following way:

a) The constructed, fictitious scam (i.e. The Scam) would have to be presented over the Internet, as that would give scammers the ability to access as many marks as possible. This would compensate for low compliance rates that were also recorded in our empirical investigations (cf. 137) and in previous research (Dyrud, 2005).

b) The type of The Scam should be a variation of an advance fee fraud (AFF), which has been shown to cause the most damage and to generate the highest response rates at present, both in our research and in victimization surveys (e.g. Anderson, 2004; Huff et al., 2010; National Consumer League's Fraud Center, 2009). Criminals have been engaging in advance fee fraud for centuries. A variation of AFF called the Spanish prisoner trick first appeared in the early 16th century (Zuckoff, 2005) and follows roughly the same pattern as the advance fee schemes today. Therefore, AFF is here to stay, and in order for it to be effective, a certain level of misdirection is needed (i.e. the prospective victim has to believe they will receive something of value in exchange for their funds; Ross & Smith, 2011). The internet as a delivery vehicle enables a greater level of obfuscation than other traditional methods, thus advance fee fraud is more effective in that setting.

c) The Scam should be presented either as a low or no risk proposition. The empirical investigation in Chapter 2 has shown that risk preferences of individuals do not change across virtual or concrete domains, thus The Scam should be presented as a definite gain with no risk involved. Even if there is

an advance fee to be paid, this fee would have to appear to be repaid by an order of magnitude bigger pay-out.

d) The Scam would have to appear to be coming from an authority figure (i.e. bank manager, doctor, lawyer, journal editor…) or a trusted source (a friend, a distant relative, a 'soul-mate', high ranking University officials, eBay, PayPal, Google, Apple…). Scammers already use this persuasive technique in various settings (cf. Chapter 3, p. 72).

e) The Scam should employ social influence techniques to increase compliance. These techniques motivate increase in compliance through informational or normative goals (Cialdini & Goldstein, 2004; Deutsch & Gerard, 1955) and The Scam should employ both. It should present the mark with a 'previously unavailable information' that would force any reasonable individual to comply with scammers' requests – for example insider information on high yield stock options (Stevenson, 2000). The information included in a fraudulent message should also convince the prospective victim that they are corresponding with a like-minded individual who will not swindle them (Correia, Vala, & Aguiar, 2007) and who shares the same values with them and is thus good relationship material (Whitty & Buchanan, 2012b). Normative influence techniques (e.g. Cialdini & Goldstein, 2004) employed in existing scams include appeals to morality (e.g. a destitute widow looking to salvage her life; or a terminal cancer patient hoping to make restitution by giving away large sums of money; or a natural disaster survivor who looks for a good Samaritan), appeals to religious beliefs (e.g. 419 Nigerian scams with a subject line 'God Bless as You Assist'; Dyrud, 2005). On the normative side, The Scam should contain both references to existing events,

thus establishing a social context; and appeals to global normative values like helping the unfortunate or a chance to right a wrong.

f) The Scam should give the scammer a chance to build a long-term relationship with the prospective victim. Some scams develop slowly over a span of several years, gradually building a rapport (Cukier et al., 2007). Once the scammer is perceived as a friend, the need to honour ones' commitments to them is increased (cf. Section 3.11.2, p. 112).

g) The Scam should appeal to the prospective victims' sense of adventure and present them with a chance to imagine the possibilities that would open for them in the future if they comply with it, including themes of being provided for, of having a chance to travel, to create a family, experience new things… Existing scam types have been successful to some extent in including this postulate (Cukier et al., 2007; Langenderfer & Shimp, 2001). At times they appeal directly to greed, sometimes they employ other incentives, like a chance to be entrepreneurial, or travel to exotic locations.

Targeting a person who has a low ability to exert self-control would be effective, if the goal was increased compliance, regardless of whether we construe self-control to be a trait or a state. Scammers have no way of knowing what the level of self-control of a specific individual is, but they solve this by targeting many prospective victims at once. In addition they try to either catch individuals in a state of self-regulatory fatigue, or try to induce it themselves. The nature of the delivery of fraudulent content (e.g. email correspondence) could be construed as one way of inducing this state. Sifting through our inboxes is a clear example of taking quick and often mindless decisions about received correspondence in a boring situation where we would rather be doing something else. We have, to date, been unable to uncover any research on ego-depleting

properties of reading and prioritising email but that would be an interesting proposition for further research.

6.4 Theoretical implications of our findings

Previous research into scam compliance (Fischer et al., 2008b; Shadel & Pak, 2007) has, like ours, focused on well-known findings in the field of social psychology, specifically in the findings concerned with the social psychology of persuasion and, in some cases, applied them to scams. In particular, our findings reflect those stemming from research conducted by Cialdini (2001). The present Thesis, however, adds practical support to those findings when it comes to the psychology of scams. While it was theoretically feasible that all the factors taken into account in the present Thesis would inform individual behaviour when it comes to the Internet fraud, we have, to a certain extent, also empirically shown the practical feasibility of some of those theories we have taken into account. While some persuasive techniques have been used in the Internet scams in the past (e.g. illusions of control, liking and similarity, and the uniqueness of the scam offer), their influence on scam compliance received no empirical support in our studies. This nuance has not been fully explored yet in the social psychological theory of persuasion. If future research of these departures from theory would hold in other areas where persuasive techniques are used in practice, for example in legitimate marketing or in politics, that would suggest a need of further and deeper examination of techniques used in social psychology of persuasion. Specifically, we should revisit the well-established techniques (e.g. by Cialdini & Goldstein, 2004; Goldstein, Martin, & Cialdini, 2008; Petty & Cacioppo, 1986) and not stop at the point where we demonstrate that they work, but examine how well and in which settings they work. In particular, we should analyse whether the context or sociological effects make the specific factors particularly relevant when analysing scam compliance. A deeper

theoretical understanding of social psychology of persuasion would also help us in targeted education designed to reduce vulnerability.

The ability to exert self-control has been established in the past as a strong predictor of a diverse set of human behaviours (e.g. Section 1.4.4 of the present Thesis; Baron, 2003; DeWall et al., 2007; Hoch & Loewenstein, 1991; Kuijer et al., 2008). From the infancy of psychology as a science (cf. James, 1890a, 1890b) to more recent research (Vohs & Baumeister, 2010) this area has received much attention from psychologists. This attention was not constant through history, indeed, the concept of willpower as a motivator or detractor of human behaviour has after a relative lull, again become a focus of attention, most notably through research conducted by Baumeister and colleagues (Baumeister et al., 1998b; Baumeister & Heatherton, 1996; Vohs & Baumeister, 2010) in psychology and Ariely (2008) in behavioural economics for example. While our finding that the ability to exert self-control strongly influences scam compliance and its three stages is not revolutionary, it is still a significant finding that adds to our knowledge of consumer behaviour in general. We believe that, much like in the case of psychology of persuasion, the phenomena of self-control should be studied not only in the sense of whether it influences a particular human behaviour, but also in a sense of how strongly a particular behaviour is influenced by the state of self-regulatory fatigue at that moment. If self-control is like a muscle (Baumeister, Vohs, & Tice, 2007; Muraven & Baumeister, 2000), then it would be reasonable to assume that, like a muscle, it would not just work or not, but would allow an individual to sometimes accomplish harder and sometimes easier tasks, depending on the level of previous exertion. Carrying this metaphor further we could postulate the need for creation of a *mind fitness gym*, where participants would be able to train their self-control much like their other muscles in order to be able to reduce their window of vulnerability. Note that there is some empirical support for the notion that repeatedly exercising one's ability for

self-control can lead to an increase of its overall level (Baumeister, Gailliot, DeWall, & Oaten, 2006; Baumeister et al., 2007).

6.5 Practical implications of our findings

We are constantly exposed to Internet fraud through our mailboxes or fraudulent web sites. U.S. Secret service created a special task force in 2005, called *4-1-9 operation*, concerned with Nigerian advance fee fraud letters (Dyrud, 2005). The task force asked the general public to report any suspicious emails. They received 300-500 emails and 100 phone calls from prospective victims daily. The losses to scams (of all kinds) are estimated to be in billions of pounds yearly according to the U.K. Office of Fair Trading (Fischer et al., 2008b). Every year, a small number of individuals are beaten, tortured and sometimes killed as a direct result of complying with scams (Dyrud, 2005; Modic, 2010) . Thus, the solution cannot be to wait for scammers to go away or to pretend that the issue is of no concern to us. The financial impact of Internet fraud is considerable (cf. Chapter 1, p. 23).

On the other hand, the compliance rates are low – several researchers agreed that 1% response rate to scams was a reasonable estimate, based on response standards of legal mail campaigns (Cukier et al., 2007; Dyrud, 2005). Previous empirical research by Shadel and Pak (2007); and Fischer et al. (2012) has yielded scam response rates of 7% - 13%. Our investigation yielded 17% response rates in the general population (cf. Chapter 4, p. 137). High attack rates and low compliance rates per person mean that the compliance rates per scam are very low indeed. The goal of the present Thesis is to offer recommendations on how to lower already low compliance rates. This can be achieved through several mechanisms:

a) End-user education. We propose adding content to the already existing awareness campaigns such as The Devil's in Your Details (TDYD) run by

the National Fraud Authority in the U.K. (ActionFraud, 2012). TDYD raises public scam awareness through a series of events, adverts and online content. The National Fraud Authority already educates users on issues of online privacy and safeguarding your personal data in addition to providing general fraud prevention guidelines and fraud-reporting facilities. A solution we are proposing is not concerned with the content of the advisories (which is factually correct) but with the way they are presented to individuals. We propose to go beyond general advice and incorporate our findings into future advisories. For example, our investigation showed that specific facets of impulsivity inform compliance rates. Our research has confirmed the notion that rational decision making processes are, to some extent, influenced by the need to experience new sensations (Bayard et al., 2011; Horvath & Zuckerman, 1993) or negative affect (Fichman et al., 1999; Zermatten et al., 2005). One of the strategies we propose is not to counteract this mechanism, but to diminish the appeal of fraudulent offers and thus make them less exciting. Several mechanisms familiar to us from psychotherapy can be employed to achieve this, for example teaching individuals to conduct reality checks (Schneider, 2001b), when facing an unlikely windfall – that is to say that we would teach them to ask themselves, *why* would somebody out of the blue offer them in particular what is essentially something for nothing. Another question they should ask is: how likely is it that somebody is both so unfamiliar with an offered product or a service that they sell it below market price, while at the same time present themselves as knowledgeable in the area? A number of cognitive shortcuts can be employed, similar to a U.S. saying *stranger, danger* in case of sexual predators. These quick sayings would enable more accurate heuristic processing which is quick by definition

(Gigerenzer & Goldstein, 1996), but as discussed in Chapter 5 (cf. p. 180) could lead to increased scam compliance if the information presented to individuals is misrepresented. We propose that short sentences would quickly reframe (for a definition cf. Robbins, Alexander, Newell, & Turner, 1996) the scam and offer an opportunity for a more accurate heuristic assessment. Here are a few examples of sayings, based on our empirical investigations:

a. *Advance fee? Not for me!*
b. *Rich widow from Nigeria does not fulfil my relationship criteria.*
c. *An interest-free loan from my bank? I am not buying that prank!*
d. *Say no, when their feedback is low*.

b) Employment of fail-safes in online transactions. There are a number of preventative measures employed today, but they mostly focus on securing transactions (Wright, 2002) or protecting consumers after the fact (e.g. PayPal's dispute process).We propose that a greater emphasis should be put on protecting the consumer from the onset, by for example, making it harder to impulse-purchase services or products. We realize that this might not be in the best interest of businesses, but that is only a matter of framing the issue. On the surface, selling; or providing a platform to sell as many products as possible in the shortest amount of time is a priority of any enterprise. But preventing the backlash of unsatisfied customers and losing repeat custom (which is a big source of revenue in e-commerce; Anderson & Srinivasan, 2003; Penz & Kirchler, 2006; Reichheld & Schefter, 2000) in conjunction with tarnished reputation is also high on any legitimate vendors' priority list, as it translates into larger and relatively more stable revenues down the line. Consumers value their privacy (Joinson et al., 2010; Wafa, 2008) and are

willing, to a certain extent, to perform additional tasks that prevent them being defrauded. Mechanisms that legitimate e-sellers could employ include:

a. Introduce a time delay on the transaction (depending on the nature of the goods and their price) – money could be taken from an individual's account only when an order is dispatched. A request to confirm the transaction could be sent the next day and the transaction could be frozen until confirmed.

b. In online auctions, bidders who bid on a specific item for the first time could be prevented from doing so if an auction will finish in less than three hours.

c) Employment of local preventative measures by, for example, using the Scamseek project (Patrick, 2006) or similar. Scamseek is a text data-mining tool that crawls through the Internet, continuously assessing and classifying the fraudulent nature of online content (such as web pages or email). It employs heuristics and assesses content according to the intent of the message, not according to word strings contained in the message. We propose that a construction of a software application that would continuously monitor our correspondence and compare it to the Scamseek data would be advisable. When parallels between existing scams and our correspondence were found, the proposed application would alert us to this fact and tell us how likely it is that we are dealing with a fraudster. The decision to go on with the correspondence or purchase would still be up to the individual – the software would only notify the likelihood of it being fraudulent.

The findings in the present Thesis have confirmed the notion that victim facilitation is taking place in scam compliance. It is not our intention or recommendation to create an Orwellian dystopia where individuals are constantly

surveilled and controlled, rather we would like to help individuals learn how to recognize and control their own impulses. In order to fine-tune this process a number of future research considerations present themselves.

6.6 Future research directions

6.6.1 Research into specific scam types

Psychological aspects of scam compliance have not been extensively researched yet, so naturally there is more work to be done in this area. Our research should be extended in the future to provide more granularity. Since compliance rates are generally low, more extensive and more targeted research should be conducted to uncover the victimology of specific scam types. While the present Thesis has offered us insight into general scam compliance, our analysis hinted at the presence of specific differences in factors influencing compliance across both the levels of scam compliance (i.e. responding to scams vs. losing money to them) and the type of scam. To take an obvious example, the victims of scams in general, shared some similar traits with victims of lonely hearts swindles, when we compared our research to that conducted by Whitty and Buchanan (2012b). Extraversion and sensation seeking were significant factors in both our studies. On the other hand several victims of lonely hearts swindles stated that they were lonely prior to meeting the scammer, a factor that does not have an obvious direct bearing on compliance in online lottery scams, for example. There are obvious differences between romantic and financial fraud, but it is also quite possible that different psychological factors are involved when a person responds to an “out of the blue” scam message, as in advance fee fraud as compared to when they are taken in by an auction fraud while in the process of trying to buy a specific commodity.

Therefore, a more thorough investigation targeting specific scam types and psychological factors influencing compliance pertinent to those types is needed.

6.6.2 Risk preferences

Risk preferences of an individual were seen as universal in early economic and psychological studies (for an overview, cf. Schoemaker, 1993). The claim that individuals have the same attitudes towards risky choices regardless of the setting where the choices are being made, has come under criticism, both from the perspective of financial outcomes (i.e. gaining or losing; Schoemaker, 1990); and from the perspective of risk domains (e.g. financial, social, ethical; Weber et al., 2002). There is now ample empirical evidence that risk preferences of an individual change according to the risk domain (Nicholson et al., 2005; Soane & Chmiel, 2005; Tsukayama, Duckworth, & Kim, 2012; Weber et al., 2002). This allows us to infer that Internet fraud with several distinct types of scams can be construed as a separate risk domain, with connections to other established risk domains. Risk preferences in a boiler room scams can be similar to an individual's preferences in the financial domain, while risk preferences in lonely hearts swindles can be similar to those in the social domain as defined by Weber et al. (2002). While it is clear from previous research that domain non-specific attitudes towards risky choices inform general scam compliance (e.g. Fischer et al., 2012) it is not clear how domain-specific risk preferences inform compliance in different scam types. In future research we should be concerned with classification of the ubiquitous Internet fraud types into clear categories corresponding to recognized risk domains and then performing analysis using already established risk preferences scales for those domains.

6.6.3 Tested population

The subjects of the present Thesis were the victims of Internet fraud. We are aware of the fact that our victim sample was self-selective, consisting of those who were willing to fill in questionnaires in response to a public call. This sample was still probably better than a sample we would get from police or other agency reported crime statistics (where the incidence of reporting scam compliance is low), but it was not as good as using a professionally obtained representative sample (from an organization such as Ipsos-Mori). Allowing for financial considerations, obtaining a representative sample would be a good next step in researching scam compliance. Our investigation confirmed the notion that generally, victims of crime share personality traits with the offenders, although there are some caveats one must take into account.

Furthermore, most research on offender personality traits has focused on offenders with criminal records or those who were in prison at the time of the testing, that is the ones who were caught (e.g. Herrero & Colom, 2008; Miller & Lynam, 2001; Samuels et al., 2004). This raises some doubts about the comparability of the findings across the whole offender population. It is reasonable to assume that particularly successful offenders might have different personality traits compared to those who were ultimately unsuccessful. We propose that further studies into the psychological factors influencing individuals who are engaging in fraudulent activity should focus on offenders who have so far eluded incarceration. Getting in touch with this population poses some obvious methodological issues, but we believe that they can be overcome, especially in the case of Internet fraud – after all, getting in touch with scammers is not difficult, they keep contacting all of us through our mailboxes.

6.6.4 Incorporating newest research findings

The previously established scales that were used in our research have proven to be reliable and valid by us and other researchers. However, future research should

incorporate newer additions that have subsequently come to light. For example, the UPPS impulsivity scale first constructed and validated by Whiteside and Lynam (2001) has been extended to include a fifth pathway – positive urgency (i.e. impulsive behaviour under positive affect) by Melisa Cyders and her colleagues (Cyders & Smith, 2007; Cyders et al., 2007). Research into risk preferences in scams should be similarly extended (cf. section 6.5.2), while research into personality traits of individuals engaging in Internet fraud should yield more detailed results to account not only for personality domains but also for specific facets comprising them.

6.7 Conclusion

Throughout the present Thesis, we faced a few challenges. Our experimental designs always included psychological factors that were almost guaranteed to yield results (according to previous research). And yet, in many cases some of those factors explained no variance or were unreliable. From one viewpoint this could be construed as bad experimental design, but from another it is very valuable. Most of the factors that did inform scam compliance seem obvious, with the benefit of a perfect hindsight. And yet, the factors that were unreliable would also seem obvious if they panned out, thus we are not just mastering the obvious (Adams, 1996, p. 221) in the present Thesis – we are demonstrating that common sense is not a substitute for scientific proof.

At this point, we should answer the question posed at the beginning of the present Thesis: Why do people decide to be scammed? Our findings indicate that the most important identifiable factor (that we found) informing that question is (lack of) self-control. There are a number of ways this occurs: either from active involvement by the scammers; individual characteristics of the prospective victim; or by the conspiracy of circumstance; but it does occur. None of us is completely shielded from that – the author himself has been scammed or almost scammed several times during the creation

of the present Thesis and he is somewhat knowledgeable in this field. This leads us to infer that it is not a question of *if*, but *when* an individual will decide to be scammed. A number of strategies can be employed to minimize the risk and the subsequent losses (cf. Section 6.4), but we believe that there is simply no reasonable way to completely prevent individuals from falling for scams. If any person still believes that there is a reasonable way of accomplishing that (i.e. one that does not involve electrocuting all the scammers; or living inside an impregnable fortress with no contact with the outside world) we have developed a great solution for them, for a very low advance fee. The only thing we require from them are their bank details, their credit card number and the three unimportant numbers on the back of the card. The London Bridge is also included in the deluxe package.

TL;DR

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Appendices

Overview of Appendices

Appendix 1

Chapter 2 Ethics board application and approval

PSYCHOLOGY DEPARTMENT ETHICAL APPROVAL FORM

Tick one box: ☐ **STAFF Project** ☑ **POSTGRADUATE Project** ☑ **TRACK A**
☐ **UNDERGRADUATE Project** ☐ **TRACK B**
☐ **ROUTINE EXTENSION TO PRE-APPROVED STUDY**

Title Of Project: **Decision making under risk in virtual context**

Name of researcher(s) David Modic

Name of supervisor (for student research): Stephen E. Lea Date: 16.03.2009

		YES	NO	N/A
1	Will you describe the main experimental procedures to participants in advance, so that they are informed in advance about what to expect?	X		
2	Will you tell participants that their participation is voluntary?	X		
3	Will you obtain written consent for participation?	X		
4	If the research is observational, will you ask participants for their consent to being observed?			X
5	Will you tell participants that they may withdraw from the research at any time and for any reason?	X		
6	With questionnaires, will you give participants the option of omitting questions they do not what to answer?	X		
7	Will you tell participants that their data will be treated with full confidentiality and that, if published, it will not be identifiable as theirs?	X		
8	Will you debrief participants at the end of their participation (ie. give them a brief explanation of the study)?	X		

If you have ticked **No** to any of Q1-8, but have **ticked box A** overleaf, please give any explanation on a separate sheet. (Note: N/A = not applicable)

		YES	NO	N/A
9	Will your project involve deliberately misleading participants in any way?		X	
10	Is there a realistic risk of any participants experiencing either physical or psychological distress or discomfort? If **Yes,** give details on a separate sheet and state what you will tell them to do if they should experience any problems (e.g. who they can contact for help).		X	

If you have ticked **Yes** to 9 or 10 you should normally **tick box B** overleaf; if not, please give a full explanation on a separate sheet.

			YES	NO	N/A
11	Does your study involve work with animals? If yes, and your study is *purely* observational, please **tick box A.** All other studies should **tick box B** and provide supporting information.			X	
12	Do participants fall into any of the following special groups? If they do, please refer to BPS guidelines, and **tick box B** overleaf. **Please note that you may also need to gain satisfactory CRB clearance or equivalent for overseas participants.**	School children (under 18 years of age)		X	
		People with learning or communication difficulties		X	
		Patients		X	
		Those at risk of psychological distress or otherwise vulnerable		X	
		People in custody		X	
		People engaged in illegal activities (e.g. drug taking)		X	

There is an obligation on the lead researcher to bring to the attention of the Departmental Ethics Committee projects with ethical implications not clearly covered by the above checklist.

PLEASE TICK **EITHER** BOX A or BOX B BELOW AND **PROVIDE THE DETAILS REQUIRED** IN SUPPORT OF YOUR APPLICATION, THEN SIGN THE FORM.

Please tick:

A. I consider that this project has **no** significant ethical implications to be brought before the Departmental Ethics Committee.	**X**

In less than 150 words, provide details of the experiment including the number and type of participants, methods and tests to be used (i.e. the procedure).

This is a modification of Kahneman and Tversky's Prospect theory experiment (decision making under risk). The original consists of 16 dichotomous questions concerned with decision process and different choices made by participants depending on whether they are risk-seeking or risk-averse. The experiment will consist of **four online questionnaires** created with in-house software [php-surveyor] – the **original** questionnaire, two **modified** questionnaires which will pose the same questions changed to reflect a virtual and mixed payment bias (i.e. instead of asking to choose between two monetary rewards with differing probability of getting them, they will be asked to chose between one or two online offers of the same value and probability as above). Fourth part of the questionnaire will ask for **demographic** data. The participants will be students. The tests used will be Repeated measures ANOVA and simple t-tests. Please find attached a few sample questions from the questionnaires (Attachment A).

This form (and any attachments) should be submitted to the Departmental Ethics committee where it will be considered by the Chair before it can be approved.

B. I consider that this project **may** have ethical implications that should be brought before the Departmental Ethics Committee, and/or it will be carried out with children or other vulnerable populations.	

Please provide all the further information listed below in a separate attachment.

1. Title of project.
2. Purpose of project and its academic rationale.
3. Brief description of methods and measurements.
4. Participants: a) Human research: Recruitment methods, number, age, gender, exclusion/inclusion criteria.
   b) Animal research: location of study site, method of obtaining / marking / identifying subjects, handling procedures for field experiments.
5. Consent and participant information arrangements, debriefing. (Not relevant for animal research) ***Please attach intended information and consent forms.***
6. A clear but concise statement of the ethical considerations raised by the project and how you intend to deal with them.
7. Estimated start date and duration of project.

This form should be submitted to the Departmental Ethics Committee for consideration.
If any of the above information is missing, your application will be returned to you.

I am familiar with the BPS Guidelines for ethical practices in psychological research (and have discussed them with other researchers involved in the project.)

Signed…… Print Name…David Modic…….. Date…26.03.2009…
(UG/PG Researcher(s), if applicable) Email……dm294@ex.ac.uk……..

Signed…… Print Name…Stephen Lea ……. Date……..
(Lead Researcher or Supervisor) Email…… S.E.G.Lea@exeter.ac.uk……..

STATEMENT OF ETHICAL APPROVAL

This project has been considered using agreed Departmental procedures and is now approved.

Signed……Print Name……..Date……..
(Chair, Departmental Ethics Committee)

UNIVERSITY OF EXETER

SCHOOL of PSYCHOLOGY
ETHICS COMMITTEE

Washington Singer Laboratories
Perry Road
Exeter
EX4 4QG

Telephone +44 (0)1392 264626
Fax +44 (0)1392 264623
Email m.l.dexter@exeter.ac.uk

To: **David Modic**
From: **Cris Burgess**
CC: **Stephen Lea**
Re: **Application 2008/148 Ethics Committee**
Date: **August 15, 2012**

The School of Psychology Ethics Committee has now considered your proposal. The project has been approved in principle for the duration of your study.

Please ensure that you are familiar with the issues raised in the BPS Guidelines for Online Research, the link for which may be found at the bottom of the School intranet page here: http://psynet.ex.ac.uk:8200/gen/ethics/structure.

The agreement of the Committee is subject to your compliance with the British Psychological Society Code of Conduct and the University of Exeter procedures for data protection (http://www.ex.ac.uk/admin/academic/datapro/). In any correspondence with the Ethics Committee about this application, please quote the reference number above.

I wish you every success with your research.

Cris Burgess
(Acting) Chair of School Ethics Committee

Chapter 3 Ethics board application and Approval

PSYCHOLOGY DEPARTMENT ETHICAL APPROVAL FORM

Tick one box: ☐ **STAFF Project** **X POSTGRADUATE Project** **X TRACK A**
☐ **UNDERGRADUATE Project** ☐ **TRACK B**
☐ **ROUTINE EXTENSION TO PRE-APPROVED STUDY**

Title Of Project: **INFLUENCE OF SOCIAL MECHANISMS ON SCAMS**

Name of researcher(s) DAVID MODIC

Name of supervisor (for student research) Stephen Lea Date 17.02.2010

		YES	NO	N/A
1	Will you describe the main experimental procedures to participants in advance, so that they are informed in advance about what to expect?	X		
2	Will you tell participants that their participation is voluntary?	X		
3	Will you obtain written consent for participation?	X		
4	If the research is observational, will you ask participants for their consent to being observed?	X		
5	Will you tell participants that they may withdraw from the research at any time and for any reason?	X		
6	With questionnaires, will you give participants the option of omitting questions they do not what to answer?	X		
7	Will you tell participants that their data will be treated with full confidentiality and that, if published, it will not be identifiable as theirs?	X		
8	Will you debrief participants at the end of their participation (ie. give them a brief explanation of the study)?	X		

If you have ticked **No** to any of Q1-8, but have **ticked box A** overleaf, please give any explanation on a separate sheet. (Note: N/A = not applicable)

		YES	NO	N/A
9	Will your project involve deliberately misleading participants in any way?		X	
10	Is there a realistic risk of any participants experiencing either physical or psychological distress or discomfort? If **Yes,** give details on a separate sheet and state what you will tell them to do if they should experience any problems (e.g. who they can contact for help).		X	

If you have ticked **Yes** to 9 or 10 you should normally **tick box B** overleaf; if not, please give a full explanation on a separate sheet.

			YES	NO	N/A
11	Does your study involve work with animals? If yes, and your study is *purely* observational, please **tick box A.** All other studies should **tick box B** and provide supporting information.			X	
12	Do participants fall into any of the following special groups? If they do, please refer to BPS guidelines, and **tick box B** overleaf. **Please note that you may also need to gain satisfactory CRB clearance or equivalent for overseas participants.**	School children (under 18 years of age)		X	
		People with learning or communication difficulties		X	
		Patients		X	
		Those at risk of psychological distress or otherwise vulnerable		X	
		People in custody		X	
		People engaged in illegal activities (e.g. drug taking)		X	

There is an obligation on the lead researcher to bring to the attention of the Departmental Ethics Committee projects with ethical implications not clearly covered by the above checklist.

PLEASE TICK **EITHER** BOX A or BOX B BELOW AND **PROVIDE THE DETAILS REQUIRED** IN SUPPORT OF YOUR APPLICATION, THEN SIGN THE FORM.

Please tick:

A. I consider that this project has **no** significant ethical implications to be brought before the Departmental Ethics Committee.	**X**

In less than 150 words, provide details of the experiment including the number and type of participants, methods and tests to be used (i.e. the procedure).

Using an online survey tool (limeSurveyor), the participants will answer a questionnaire in three general parts. First part will be a series of statements adapted from various sources (Cialdini, Rusch, etc) all concerned with different 'social engineering' mechanisms, second part will explore the likelihood of falling for a particular scam (list adapted from National Consumer League and Office of Fair Trade) and the third part will cover demographics (age, gender, relative wealth, internet usage). The participants will be students of University of Exeter and possibly general population. There will be approximately 300 participants. The tests carried out will be FACTOR ANALYSIS – to create a scale measuring influence of different types of social mechanisms on being scammed. ANOVA – to pair specific factors with specific scams. The survey and the experiment will follow BPS guidelines for online research.

This form (and any attachments) should be submitted to the Departmental Ethics committee where it will be considered by the Chair before it can be approved.

B. I consider that this project **may** have ethical implications that should be brought before the Departmental Ethics Committee, and/or it will be carried out with children or other vulnerable populations.	

Please provide all the further information listed below in a separate attachment.

1. Title of project.
2. Purpose of project and its academic rationale.
3. Brief description of methods and measurements.
4. Participants: a) Human research: Recruitment methods, number, age, gender, exclusion/inclusion criteria.
   b) Animal research: location of study site, method of obtaining / marking / identifying subjects, handling procedures for field experiments.
5. Consent and participant information arrangements, debriefing. (Not relevant for animal research) ***Please attach intended information and consent forms.***
6. A clear but concise statement of the ethical considerations raised by the project and how you intend to deal with them.
7. Estimated start date and duration of project.

This form should be submitted to the Departmental Ethics Committee for consideration.
If any of the above information is missing, your application will be returned to you.

I am familiar with the BPS Guidelines for ethical practices in psychological research (and have discussed them with other researchers involved in the project.)

Signed..... Print Name...David Modic..... Date...17.02.2010
(UG/PG Researcher(s), if applicable) Email...D.Modic@ex.ac.uk.....

Signed..... Print Name...Stephen E. G. Lea ..... Date...18.02.2010
(Lead Researcher or Supervisor) Email...S.E.G.Lea@ex.ac.uk.....

STATEMENT OF ETHICAL APPROVAL

This project has been considered using agreed Departmental procedures and is now approved.

Signed.....Print Name.....Date.....
(Chair, Departmental Ethics Committee)

UNIVERSITY OF EXETER

SCHOOL of PSYCHOLOGY
ETHICS COMMITTEE

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EX4 4QG

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Fax +44 (0)1392 264623
Email m.l.dexter@exeter.ac.uk

To: **David Modic**
From: **Louise Pendry**
CC: **Stephen Lea**
Re: **Application 2009/131 Ethics Committee**
Date: **August 15, 2012**

The School of Psychology Ethics Committee has now met and discussed your proposal **2009/131 – Influence of Social Mechanisms on Scams.** The project has been approved in principle for the duration of your study.

The agreement of the Committee is subject to your compliance with the British Psychological Society Code of Conduct and the University of Exeter procedures for data protection (http://www.ex.ac.uk/admin/academic/datapro/). In any correspondence with the Ethics Committee about this application, please quote the reference number above.

I wish you every success with your research.

L. Pendry

Louise Pendry
Chair of School Ethics Committee

Chapter 4 Ethics board application and Approval

PSYCHOLOGY DEPARTMENT ETHICAL APPROVAL FORM

Tick one box: ☐ **STAFF Project** **X POSTGRADUATE Project** **X TRACK A**
☐ **UNDERGRADUATE Project** ☐ **TRACK B**
☐ **ROUTINE EXTENSION TO PRE-APPROVED STUDY**

Title Of Project: **VICTIMOLOGY OF ONLINE SCAMS**

Name of researcher(s) DAVID MODIC

Name of supervisor (for student research) Stephen Lea Date 17.02.2010

		YES	NO	N/A
1	Will you describe the main experimental procedures to participants in advance, so that they are informed in advance about what to expect?	X		
2	Will you tell participants that their participation is voluntary?	X		
3	Will you obtain written consent for participation?	X		
4	If the research is observational, will you ask participants for their consent to being observed?	X		
5	Will you tell participants that they may withdraw from the research at any time and for any reason?	X		
6	With questionnaires, will you give participants the option of omitting questions they do not what to answer?	X		
7	Will you tell participants that their data will be treated with full confidentiality and that, if published, it will not be identifiable as theirs?	X		
8	Will you debrief participants at the end of their participation (ie. give them a brief explanation of the study)?	X		

If you have ticked **No** to any of Q1-8, but have **ticked box A** overleaf, please give any explanation on a separate sheet. (Note: N/A = not applicable)

		YES	NO	N/A
9	Will your project involve deliberately misleading participants in any way?		X	
10	Is there a realistic risk of any participants experiencing either physical or psychological distress or discomfort? If **Yes,** give details on a separate sheet and state what you will tell them to do if they should experience any problems (e.g. who they can contact for help).		X	

If you have ticked **Yes** to 9 or 10 you should normally **tick box B** overleaf; if not, please give a full explanation on a separate sheet.

			YES	NO	N/A
11	Does your study involve work with animals? If yes, and your study is *purely* observational, please **tick box A.** All other studies should **tick box B** and provide supporting information.			X	
12	Do participants fall into any of the following special groups? If they do, please refer to BPS guidelines, and **tick box B** overleaf. **Please note that you may also need to gain satisfactory CRB clearance or equivalent for overseas participants.**	School children (under 18 years of age)		X	
		People with learning or communication difficulties		X	
		Patients		X	
		Those at risk of psychological distress or otherwise vulnerable		X	
		People in custody		X	
		People engaged in illegal activities (e.g. drug taking)		X	

There is an obligation on the lead researcher to bring to the attention of the Departmental Ethics Committee projects with ethical implications not clearly covered by the above checklist.

PLEASE TICK **EITHER** BOX A or BOX B BELOW AND **PROVIDE THE DETAILS REQUIRED** IN SUPPORT OF YOUR APPLICATION, THEN SIGN THE FORM.

Please tick:

A. I consider that this project has **no** significant ethical implications to be brought before the Departmental Ethics Committee.	**X**

In less than 150 words, provide details of the experiment including the number and type of participants, methods and tests to be used (i.e. the procedure).

Using an online survey tool (limeSurveyor), the participants will answer a questionnaire based on IRL victimology studies three general parts. This will be follow-up study conducted in two groups simultaneously – a control group and a group of those who have been victims of scams in the past. The purpose of the study is to pinpoint the differences in victimology between the two groups. There will be at least a hundred participants, most of them from the University of Exeter. The test carried out will be a series of repeated measures ANOVA's, designed to uncover any differences between the two populations. The survey and the experiment will follow BPS guidelines for online research.

This form (and any attachments) should be submitted to the Departmental Ethics committee where it will be considered by the Chair before it can be approved.

B. I consider that this project **may** have ethical implications that should be brought before the Departmental Ethics Committee, and/or it will be carried out with children or other vulnerable populations.	

Please provide all the further information listed below in a separate attachment.

1. Title of project.
2. Purpose of project and its academic rationale.
3. Brief description of methods and measurements.
4. Participants: a) Human research: Recruitment methods, number, age, gender, exclusion/inclusion criteria.
   b) Animal research: location of study site, method of obtaining / marking / identifying subjects, handling procedures for field experiments.
5. Consent and participant information arrangements, debriefing. (Not relevant for animal research) ***Please attach intended information and consent forms.***
6. A clear but concise statement of the ethical considerations raised by the project and how you intend to deal with them.
7. Estimated start date and duration of project.

This form should be submitted to the Departmental Ethics Committee for consideration.
If any of the above information is missing, your application will be returned to you.

I am familiar with the BPS Guidelines for ethical practices in psychological research (and have discussed them with other researchers involved in the project.)

Signed..... Print Name...David Modic..... Date...17.02.2010
(UG/PG Researcher(s), if applicable) Email...D.Modic@ex.ac.uk.....

Signed..... Print Name...Stephen E. G. Lea ..... Date...18.02.2010
(Lead Researcher or Supervisor) Email...S.E.G.Lea@ex.ac.uk.....

STATEMENT OF ETHICAL APPROVAL

This project has been considered using agreed Departmental procedures and is now approved.

Signed.....Print Name.....Date.....
(Chair, Departmental Ethics Committee)

UNIVERSITY OF EXETER

SCHOOL of PSYCHOLOGY
ETHICS COMMITTEE

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Fax +44 (0)1392 264623
Email m.l.dexter@exeter.ac.uk

To: **David Modic**
From: **Louise Pendry**
CC: **Stephen Lea**
Re: **Application 2009/133 Ethics Committee**
Date: **August 15, 2012**

The School of Psychology Ethics Committee has now met and discussed your proposal **2009/133 – Victimology of online scams.** The project has been approved in principle for the duration of your study.

The agreement of the Committee is subject to your compliance with the British Psychological Society Code of Conduct and the University of Exeter procedures for data protection (http://www.ex.ac.uk/admin/academic/datapro/). In any correspondence with the Ethics Committee about this application, please quote the reference number above.

I wish you every success with your research.

L. Pendry

Louise Pendry
Chair of School Ethics Committee

Chapter 5 Ethics board application(s), approval and correspondence with the University of Exeter student guild

PSYCHOLOGY DEPARTMENT ETHICAL APPROVAL FORM

Tick one box: ☐ **STAFF Project** **X POSTGRADUATE Project** **X TRACK A**
☐ **UNDERGRADUATE Project** ☐ **TRACK B**
☐ **ROUTINE EXTENSION TO PRE-APPROVED STUDY**

Title Of Project: **EGO DEPLETION AND SCAMS**

Name of researcher(s) DAVID MODIC

Name of supervisor (for student research) Stephen Lea Date 17.02.2010

		YES	NO	N/A
1	Will you describe the main experimental procedures to participants in advance, so that they are informed in advance about what to expect?	X		
2	Will you tell participants that their participation is voluntary?	X		
3	Will you obtain written consent for participation?	X		
4	If the research is observational, will you ask participants for their consent to being observed?	X		
5	Will you tell participants that they may withdraw from the research at any time and for any reason?	X		
6	With questionnaires, will you give participants the option of omitting questions they do not what to answer?	X		
7	Will you tell participants that their data will be treated with full confidentiality and that, if published, it will not be identifiable as theirs?	X		
8	Will you debrief participants at the end of their participation (ie. give them a brief explanation of the study)?	X		

If you have ticked **No** to any of Q1-8, but have **ticked box A** overleaf, please give any explanation on a separate sheet. (Note: N/A = not applicable)

		YES	NO	N/A
9	Will your project involve deliberately misleading participants in any way?		X	
10	Is there a realistic risk of any participants experiencing either physical or psychological distress or discomfort? If **Yes,** give details on a separate sheet and state what you will tell them to do if they should experience any problems (e.g. who they can contact for help).		X	

If you have ticked **Yes** to 9 or 10 you should normally **tick box B** overleaf; if not, please give a full explanation on a separate sheet.

			YES	NO	N/A
11	Does your study involve work with animals? If yes, and your study is *purely* observational, please **tick box A.** All other studies should **tick box B** and provide supporting information.			X	
12	Do participants fall into any of the following special groups? If they do, please refer to BPS guidelines, and **tick box B** overleaf. **Please note that you may also need to gain satisfactory CRB clearance or equivalent for overseas participants.**	School children (under 18 years of age)		X	
		People with learning or communication difficulties		X	
		Patients		X	
		Those at risk of psychological distress or otherwise vulnerable		X	
		People in custody		X	
		People engaged in illegal activities (e.g. drug taking)		X	

There is an obligation on the lead researcher to bring to the attention of the Departmental Ethics Committee projects with ethical implications not clearly covered by the above checklist.

PLEASE TICK **EITHER** BOX A or BOX B BELOW AND **PROVIDE THE DETAILS REQUIRED** IN SUPPORT OF YOUR APPLICATION, THEN SIGN THE FORM.

Please tick:

A. I consider that this project has **no** significant ethical implications to be brought before the Departmental Ethics Committee.	**X**

In less than 150 words, provide details of the experiment including the number and type of participants, methods and tests to be used (i.e. the procedure).

Using an online survey tool (limeSurveyor), the participants will answer a questionnaire in three general parts. First part will be an ego-depletion exercise (with a manipulation check), second part will explore the likelihood of falling for a particular scam (list adapted from National Consumer League and Office of Fair Trade) and the third part will cover demographics (age, gender, relative wealth, internet usage). The experiment will be conducted in two groups (ego-depleted and control). The participants will be students of University of Exeter. There will be approximately 100 participants. The tests carried out will be a series of ANOVA's. The survey and the experiment will follow BPS guidelines for online research.

This form (and any attachments) should be submitted to the Departmental Ethics committee where it will be considered by the Chair before it can be approved.

B. I consider that this project **may** have ethical implications that should be brought before the Departmental Ethics Committee, and/or it will be carried out with children or other vulnerable populations.	

Please provide all the further information listed below in a separate attachment.

1. Title of project.
2. Purpose of project and its academic rationale.
3. Brief description of methods and measurements.
4. Participants: a) Human research: Recruitment methods, number, age, gender, exclusion/inclusion criteria.
   b) Animal research: location of study site, method of obtaining / marking / identifying subjects, handling procedures for field experiments.
5. Consent and participant information arrangements, debriefing. (Not relevant for animal research) ***Please attach intended information and consent forms.***
6. A clear but concise statement of the ethical considerations raised by the project and how you intend to deal with them.
7. Estimated start date and duration of project.

This form should be submitted to the Departmental Ethics Committee for consideration.
If any of the above information is missing, your application will be returned to you.

I am familiar with the BPS Guidelines for ethical practices in psychological research (and have discussed them with other researchers involved in the project.)

Signed..... Print Name...David Modic..... Date...17.02.2010
(UG/PG Researcher(s), if applicable) Email...D.Modic@ex.ac.uk.....

Signed..... Print Name...Stephen E. G. Lea ..... Date...18.02.2010
(Lead Researcher or Supervisor) Email...S.E.G.Lea@ex.ac.uk.....

STATEMENT OF ETHICAL APPROVAL

This project has been considered using agreed Departmental procedures and is now approved.

Signed.....Print Name.....Date.....
(Chair, Departmental Ethics Committee)

UNIVERSITY OF EXETER

SCHOOL of PSYCHOLOGY
ETHICS COMMITTEE

Washington Singer Laboratories
Perry Road
Exeter
EX4 4QG

Telephone +44 (0)1392 264626
Fax +44 (0)1392 264623
Email m.l.dexter@exeter.ac.uk

To: **David Modic**
From: **Louise Pendry**
CC: **Stephen Lea**
Re: **Application 2009/132 Ethics Committee**
Date: **August 15, 2012**

The School of Psychology Ethics Committee has now met and discussed your proposal **2009/132 – Ego depletion and scams.** The project has been approved in principle for the duration of your study.

The agreement of the Committee is subject to your compliance with the British Psychological Society Code of Conduct and the University of Exeter procedures for data protection (http://www.ex.ac.uk/admin/academic/datapro/). In any correspondence with the Ethics Committee about this application, please quote the reference number above.

I wish you every success with your research.

L. Pendry

Louise Pendry
Chair of School Ethics Committee

PSYCHOLOGY DEPARTMENT ETHICAL APPROVAL FORM

Tick one box: ☐ **STAFF Project** **X POSTGRADUATE Project** **X TRACK A**
☐ **UNDERGRADUATE Project** ☐ **TRACK B**
☐ **ROUTINE EXTENSION TO PRE-APPROVED STUDY**

Title Of Project: Self-regulation and scams

Name of researcher(s) David Modic

Name of supervisor (for student research) Stephen E.G. Lea Date 13.01.2012

		YES	NO	N/A
1	Will you describe the main experimental procedures to participants in advance, so that they are informed in advance about what to expect?	X		
2	Will you tell participants that their participation is voluntary?	X		
3	Will you obtain written consent for participation?	X		
4	If the research is observational, will you ask participants for their consent to being observed?			X
5	Will you tell participants that they may withdraw from the research at any time and for any reason?	X		
6	With questionnaires, will you give participants the option of omitting questions they do not what to answer?	X		
7	Will you tell participants that their data will be treated with full confidentiality and that, if published, it will not be identifiable as theirs?	X		
8	Will you debrief participants at the end of their participation (ie. give them a brief explanation of the study)?	X		

If you have ticked **No** to any of Q1-8, but have **ticked box A** overleaf, please give any explanation on a separate sheet. (Note: N/A = not applicable)

		YES	NO	N/A
9	Will your project involve deliberately misleading participants in any way?		X	
10	Is there a realistic risk of any participants experiencing either physical or psychological distress or discomfort? If **Yes,** give details on a separate sheet and state what you will tell them to do if they should experience any problems (e.g. who they can contact for help).		X	

If you have ticked **Yes** to 9 or 10 you should normally **tick box B** overleaf; if not, please give a full explanation on a separate sheet.

			YES	NO	N/A
11	Does your study involve work with animals? If yes, and your study is *purely* observational, please **tick box A.** All other studies should **tick box B** and provide supporting information.			X	
12	Do participants fall into any of the following special groups? If they do, please refer to BPS guidelines, and **tick box B** overleaf. **Please note that you may also need to gain satisfactory CRB clearance or equivalent for overseas participants.**	School children (under 18 years of age)		X	
		People with learning or communication difficulties		X	
		Patients		X	
		Those at risk of psychological distress or otherwise vulnerable		X	
		People in custody		X	
		People engaged in illegal activities (e.g. drug taking)		X	

There is an obligation on the lead researcher to bring to the attention of the Departmental Ethics Committee projects with ethical implications not clearly covered by the above checklist.

PLEASE TICK **EITHER** BOX A or BOX B BELOW AND **PROVIDE THE DETAILS REQUIRED** IN SUPPORT OF YOUR APPLICATION, THEN SIGN THE FORM.

Please tick:

A. I consider that this project has **no** significant ethical implications to be brought before the Departmental Ethics Committee.	**X**

In less than 150 words, provide details of the experiment including the number and type of participants, methods and tests to be used (i.e. the procedure).

This is a more detailed description of a study that was already approved by the ethics committee (Application 2009/132 Ethics Committee) – I am appending the full questionnaire.

There is a section where a doctored screenshot of a fake email from Exeter Student Guild is presented to the participants and they are asked questions about it. I am appending, with the full questionnaire, the correspondence I had with the Exeter Student Guild, who have given me permission to use this screenshot in my experiment.

As stated before, this is only an addendum to the study where ethical approval was already granted. Since my supervisor is retired and can't sign this particular form at the moment, and si this is only an addendum to a previously already approved study, I am hoping you will trust me that this submission has been done with my supervisors knowledge and approval.

This form (and any attachments) should be submitted to the Departmental Ethics committee where it will be considered by the Chair before it can be approved.

B. I consider that this project **may** have ethical implications that should be brought before the Departmental Ethics Committee, and/or it will be carried out with children or other vulnerable populations.	

Please provide all the further information listed below in a separate attachment.

1. Title of project.
2. Purpose of project and its academic rationale.
3. Brief description of methods and measurements.
4. Participants: a) Human research: Recruitment methods, number, age, gender, exclusion/inclusion criteria.
   b) Animal research: location of study site, method of obtaining / marking / identifying subjects, handling procedures for field experiments.
5. Consent and participant information arrangements, debriefing. (Not relevant for animal research) ***Please attach intended information and consent forms.***
6. A clear but concise statement of the ethical considerations raised by the project and how you intend to deal with them.
7. Estimated start date and duration of project.

This form should be submitted to the Departmental Ethics Committee for consideration.
If any of the above information is missing, your application will be returned to you.

I am familiar with the BPS Guidelines for ethical practices in psychological research (and have discussed them with other researchers involved in the project.)

Signed..... Print Name..... Date.....
(UG/PG Researcher(s), if applicable) Email.....

Signed..... Print Name..... Date.....

UNIVERSITY OF EXETER

Psychology Research Ethics Committee

Psychology, College of Life & Environmental Sciences

Washington Singer Laboratories
Perry Road
Exeter
EX4 4QG

Telephone +44 (0)1392 724611
Fax +44 (0)1392 724623
Email Marilyn.evans@exeter.ac.uk

To: **David Modic**
From: **Cris Burgess**
CC: **Stephen Lea**
Re: **Application 2011/538 Ethics Committee**
Date: **August 15, 2012**

The School of Psychology Ethics Committee has now discussed your application, ***2011/538*** – ***Self-regulation and scams***. The project has been approved in principle for the duration of your study.

The agreement of the Committee is subject to your compliance with the British Psychological Society Code of Conduct and the University of Exeter procedures for data protection (http://www.ex.ac.uk/admin/academic/datapro/). In any correspondence with the Ethics Committee about this application, please quote the reference number above.

I wish you every success with your research.

Cris Burgess
Chair of Psychology Research Ethics Committee

PSYCHOLOGY DEPARTMENT ETHICAL APPROVAL FORM

Tick one box: ☐ **STAFF Project** ☑ **POSTGRADUATE Project** ☑ **TRACK A**
☐ **UNDERGRADUATE Project** ☐ **TRACK B**
☐ **ROUTINE EXTENSION TO PRE-APPROVED STUDY**

Title Of Project: **Decision making under risk in virtual context**

Name of researcher(s) David Modic

Name of supervisor (for student research): Stephen E. Lea Date: 16.03.2009

		YES	NO	N/A
1	Will you describe the main experimental procedures to participants in advance, so that they are informed in advance about what to expect?	X		
2	Will you tell participants that their participation is voluntary?	X		
3	Will you obtain written consent for participation?	X		
4	If the research is observational, will you ask participants for their consent to being observed?			X
5	Will you tell participants that they may withdraw from the research at any time and for any reason?	X		
6	With questionnaires, will you give participants the option of omitting questions they do not what to answer?	X		
7	Will you tell participants that their data will be treated with full confidentiality and that, if published, it will not be identifiable as theirs?	X		
8	Will you debrief participants at the end of their participation (ie. give them a brief explanation of the study)?	X		

If you have ticked **No** to any of Q1-8, but have **ticked box A** overleaf, please give any explanation on a separate sheet. (Note: **N/A** = not applicable)

		YES	NO	N/A
9	Will your project involve deliberately misleading participants in any way?		X	
10	Is there a realistic risk of any participants experiencing either physical or psychological distress or discomfort? If **Yes,** give details on a separate sheet and state what you will tell them to do if they should experience any problems (e.g. who they can contact for help).		X	

If you have ticked **Yes** to 9 or 10 you should normally **tick box B** overleaf; if not, please give a full explanation on a separate sheet.

			YES	NO	N/A
11	Does your study involve work with animals? If yes, and your study is *purely* observational, please **tick box A.** All other studies should **tick box B** and provide supporting information.			X	
12	Do participants fall into any of the following special groups? If they do, please refer to BPS guidelines, and **tick box B** overleaf. **Please note that you may also need to gain satisfactory CRB clearance or equivalent for overseas participants.**	School children (under 18 years of age)		X	
		People with learning or communication difficulties		X	
		Patients		X	
		Those at risk of psychological distress or otherwise vulnerable		X	
		People in custody		X	
		People engaged in illegal activities (e.g. drug taking)		X	

PSYCHOLOGY DEPARTMENT ETHICAL APPROVAL FORM

Tick one box: ☐ STAFF Project ☑ POSTGRADUATE Project ☑ TRACK A
☐ UNDERGRADUATE Project ☐ TRACK B
☐ ROUTINE EXTENSION TO PRE-APPROVED STUDY

Title Of Project: **Decision making under risk in virtual context**

Name of researcher(s) David Modic

Name of supervisor (for student research): Stephen E. Lea Date: 16.03.2009

		YES	NO	N/A
1	Will you describe the main experimental procedures to participants in advance, so that they are informed in advance about what to expect?	X		
2	Will you tell participants that their participation is voluntary?	X		
3	Will you obtain written consent for participation?	X		
4	If the research is observational, will you ask participants for their consent to being observed?			X
5	Will you tell participants that they may withdraw from the research at any time and for any reason?	X		
6	With questionnaires, will you give participants the option of omitting questions they do not what to answer?	X		
7	Will you tell participants that their data will be treated with full confidentiality and that, if published, it will not be identifiable as theirs?	X		
8	Will you debrief participants at the end of their participation (ie. give them a brief explanation of the study)?	X		

If you have ticked **No** to any of Q1-8, but have **ticked box A** overleaf, please give any explanation on a separate sheet. (Note: N/A = not applicable)

		YES	NO	N/A
9	Will your project involve deliberately misleading participants in any way?		X	
10	Is there a realistic risk of any participants experiencing either physical or psychological distress or discomfort? If **Yes,** give details on a separate sheet and state what you will tell them to do if they should experience any problems (e.g. who they can contact for help).		X	

If you have ticked **Yes** to 9 or 10 you should normally **tick box B** overleaf; if not, please give a full explanation on a separate sheet.

			YES	NO	N/A
11	Does your study involve work with animals? If yes, and your study is *purely* observational, please **tick box A.** All other studies should **tick box B** and provide supporting information.			X	
12	Do participants fall into any of the following special groups? If they do, please refer to BPS guidelines, and **tick box B** overleaf. **Please note that you may also need to gain satisfactory CRB clearance or equivalent for overseas participants.**	School children (under 18 years of age)		X	
		People with learning or communication difficulties		X	
		Patients		X	
		Those at risk of psychological distress or otherwise vulnerable		X	
		People in custody		X	
		People engaged in illegal activities (e.g. drug taking)		X	

From: Guild President Mail
Sent: 12 January 2012 16:06
To: Modic, David
Cc: Lea, Stephen
Subject: RE: A request for help

Hi,

Thank you for clarifying that for me, I (the Guild) have no problem with this going ahead. I look forward to receiving your findings and a short blurb would be very useful if you have the time.

Good luck with the experiment.

All the best,

Nick Davis
President
University of Exeter Students' Guild

From: Modic, David
Sent: 12 January 2012 14:15
To: Guild President Mail
Cc: Lea, Stephen
Subject: RE: A request for help

Hi,
First of all, thank you replying and for taking the time! I am more than happy to answer the questions you pose.

ad. 1
Participants in the experiment will be first year undergrads from the School of psychology (who will be able to claim for course credits if they participate or enter a raffle for amazon.co.uk vouchers) and Business school undergrads (who will be able to enter a raffle for amazon.co.uk vouchers). All in all, we expect a sample size of about 100-200. The particular section in question here is a part of a larger experiment in which we also look at shady auctions and materialism among other things. The students whom I'll contact, will be asked to participate in an experiment about consumer attitudes and marketing - they will receive an invitation to participate in an online experiment from me personally and not anybody else. I would love to be able to contact all Exeter students about this experiment - after all, phishing concerns the whole student body, but that overreaches my authority.

ad. 2
When I wrote 'vulnerable students', I meant that previous research has shown that student population in general is more vulnerable to specific types of scam (some of this dynamic could be attributed to perhaps bigger respect for certain authority figures, greater online presence, lack of cynicism and paranoia that comes when you are older etc.). I am not targeting specific students, I am just betting that there will be a certain amount of people who will respond favourably to phishing, based on previous research.

ad 3.
I am not sending the email in question at all. In the experiment, I present the students with the screenshot of an email and ask them whether they recall receiving it. They can't recall it, obviously, because it wasn't sent, but for the moment, I am letting them assume that the email is out there, it is just that they failed to receive it. And then I ask questions about it. In the debrief at the end of the experiment I tell them that the email does not exist and that they didn't receive it because it wasn't sent. So, in effect, I am not impersonating the guild at all, because there never was any such correspondence from the guild in the first place and nobody actually sent it. I realize that there is a slight chance that someone will immediately, before they even finish the questionnaire and have a chance to find out that the screenshot was doctored, start looking for the email and then contact you

about it, asking about the spring ball, which would be awkward if you knew nothing about this and not keeping you in the loop would be also rude and unethical on my behalf. So, now, if anyone contacts you about the spring ball you will know to either ignore the mail, or write to say that it will all be clear in the next group posting from student guild where you'll be able to inform the students about the experiment and our findings, plus give recommendations on how to protect oneself from phishing (I will gladly write a short blurb about that, if you wish) - It usually takes about a fortnight to get as many respondents as you could possibly get from the given participant pool. I will then immediately run the analysis and send

over the partial results, so in about three weeks' time, from the start date, everything becomes much clearer even for the few who failed to read the debrief.

I hope that answers your questions. If you need any kind of additional information, I will gladly provide it.

Cheers,
--- David Modic, EGF (SEORG)
School of Psychology, College of Life and Environmental Sciences, University of Exeter
Admin of scamresearch.info at the University of Exeter

From: Guild President Mail
Sent: 12 January 2012 12:32
To: Modic, David
Subject: RE: A request for help

Hi David,

Sorry for the delay in reply, I was just passing this idea past our Communications manager, this looks like a really interesting idea that could yield some great information and raise awareness. My only questions are:

1. How many students will you be contacting?
2. How have you selected these 'vulnerable students'?
3. You said you were not writing impersonating the students Guild so on what pretence are you writing to these students?

If you can answer these questions then I see no reason why the project could not go ahead as planned. I think we would also appreciate some info after the project has taken place to raise some publicity and awareness about the dangers of phishing.

All the best,

Nick Davis
President
University of Exeter Students' Guild

From: Modic, David
Sent: 11 January 2012 11:18
To: Guild President Mail; VP Academic officer mail
Cc: Lea, Stephen
Subject: A request for help
Importance: High

Hi Nick and James,

My name is David Modic, I am a PhD student at the School of Psychology and I was hoping you could help me with my research by doing nothing. I am not kidding. Please allow me to explain.

Professor Stephen E.G. Lea and I are looking at various types of scams and what makes people fall for them. We are, of course, not actually scamming people, but we are presenting people with diverse scenarios and looking at what resonates with them and why. Our work has, so far, received some international recognition (we presented our findings both in the UK, wider EU area and USA) and media attention (several BBC interviews).

What are we planning to do?

In our latest experiment, the one that I am writing to you about, we'll be looking at spear phishing (where somebody misrepresents themselves as a well-known entity in order to manipulate people to reveal sensitive data. More on spearphishing here: http://searchsecurity.techtarget.com/definition/spear-phishing). We are, specifically, planning to present students, who are particularly vulnerable to this kind of attack, with a screenshot of a fictitious mail that appears to be coming from the student guild, advertising a fictional Spring ball tickets for 3.50 pounds. Please find the screenshot of the email attached. With the screenshot, we'll ask several questions, namely:

- Can you recall receiving this email recently?
Please signify (on a scale of 1 to 5) how much you agree with the following statements
- I am going to attend this event
- I will look for this email in my inbox later
- In general, I enjoy the informal wording of emails from student guild
- I think it is good that the student guild does not rely on third parties anymore, when it comes to payments
- I trust the Exeter student guild
- I would purchase my tickets through the link provided in the email

Let me emphasise that:

- We are NOT actually sending an email on behalf of anybody to the student body (all they see is a screenshot)
- The participants cannot actually click on the link in the email and cannot lose any money from our experiment
- it is exceedingly easy to do an actual attack like that (literally, a few minutes work for a scammer), so it is good to be informed and prepared about it.

While we don't inform the students right away that this is fictitious screenshot, we do tell them about it at the end of the experiment. This is what we say:

...[SNIP]...

There was another potential scam presented - the offer to get tickets to a ball. This is a so-called spearphishing attack (read more about it here: http://searchsecurity.techtarget.com/definition/spear-phishing). Let us be completely clear:
To the best of our knowledge, there isn't going to be a new spring ball!
You couldn't have received the email, as it has not been sent to anyone!
There is no point in looking for this email.
No sensitive data was stolen from you (but it could have been! Be informed about phishing!)
Student guild is in no way connected to our research and does not send out fraudulent emails.
Somebody else pretending to be from student guild could, though.

Here is how this could have worked (make no mistake, an email like that could have easily been sent to your address) -

1. It is very very easy to fake a "FROM" email address. So the sender in the presented email could have been faked.
2. A scammer could create an online payment form - could be done in GoogleDocs - we've seen it done before; where you enter your data. It could ask for your CC number, name on card, security number on the back, expiry date and Secured by MasterCard password (full one).
3. The email contains a plausible reason why the usual payment system does not work. It redirects you to a page owned by the scammer (exeterstudentguild.org) that seems very similar to the actual page.
4. The offer is enticing and plausible. Only £3.50 entrance fee (with corporate sponsorship)!
5. The scammer gets away with your credit card data.

...[SNIP]...

What are the potential benefits to the student body and student guild from this experiment?

- Gather data about student vulnerability to spear phishing (we will gladly share this part of the results with you), which might be helpful in creating strategies to protect the student body from such attacks.

- Get information without anybody actually being hurt/scammed (as I said it is both exceedingly easy to do such an attack; and it is not a question of if there is going to be a real one like that, but when).

- You can write about the experiment and its repercussions in the next monthly missive, after the experiment was concluded and thus raise awareness of these kinds of attacks.

What are we asking of you?

To do nothing, like I said. Well, not nothing - we are asking for your blessing, in essence. While we are not breaking any laws and are within the bounds of the professional ethics, we still feel that since we are using Exeter student guild in our example, that it is the decent and right thing to do, to ask for your approval.

Let me reiterate that we are not sending any emails on your behalf, we are not pretending to be you in any way and that we clearly state that the Exeter student guild is not involved in any kind of fraudulent activity.

Please, even if you think that our experiment is clearly unacceptable and that you would prefer this kind of thing to actually happen for real before reacting, we ask you to not discuss it now with the wider student body, since even if we change the experiment and run it in a different form, the results could be skewed if our participants are aware that this is what we are researching (which makes the scammers win in the end).

I was hoping you could give us a go ahead as soon as possible as I was planning to start running the experiment early next week (time is of the essence and thesis write-up waits for no man :)).

I would be more than happy to discuss this with any or both of you in person to alleviate any concerns you might have - would Friday any time before 11 or after 12:30 work for you?

Thank you for your time and kind consideration,

--- David Modic, EGF (SEORG)
School of Psychology, College of Life and Environmental Sciences, University of Exeter
Admin of scamresearch.info at the University of Exeter

Appendix 2 – Transferring risk studies into an online setting

Expected values and variance for individual outcomes in study items

Table A2.1

Expected Values (EV) and Variance for Individual Outcomes in Items From INTERNET Questionnaire

	OUTCOME 1				OUTCOME 2			
Item	Chance	Value	EV	s.d.	Chance	Value	EV	s.d.
1	0.33 0.67	£850 £800	£808.50	£24.82	1.00	£800	£800.00	£0.00
2	0.33 0.67	£850 £0	£280.50	£399.68	0.34 0.66	£800 £0	£272.00	£378.97
3	0.8	£1,300	£1,040.00	£520.00	1.00	£1,000	£1,000.00	£0.00
4	0.2	£1,300	£260.00	£520.00	0.25	£1,000	£250.00	£433.01
5	0.05	VAC1	N/A	N/A	0.10	VAC2	N/A	N/A
6	0.5	VAC1	N/A	N/A	1.00	VAC2	N/A	N/A
7	0.45	£2,000	£900.00	£994.99	0.90	£1,000	£900.00	£300.00
8	0.001	£2,000	£2.00	£63.21	0.002	£1,000	£2.00	£44.68
9	0.8	-£1,300	-£1,040.00	£520.00	1.00	-£1,000	-£1,000.00	£0.00
10	0.2	-£1,300	-£260.00	£520.00	0.25	-£1,000	-£250.00	£433.01
11	0.45	-£2,000	-£900.00	£994.99	0.90	-£1,000	-£900.00	£300.00
12	0.01	-£2,000	-£20.00	£199.00	0.02	-£1,000	-£20.00	£140.00
13	0.8	£1,300	£1,040.00	£520.00	1.00	£1,000	£1,000.00	£0.00
14	0.5	£330	£165.00	£165.00	1.00	£165	£165.00	£0.00
15	0.5	-£330	-£165.00	£165.00	1.00	-£165	-£165.00	£0.00

VAC1 = a three-week vacation in Florida and New York
VAC2 = a one-week vacation in Florida

Scales used in the Chapter 2 experiment

Table A2.2

Internet Scale used in the Chapter 2 Experiment[a]

Item number	Outcome 1	Outcome 2
1	33% chance to win £850 67% chance to win £800	£800 for sure
2	33% chance to win £850 67% chance to win £0	34% chance to win £800 66% chance to win £0
3	80% chance to win £1300	£1000 for sure
4	20% chance to win £1300	25% chance to win £1000
5	5% chance to win a three-week tour of Florida and the Caribbean	10% chance to win a one-week tour of Florida
6	50% chance to win a three-week tour of Florida and the Caribbean	Win a one-week tour of Florida with certainty
7	45% chance to win £2000	90% chance to win £1000
8	0.1% chance to win £2000	0.2% chance to win £1000
9	80% chance to lose £1300	lose £1000 for sure
10	20% chance to lose £2000	25% chance to lose £1000
11	45% chance to lose £2000	90% chance to lose £1000
12	0.1% chance to lose £2000	0.2% chance to lose £1000
13[b]	80% chance to win £1300	£1000 for sure
14[c]	50% chance to win £330	£165 for sure
15[d]	50% chance to lose £330	lose £165 for sure
16	25% chance to win £40	20% chance to win £30

Note. [a]Instructions: "Choose between the following two gambles. Please choose only one of the following."
[b] Instructions: "Consider the following two-stage game. In the first stage, there is a probability of 75% to end the game without winning anything, and a probability of 25% to move into the second stage. If you reach the second stage you have a choice between:
NOTE: Your choice must be made before the game starts, i.e. before the outcome of the first stage is known. Please state your preference."
[c] Instructions: “In addition to whatever you own, you have been given £330. You are now asked to choose between:"
[d] Instructions: "In addition to whatever you own, you have been given £660. You are now asked to choose between:"

Table A2.3

InternetVirtual Scale used in the Chapter 2 Experiment[a]

Item	Outcome 1	Outcome 2
1	33% chance to win Amazon.co.uk gift voucher worth £85 66% chance to win Amazon.co.uk gift voucher worth £80	win Amazon.co.uk gift voucher worth £80 for sure
2	33% chance to win Amazon.co.uk gift voucher worth £85 67% chance to win Amazon.co.uk gift voucher worth £0	34% chance to win Amazon.co.uk gift voucher worth £80 66% chance to win Amazon.co.uk gift voucher worth £0
3	80% chance to win Amazon.co.uk gift voucher worth £130	win Amazon.co.uk gift voucher worth £100 for sure
4	20% chance to Amazon.co.uk gift voucher worth win £130	25% chance to win Amazon.co.uk gift voucher worth £100
5	5% chance to win a three-week tour of Florida and the Caribbean in an online draw	10% chance to win a one-week tour of Florida in an online draw
6	50% chance to win a three-week tour of Florida and the Caribbean	Win a one-week tour of Florida with certainty
7	45% chance to win Amazon.co.uk gift voucher worth £200	90% chance to win Amazon.co.uk gift voucher worth £100
8	0.1% chance to win Amazon.co.uk gift voucher worth £200	0.2% chance to win Amazon.co.uk gift voucher worth £100
9	80% chance to incur an unexpected charge of £130 by your credit card company	incur an unexpected charge of £100 by your credit card company for sure
10	20% chance to incur an unexpected charge of £130 by your credit card company	25% chance to incur an unexpected charge of £100 by your credit card company
11	45% chance to incur an unexpected charge of £200 by your credit card company	90% chance to incur an unexpected charge of £100 by your credit card company
12	0.1% chance to incur an unexpected charge of £200 by your credit card company	0.2% chance to incur an unexpected charge of £100 by your credit card company
13[b]	80% chance to win £1300	£1000 for sure
14[c]	50% chance to win Amazon.co.uk gift voucher worth £33	win Amazon.co.uk gift voucher worth £16 for sure
15[d]	50% chance to incur an unexpected charge of £33 by your credit card company	incur an unexpected charge of £16 by your credit card company for sure
16	25% chance to win Amazon.co.uk gift voucher worth £40	20% chance to win Amazon.co.uk gift voucher worth £30

Note. [a]Instructions: "Choose between the following two gambles. Please choose only one of the following."
[b] Instructions: "Consider the following two-stage game. In the first stage, there is a probability of 75% to end the game without winning anything, and a probability of 25% to move into the second stage. If you reach the second stage you have a choice between:
NOTE: Your choice must be made before the game starts, i.e. before the outcome of the first stage is known. Please state your preference."
[c] Instructions: "In addition to whatever you own, £66 has been added to your bank balance. You are now asked to choose between:"
[d] Instructions: "In addition to whatever you own, you have been given £660. You are now asked to choose between:"

Table A2.4

Pearson Correlations Between Items in Internet Questionnaire (n= 84)

	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Item 01 [CE]	.213**	-.057	-.147	-.141	.109	-.185*	.182*	.252**	.123	.063	.054	-.025	.056	-.020
Item 02 [CE]		-.176*	.051	-.209**	-.220**	-.064	.130	.257**	-.099	.098	-.037	.219**	.034	.040
Item 03 [CE]			-.008	.008	.104	.194	.083	-.055	.128	.036	-.042	-.062	.027	.056
Item 04 [CE]				.069	-.092	-.043**	.178*	.091	-.152*	-.101	.138	.040	.209**	-.042
Item 05 [CE]					.154*	.118	-.067	-.012	.152*	.162*	.073	-.040	.178*	.094
Item 06 [CE]						.125	.020	-.060	.182*	.187*	.144	.009	.044	.069
Item 07 [CE]							-.011	-.284**	.064	-.012	-.021	.239**	.089	-.106
Item 08 [CE]								.283**	-.105	-.125	-.274**	.049	.198**	-.037
Item 09 [Refl]									.045	.124	-.015	-.084	.122	.304**
Item 10 [Refl]										.070	.175*	-.028	.105	.145
Item 11 [Refl]											.214*	.139	-.123	.170*
Item 12 [Refl]												.009	.110	.246**
Item 13 [Iso]													-.049	-.231**
Item 14 [Iso]														-.181*

Note. a for full description of the items, please consult table A2.2
[CE] denotes apriori classification as the Certainty Effect Item
[Refl] denotes apriori classification as the Reflection Effect Item
[Iso] denotes apriori classification as the Isolation Effect Item
* p < .1; ** p < .05; *** p< .001

Table A2.5

Factor Loadings and Communalities of Prospect Theory Questionnaire Items, based on a Principal Axis Factoring with Direct Oblimin Rotation (n = 84)

	1	2	3	4	5	6
Item 01 [CE]	.502	.167		.257	-.430	-.277
Item 02 [CE]	.473	-.124	-.148	.313	.196	
Item 03 [CE]	-.152		.185		-.170	.219
Item 04 [CE]	.111	-.139	.274	-.111	.417	
Item 05 [CE]	-.211	.219	.292			
Item 06 [CE]	-.176	.292	.246	.148	-.245	
Item 07 [CE]	-.377	-.142	.238	.230		.206
Item 08 [CE]	.461	-.274	.353		-.141	.295
Item 09 [Refl]	.648	.246				.161
Item 10 [Refl]		.349	.186		-.177	
Item 11 [Refl]		.366		.324		.146
Item 12 [Refl]	-.109	.487	.111	.188	.304	-.270
Item 13 [Iso]		-.273		.643	.152	.157
Item 14 [Iso]	.118		.639		.102	-.243
Item 15 [Iso]	.151	.597	-.119	-.159	.148	.298

Note. Abbreviations in brackets denote apriori classification of the item: CE - Certainty Effect; Refl - Reflection Effect; Iso - Isolation Effect
Factor Loadings of < .1 were suppressed

Appendix 3 – Susceptibility to Persuasion tables and scales

Table A3.1

Descriptions of Scenarios used in Study 1 in Chapter 3.

Fake Cheque	A fake cheque is used to pay for services or goods you offer. This becomes apparent only when the bank refuses to cash the cheque.
Fake Gig	You buy event tickets online (or by other means), only to find out later that the tickets are fake or were never delivered.
Merchandise	You purchase goods from an online store. The goods either never arrive or have been misrepresented (e.g. fake designer brands, actual goods look different from the photos on the website, used goods sold as new...). This type of scheme does not include online auction sites (e.g. eBay).
Gifts	Somebody offers prizes with a request for an initial investment (personal information or money), however, the prizes never materialise afterwards.
Phishing	Receive an email from a person masquerading as a well-known source which asked you to enter personal information (for instance bank details or a password to a web-site).
419AFF	An email from a unknown African or Iraqi relative; a Nigerian dictators' wife, a Nigerian building subcontractor, a lawyer, etc., promising wealth and riches which require you to cover initial fees in order for the process to successfully conclude. Despite investment of time and money the payoff never comes, you only get requests for more money.
Auctions	Purchased goods online via an auction (e.g. eBay) but despite payment, the goods are never delivered or misrepresented (e.g. fake designer brands, actual goods look different from the auction photos, used goods sold as new, seller is from another country, which means hidden customs fees, ...).
Loan	Somebody offers a business or personal loan despite the customer having bad credit rating. A processing fee is required. Despite having paid the fee, the credit or loan is never received.
Lottery	An email tells you that you've just won the lottery! In order to claim your winnings you need to pay a fee of some sort. After the fees are paid the "lottery officials" seem to disappear with your money and no winnings are ever received.

Note. Continued on the next page.

Table A3.1 (continued)
Descriptions of Scenarios used in Study 1 in Chapter 3.

Relationship	After being in an online relationship for a short period of time, the person you believe to be your partner requests money for a particular reason (e.g. financial aid or travelling expenses in order to come and visit you) which you pay. After a while it turns out that your online date is never coming to visit. They have been misrepresenting themselves to you (fake profile picture, different age, gender, nationality)
Fake Mag	Offered and paid for a subscription to a magazine, (usually offered with "free prizes"), but despite paying the subscription fee, the magazine (and other things offered) never arrive.
Telephone Scams	If you receive one of these calls, upon answering the telephone you might hear a recorded message congratulating you on winning an all expenses trip to an exotic location. You will then be asked to press 9 to hear further details. If you press 9 you will be connected to a premium rate line that costs approximately £20 per minute. Even if you disconnect immediately, it will remain connected for a minimum of 5 minutes costing around £ 100.
Boiler Room	You are contacted by a 'stock-broker' or their assistant offering an investment opportunity, buying stocks in a company that is the next Google or Shell or ... You are asked to buy stocks and told of huge profits you could make. If you decide to invest, the stocks will actually be bought in your name, but you will not be able to sell them for a set period of time (usually two years). In the meantime the company whose value was artificially inflated would crash.
Pyramid	A successful pyramid scheme combines a fake yet seemingly credible business with a simple-to-understand yet sophisticated-sounding money-making formula which is used for profit. The essential idea is that the mark, Mr. X, makes only one payment. To start earning, Mr. X has to recruit others like him who will also make one payment each. Mr. X gets paid out of receipts from those new recruits. They then go on to recruit others. As each new recruit makes a payment, Mr. X gets a cut. He is thus promised exponential benefits as the "business" expands. The flaw is that there is no end benefit. The money simply travels up the chain. Individuals at the bottom of the pyramid end up with a deficit.

Appendix 4 – Personality traits and victims of scams – tables and scales

Table A4.1

Descriptions of Modified Scenarios used in Study 2 in Chapter 3 and Chapter 4

	Description
Fake Cheque scam	You are selling a quite valuable item through classified ads. You have been trying to sell this for a while. All of a sudden, somebody contacts you and offers to buy this item for the list price. They don't even haggle. They post you a cheque (or check, if you prefer U.S. spelling) and ask you to send the item as soon as possible. You send them the item immediately, wanting to provide a good customer experience. The address is a P.O. Box.) and you send them the item immediately, wanting to provide a good customer experience.
Phishing	You receive an email from your bank, notifying you that there was some suspicious activity detected on your account. You should login through a secure link provided and check that everything is in order.
419 scams	You receive an email from an African or Iraqi relative (you never even knew you had); a Nigerian dictators' wife, a Nigerian building subcontractor, a lawyer, etc. They promise wealth and riches, but require you to cover initial fees in order for the process to successfully conclude. I you have no money, they will sometimes provide you with a check that cover would cover the initial fees.
Internet auction scams	You found a Lenovo ThinkPad you always wanted on eBay! The sellers feedback is quite high (98% +), they are selling their personal machine and the price is just too good to pass by. You go from wanting to buying it in two minutes, as you know that otherwise somebody else will buy it soon. It is approximately 40% discounted. You want to pay immediately. The seller requires payment through a bank transfer, claiming that PayPal fees are prohibitive. True. Well, you bought it already, you might as well pay, if you want to keep your positive feedback score. The bank information sent to you by the seller seems to indicate that you are transferring money to a bank in Hong Kong, but the seller tells you that the goods will be sent from a warehouse in your local country, so that is OK. The seller insists on communicating through personal emails, not through eBay emails, as they "don't want eBay to spy on them". Makes sense.

Note. Continued on the next page.

Table A4.1 (Continued)

Descriptions of Modified Scenarios used in Study 2 in Chapter 3 and Chapter 4

	Description
Investment scams	You are contacted by a stock-broker or their assistant offering an investment opportunity, buying stocks in a company that is the next Google or Shell or ... You are asked to buy stocks and told of huge profits you could make. If you decide to invest, the stocks will actually be bought in your name, but you will not be able to sell them for a set period of time (usually two years).
Pyramid scheme	You are contacted by a midsize business with a great idea on how to make money with a relatively little effort. There is a small charge for an initial 'business pack' that explains everything in detail, but you will be able to make that back very quickly as you recruit helpers, who will also make the initial small payment to you. You will send a small amount out of those payments to your recruiter (for his trouble). Everything else, you will keep. Your recruits will also get to keep most of the money they will make from their recruitments, but will send a small percentage to you. You will earn more and more as the business expands.
in-store credit card	You are offered an in-store credit card, from a local well-known retailer.

Table A4.2
Debriefing included in Modified Scenarios used in Study 2 in Chapter 3 and Chapter 4

Fake cheque scheme	This could be a part of a fake cheque (or check, if you prefer U.S. spelling) scheme. In our particular case it turns out that the cheque is fake and your bank refuses to cash it. There is a variation of this scheme, where the cheque is legit, but the amount on it is not. In that case the bank will cash it and realise only later that the amount was forged. They will then contact you and require the money back. You might also get in into legal hot water as from the bank's perspective you are the person who cashed a counterfeit cheque (i.e. not the victim but the perpetrator).
Phishing	A bank should never send you an email with embedded log-in links. This is almost certainly a case of phishing / spoofing. The link leads to a website that appears legit but is in fact not. The purpose of that exercise is to get personal information (username, password, account information). Variations include fake emails from student loan companies, PayPal, government, eBay... the scammers are looking for bank details, usernames / passwords, national insurance/social security number, etc.
419 scams	Barring a situation where you actually are related to the late king of Nigeria, this is usually a so called Nigerian Scam letter or a 419 scam. This is classified as an advance fee fraud. The money never arrives. If you received a check, it is fake. Documentation that you receive and needs your signature usually includes power-of-attorney form, which when signed gives the scammer complete control over your assets. People have lost their homes (scammers sold them on) and all their other possessions to those scams. A good site to check, if you are interested in 419 scams is 419eater.com

Note. Continued on the next page.

Table A4.2 (Continued)
Debriefing included in Modified Scenarios used in Study 2 in Chapter 3 and Chapter 4

Internet auction scams	Where to start? The high feedback could be irrelevant here, for two possible reasons: 1.If the account has been hijacked (as it seems to be the case here - the seller insists on bypassing eBay when communicating. This might indicate that the original owner of the account has locked the hijacker out of the account and can now monitor all official communication) as then it is not the scammer's feedback score you are looking at; 2. If the seller has sold 200.000+ items, then 2% of negative transaction feedbacks means plenty of dissatisfied customers. Bank transfer as payment type leaves you completely unprotected as a customer. PayPal fees are a consideration, that is true, but that is not really your problem, the seller pays them anyway. If anything goes bad, you do get your money back through PayPal in most cases. A bank account in China? The person has a warehouse in your local country, but doesn't have a bank account there? How are they paying the rent? This means that even if you will get the item, it will arrive from China and you will pay customs fees and the item will be delivered in a month or so, not in a few days. The goods could be counterfeit or very different from description. A good way to protect yourself from eBay fraud is to familiarize yourself with the eBay safety centre (http://pages.ebay.co.uk/safetycentre/index.html).
Lottery scams	This is probably a variation of advance fee fraud. In order to win the lottery, the least you could have done was to buy the lottery ticket. After the fees are paid the “lottery officials” disappear with your money and no winnings are ever received.

Note. Continued on the next page.

Table A4.2 (Continued)
Debriefing included in Modified Scenarios used in Study 2 in Chapter 3 and Chapter 4

Lonely hearts scams	This could be a so called Friendship & Sweetheart Swindle. Nigerian scam artists seem to have diversified into this area lately. They usually misrepresent themselves by using Nigerian movie stars or news anchors for their profile pictures. There is much to be said for keeping the romantic ideals alive, but on the other hand, there is also much to be said about caution when dealing with online identity. Of course, this is a precarious position to be in, when you are starting a relationship - you don't want to appear to be untrusting and stingy by withholding the money, as that wouldn't bode well for the relationship in the long term. If your partner needs to come and see you and can't afford the travel costs, you can easily buy the ticket for them, right? If everything is legit, there won't be any problem and if it isn't, well, you've lost some money, but the other party hasn't gained any and you might write that off as the cost of knowing a lot more about the state of your relationship. If at one point in time it seems that you are all of a sudden supporting a largish community who are all between jobs or have suffered horrible accidents and can't work, well, that also raises questions about the relationship - do you want to keep supporting others forever? Is that a relationship you want to be in? A variation on the theme is that the person actually shows up and lives with you rent-free for a while. When the time comes to chip in, they disappear.
Investment scams	This type of scheme is also called a boiler-room scam. This is how the scheme unfolds: A brokerage firm invests money into stock of a company that is circling the drain. Since a lot of money is invested, the stock of that company is artificially inflated. The scammers then call prospective investors (uninvited calling is called cold-calling) and demonstrate how the stock of the company they are peddling has risen sharply recently. They offer the mark an option to buy the stock options, which cannot be sold before a given date (usually far in the future). This fact is not widely advertised in the selling process. Once the scammers receive enough funds, the stocks inflate even more. At that point they sell their own stock in the company making a nice profit, leaving the mark with no choice but to watch how the company they invested in slowly goes broke (while they can't sell the stock).Warning signs:- cold-calling (why would a reputable firm pick you of all people for insider trading?)- In some cases, if you listen carefully to the background noise when the stock-broker calls you, you will usually hear sounds of the stock exchange / trading. If you pay attention you will realise that this is a recording that loops around every few minutes- The no-such-thing-as-a-free-lunch rule applies here.- Careful! The stock-broker wants you to commit verbally and once you have done this, they will threaten you with a law suit if you want to back out of the deal later.

Note. Continued on the next page.

Table A4.2 (Continued)
Debriefing included in Modified Scenarios used in Study 2 in Chapter 3 and Chapter 4

Pyramid scheme	This is almost certainly a pyramid Scheme. A successful pyramid scheme combines a fake yet seemingly credible business with a simple-to-understand, yet sophisticated-sounding money-making formula which is used for profit. The essential idea is that the mark, Mr. X, makes only one payment. To start earning, Mr. X has to recruit others like him who will also make one payment each. Mr. X gets paid out of receipts from those new recruits. They then go on to recruit others. As each new recruit makes a payment, Mr. X gets a cut. He is thus promised exponential benefits as the "business" expands. The flaw is that there is no end benefit. The money simply travels up the chain. Individuals at the bottom of the pyramid end up with a deficit.. Strictly speaking these schemes are not illegal in some countries, as all the obligations are in fact fulfilled by the perpetrator and there is an actual possibility to earn some money if you get close to the top of the pyramid. There is no doubt that this is a shady business practice, though. On one hand there is a question of personal ethics (you are earning money somebody else is losing) and on the other hand, the chances of getting any return on your investment are incredibly slim.
in-store credit card	This is not a scam by definition (i.e. an illegitimate marketing offer). It is a shady business practice, though. There are variations that certainly are scams. We could categorise the offers that fall under this scenario as a hidden charges scam. What usually happens with these sorts of deals is that through time it turns out that there are hidden membership fees and a prohibitive interest rate after a set amount of time. Of course, this is included in the contract you signed. Usually, in small print on the bottom of page 24 of the annexe. This shady business practice, generally does not offer enough profit to compensate for a loss from eroding customer base. Another variation is offered by one of the previous respondents to this questionnaire: "My friends were on holiday and went on a boat trip to an island. Halfway through the crossing, the boat stopped and the skipper told the passengers that they would in fact need to pay more to get all the way across. Two other passengers who had been very amiable to my friends paid up, but in retrospect my friends felt that they may have been involved in the con."

Table A4.3

Factor Loadings and Communalities Based on a Principal Components Analysis with Oblimin Rotation for 20 Items from mini-IPIP scale in the Holdout Sample (n = 276)

	E	N	C	A	O
Am the life of the party. [Extraversion]	.826				
Don't talk a lot.[R] [Extraversion]	.796				
Talk to a lot of different people at parties. [Extraversion]	.742				
Keep in the background.[R] [Extraversion]	.800				
Have frequent mood swings [Neuroticism]		.757			
Am relaxed most of the time.[R] [Neuroticism]		.687			
Get upset easily. [Neuroticism]		.753			
Seldom feel blue.[R] [Neuroticism]		.497			
Get chores done right away [Conscientiousness]			.650		
Often forget to put things back in their proper place.[R] [Conscientiousness]			.792		
Like order. [Conscientiousness]			.723		
Make a mess of things.[R] [Conscientiousness]			.610		
Sympathize with others' feelings [Agreeableness]				.814	
Am not interested in other people's problems.[R] [Agreeableness]				.770	
Feel others' emotions. [Agreeableness]				.753	
Am not really interested in others.[R] [Agreeableness]				.665	
Have a vivid imagination [Openness]					.847
Am not interested in abstract ideas.[R] [Openness]					.477
Have difficulty understanding abstract ideas.[R] [Openness]					.498
Do not have a good imagination [Openness]					.788

Note. Factor loadings < .47 are suppressed
The text in brackets denotes which a priori scale each item was assigned to.
[R] Denotes that items were reverse coded.

Table A4.4

Items in Brief Low Self-control Scale

I am good at resisting temptation*
I have a hard time breaking bad habits
I am lazy
I say inappropriate things
I do certain things that are bad for me, if they are fun
I refuse things that are bad for me*
I wish I had more self-discipline*
People would say that I have iron self-discipline*
Pleasure and fun sometimes keep me from getting work done
I have trouble concentrating
I am able to work effectively toward long-term goals*
Sometimes I can't stop myself from doing something, even if I know it is wrong
I often act without thinking through all the alternatives

NOTE * *Indicates an ITEM with reverse scoring*

Appendix 5 – risk and scams, tables and procedures

Table A5.1

Items on Kuhl Action Control Scale

Item	question / response pairs
Kuhl01	If I had to work at home
	I would often have problems getting started
	I would usually start immediately [+]
Kuhl02	When I want to see someone again
	I try to set a date for the visit right away
	I plan to do it some day [+]
Kuhl03	When I have a lot of important things to take care of
	I often don't know where to start
	It is easy for me to make a plan and then stick to it [+]
Kuhl04	When I have two things that I would like to do and can do only one
	I decide between them pretty quickly
	I wouldn't know right away which was most important to me [+]
Kuhl05	When I have to do something important that's unpleasant
	I'd rather do it right away [+]
	I avoid doing it until it's absolutely necessary
Kuhl06	When I really want to finish an extensive assignment in an afternoon
	it often happens that something distracts me
	I can really concentrate on the assignment [+]
Kuhl07	When I have to complete a difficult assignment
	I can concentrate on the individual parts of the assignment [+]
	I easily lose my concentration on the assignment
Kuhl08	When I fear that I'll lose interest during a tedious assignment
	I complete the unpleasant things first
	I start with the easier parts first [+]
Kuhl09	When it's absolutely necessary that I perform an unpleasant duty
	I finish it as soon as possible [+]
	it takes a while before I start on it
Kuhl10	When I've planned to do something unfamiliar in the following week
	it can happen that I change my plans at the last moment
	I stick with what I've planned [+]

Note. Continued on the next page.

Table A5.1 (Continued)

Items on Kuhl Action Control Scale

Item	question / response pairs
Kuhl11	When I know that something has to be done soon I often think about how nice it would be if I were already finished with it I just think about how I can finish it the fastest [+]
Kuhl12	When I'm sitting at home and feel like doing something I decide on one thing relatively fast and don't think much about other possibilities [+] I like to consider several possibilities before I decide on something
Kuhl13	When I don't have anything special to do and am bored I sometimes contemplate what I can do it usually occurs to me soon what I can do [+]
Kuhl14	When I have a hard time getting started on a difficult problem the problem seems huge to me I think about how I can get through the problem in a fairly pleasant way [+]
Kuhl15	When I have to solve a difficult problem I think about a lot of different things before I really start on the problem I think about which way would be best to try first [+]
Kuhl16	When I'm trying to solve a difficult problem and there are two solutions that seem equally good to me I make a spontaneous decision for one of the two without thinking much about it [+] I try to figure out whether or not one of the solutions is really better than the other
Kuhl17	When I have to study for a test I think a lot about where I should start I don't think about it too much: I Just start with what I think is most important [+]
Kuhl18	When I've made a plan to learn how to master something difficult I first try it out before I think about other possibilities [+] before I start, I first consider whether or not there's a better plan
Kuhl19	When I'm faced with the problem of what to do with an hour of free time sometimes I think about it for a long time I come up with something appropriate relatively soon [+]
Kuhl20	When I've planned to buy just one piece of clothing but then see several things that I like I think a lot about which piece I should buy I usually don't think about it very long and decide relatively soon [+]

Note. [+] Denotes action oriented response (i.e. not-depleted).
Instructions: "Please consider each situation and the response options given. Please pick the response alternative that would complete the sentence as it would best describe yourself"

Table A5.2

Reliability testing of Kuhl Action Control Scale

Items included [Kuhl#]	Cronbach α [standardized]	Items removed
01, 02, 03, 04, 05, 06, 07, 08, 09, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20	.55 [.53]	Kuhl08
01, 02, 03, 04, 05, 06, 07, 09, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20	.59 [.58]	Kuhl20
01, 02, 03, 04, 05, 06, 07, 09, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19	.63 [61]	Kuhl02
01, 03, 04, 05, 06, 07, 09, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19	.65 [63]	Kuhl16
01, 03, 04, 05, 06, 07, 09, 10, 11, 12, 13, 14, 15, 17, 18, 19	.66 [65]	Kuhl18
01, 03, 04, 05, 06, 07, 09, 10, 11, 12, 13, 14, 15, 17, 19	.67 [66]	Kuhl17
01, 03, 04, 05, 06, 07, 09, 10, 11, 12, 13, 14, 15, 19	.68 [67]	Kuhl12
01, 03, 04, 05, 06, 07, 09, 10, 11, 13, 14, 15, 19	.69 [69]	Kuhl13
01, 03, 04, 05, 06, 07, 09, 10, 11, 14, 15, 19	.72 [71]	Kuhl04
01, 03, 05, 06, 07, 09, 10, 11, 14, 15, 19	.72 [.72]	Kuhl19
01, 03, 05, 06, 07, 09, 10, 11, 14, 15, 19	.73 [.73]	

Note. n = 95

Table A5.3

Factor Matrix for Materialism Scale Based on Principal Component Analysis with Varimax rotation for 18 Items from MATERIALISM (n = 180)

	Success	Acquisition Centrality	Happiness
MAS1N [I admire people who own expensive homes, cars, and clothes.]	.526		
MAS2N [Some of the most important achievements in life include acquiring material possessions.]	.377		.414
MAS3N B [I don't place much emphasis on the amount of material objects people own as a sign of success.]	.704		
MAS4N [The things I own say a lot about how well I'm doing in life.]	.647		.360
MAS5N [I like to own things that impress people.]	.647		
MAS6N B [I don't pay much attention to the material objects other people own.]	.633		
MAC1N B [I usually buy only the things I need.]		.730	
MAC2N B [I try to keep my life simple, as far as possessions are concerned.]		.707	
MAC3N B [The things I own aren't all that important to me.]		.409	
MAC4N [I enjoy spending money on things that aren't practical.]		.780	
MAC5N [Buying things gives me a lot of pleasure.]	.464	.483	
MAC6N [I like a lot of luxury in my life.]	.360	.410	
MAC7N B [I put less emphasis on material things than most people I know.]	.510	.509	
MAH1N B [I have all the things I really need to enjoy life.]			.572
MAH2N [My life would be better if I owned certain things I don't have.]	.306		.698
MAH3N B [I wouldn't be any happier if I owned nicer things.]		.332	.541
MAH4N [I'd be happier if I could afford to buy more things.]	.328		.652
MAH5N [It sometimes bothers me quite a bit that I can't afford to buy all the things I'd like.]			.504

NOTE Factor Loadings of < .3 were suppressed

Table A5.4

*Factor Matrix for Action Control Scale Based on Principal Axis Factoring without rotation for 20 Items from KUHL (*N = *130)*

	F1	F2	F3	F4	F5
KUHL 1. If I had to work at home...	.510	-.520			
KUHL 2. When I want to see someone again					
KUHL 3. When I have a lot of important things to take care of	.483				.407
KUHL 4. When I have two things that I would like to do and can do only one			.614		
KUHL 5. When I have to do something important that's unpleasant	.726				
KUHL 6. When I really want to finish an extensive assignment in an afternoon					
KUHL 7. When I have to complete a difficult assignment	.428				
KUHL 8. When I fear that I'll lose interest during a tedious assignment	-.422				
KUHL 9. When it's absolutely necessary that I perform an unpleasant duty	.806				
KUHL 10. When I've planned to do something unfamiliar in the following week				-.421	
KUHL 11. When I know that something has to be done soon	.470				
KUHL 12. When I'm sitting at home and feel like doing something					
KUHL 13. When I don't have anything special to do and am bored		.615			
KUHL 14. When I have a hard time getting started on a difficult problem	.419				
KUHL 15. When I have to solve a difficult problem	.405				
KUHL 16. When I'm trying to solve a difficult problem and there are two solutions that seem equally good to me					
KUHL 17. When I have to study for a test				.451	
KUHL 18. When I've made a plan to learn how to master something difficult					
KUHL 19. When I'm faced with the problem of what to do with an hour of free time		.596			
KUHL 20. When I've planned to buy just one piece of clothing but then see several things that I like					

NOTE Factor Loadings of < .4 were suppressed

Table A5.5

*Factor Matrix for Action Control Scale Based on Principal Axis Factoring with Direct Oblimin rotation for 10 Items from KUHL (*N = *130)*

	F1	F2	F3
KUHL 1. If I had to work at home...	.351		
KUHL 3. When I have a lot of important things to take care of	.498		.390
KUHL 5. When I have to do something important that's unpleasant	.753	.301	
KUHL 6. When I really want to finish an extensive assignment in an afternoon		.682	
KUHL 7. When I have to complete a difficult assignment		.464	
KUHL 9. When it's absolutely necessary that I perform an unpleasant duty	.835	.332	
KUHL 10. When I've planned to do something unfamiliar in the following week			
KUHL 11. When I know that something has to be done soon	.492		.369
KUHL 14. When I have a hard time getting started on a difficult problem			.685

NOTE Factor Loadings of < .3 were suppressed

Table A5.6

*Factor Correlation Matrix for Action Control Scale with 10 Items (*N = *130)*

	F1	F2	F3
F1		.194	.352
F2	.194		.094
F3	.352	.094	

Note. Extraction Method - Principal Axis Factoring.
Rotation Method: Oblimin with Kaiser Normalization.

Multiple regression with untransformed DV (Appeal)

Multiple linear regression was employed to determine which factors (measured by materialism, risk perception scale and action control scale) influence scam compliance and to what extent. In addition to above factors, demographic factors (age, IT experience, gender, Online shopping experience and familiarity with eBay) were entered into the equation, to measure their influence on auction Appeal of fraudulent offer. No clear outliers were present, so none were removed from the analysis. Homoscedascity was examined via several scatterplots and these indicated good consistency of spread through the distributions.

The correlations amongst the factors were examined. Gender was moderately positively correlated to IT experience (r_{92} = .33, p = .001). Acquisition centrality

(materialism) was highly positively correlated to frequency of online shopping (r_{130} = .40, $p < .001$), to happiness ($r_{92} = .44$, $p < .001$) and to success ($r_{92} = .39$, $p < .001$). Happiness was highly positively correlated to success ($r_{92} = .48$, $p < .001$). The correlations between used factors and auction Appeal were small to moderate and all but two were statistically insignificant (feedback: $r_{92} = -.299$, $p = .002$; eBay specific items: $r_{92} = -.313$, $p = .001$), indicating that exploratory linear regression was appropriate.

A hierarchical method was used for the entry of the predictor variables. Independent variables were entered in four blocks (demographics, materialism, risk perception scale, action control scale), using enter method. Beta weights for the sequence of regressions are reported in Table A5.6, while regression coefficients are reported in Table A5.7.

Final regression analysis produced an R of .356, $R^2 = .127$ and an adjusted R^2 of .110 ($F_{2, 103} = 7.478$, $p = .001$) with two significant predictors of scam compliance – eBay specific factors and feedback. The stronger predictor of the two was eBay specific ($\beta = -.25$ $p = .008$), closely followed by feedback ($\beta = -.21$, $p = .024$).

Another stepwise multiple regression analysis was conducted with individual items from the two factors in an effort to pinpoint which eBay specific item influenced scam compliance. It produced an R of .402 and R^2 of .161 ($R^2_{adj} = .143$, $F_{1, 89} = 6.991$, $p = .01$) with "Seller feedback is lower than 100%"($\beta = -.265$, $p < .008$) and "Text in the main picture is misspelled" ($\beta = -.260$, $p = .01$) as the only two significant predictors of auction Appeal.

Table A5.6

Beta Weights of Variables Included in the Hierarchical Regression Analysis to Predict Appeal of a Fraudulent Offer (n = 130)

		b	SE b	β	t
Step 1	Age	-.15	.41	-.04	-0.35
	Gender	.22	.56	.05	0.40
	IT Knowledge	-.44	.41	-.12	-1.08
	Online shopping experience	-.39	.33	-.13	-1.18
	eBay familiarity	.15	.45	.04	0.34
	Acquisition Centrality (Materialism)	.52	.37	.18	1.43
	Happiness (Materialism)	-.43	.36	-.15	-1.19
	Success (Materialism)	.38	.30	.15	1.27
	Action Control Scale	.17	.10	.19	1.67
	Feedback (Risk Perception)	-.57	.27	-.23	-2.13**
	Location (Risk Perception)	-.19	.33	-.08	-0.58
	eBay Specific (Risk Perception)	-.77	.30	-.32	-2.56**
	Price (Risk Perception)	.38	.40	.13	0.94
Step 2	IT Knowledge	-.26	.38	-.07	-0.67
	Online shopping experience	-.28	.32	-.10	-0.88
	Acquisition Centrality (Materialism)	.47	.35	.16	1.34
	Happiness (Materialism)	-.31	.35	-.11	-0.88
	Success (Materialism)	.26	.29	.10	0.88
	Action Control Scale	.15	.09	.17	1.63
	Feedback (Risk Perception)	-.45	.26	-.18	-1.73*
	eBay Specific (Risk Perception)	-.84	.30	-.35	-2.85**
	Price (Risk Perception)	.07	.34	.03	0.22
Step 3	Acquisition Centrality (Materialism)	.40	.29	.14	1.37
	Action Control Scale	.18	.09	.19	1.92*
	Feedback (Risk Perception)	-.56	.25	-.22	-2.22**
	eBay Specific (Risk Perception)	-.8	.29	-.32	-2.74**
	Price (Risk Perception)	.06	.34	.02	0.17
Step 4	Feedback (Risk Perception)	-.54	.24	-.21	-2.29**
	eBay Specific (Risk Perception)	-.62	.23	-.25	-2.70**

Note: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table A5.7

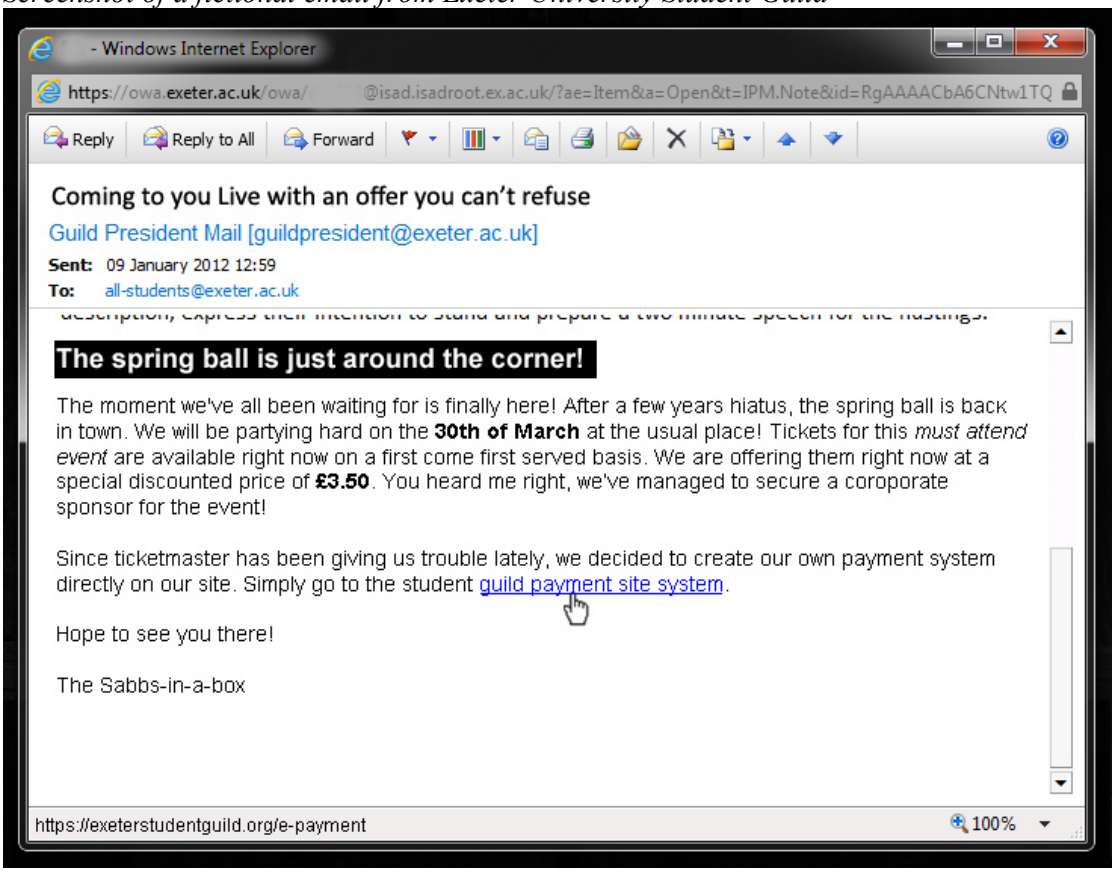
Beta Weights of Variables Included in the Hierarchical Regression Analysis to Predict Appeal of a Fraudulent Offer (n = 130)

	Variables entered	R^2	ΔR^2	F	ΔF
Step 1					
	Age, Gender, IT Knowledge, Online shopping experience, eBay familiarity, Acquisition Centrality (Materialism), Happiness (Materialism), Success (Materialism), Action Control Scale, Feedback (Risk Perception), Location (Risk Perception), eBay Specific (Risk Perception), Price (Risk Perception)	.26	.15	3.910**	2.682
Step 2					
	IT Knowledge, Online shopping experience, Acquisition Centrality (Materialism), Happiness (Materialism), Success (Materialism), Action Control Scale, Feedback (Risk Perception), eBay Specific (Risk Perception), Price (Risk Perception)	.22	.15	5.254**	4.237
Step 3					
	Acquisition Centrality (Materialism), Action Control Scale, Feedback (Risk Perception), eBay Specific (Risk Perception), Price (Risk Perception)	.19	.03	5.963**	1.544
Step 4	Feedback (Risk Perception), eBay Specific (Risk Perception)	.13	.13	7.478**	7.478**

Note: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.001$

Figure A5.1

Screenshot of a fictional email from Exeter University Student Guild



Debriefing at the end of the experiment

Thank you for your interest.

You have either reached this page because you fall out of our required age bracket, or because you completed the whole survey. In either case, we appreciate your willingness to help.

As promised, here is a brief debrief on the experiment. As you would have noticed in the initial email sent to you, there were two groups who completed slightly different questionnaires. The general thrust of our study is us looking to see whether people are more scam compliant when they are *ego-depleted*. Let us explain - there is a theory that self-control is like a muscle (see Baumeister & Tice article in the bibliography below) and the more you exercise it, the more tired it gets. Once one's self-control is depleted, they tend to make irrational decisions (like falling for a scam, for example). There are several ways of depleting someone's self-control (it also happens through the course of a regular day, but that is hard to control in an experimental setting) and in one group (EGO-DEPL) we used a video that is widely experimentally used and proven to work. In the other group (NORM) we used a general video clip that is not particularly ego depleting. In the analysis we'll compare the two. Despite the instructions on video watching (in the EGO-DEPL group), there is actually no way to not notice the words flashing on the screen, so trying to ignore them is ego-depleting.

Auctions

Thus, we first depleted your self-control (or tried to) and then presented you with several screenshots of eBay auctions. One of them was doctored to include the preferences you expressed before and the price you indicated to be reasonable was lowered by 25%. There were several red flags in that auction screenshot, which were

listed in the follow up questions to the experiment, making this offer quite an obvious scam, at least to an expert.

The theory is that when a person is ego-depleted (i.e. has lowered self-control) they will be more likely to ignore signs that something is not completely above board. When we compare NORM and EGO-DEPL groups, we should see EGO-DEPL group to be more favourably disposed towards fraudulent offers.

One thing to note about the auctions - the first three screenshots are all taken from real auctions, with modified descriptions and seller names (to preserve seller privacy). Feedback scores and detailed feedbacks were adopted from real sellers. When we piloted this study, somebody commented that in the doctored screenshot, the feedback score couldn't be right as the numbers in the detailed feedback and the feedback score don't add up. We don't know exactly how eBay does this, but the score and the detailed feedback come from the same eBay seller (with a different name, of course).

Spring BALL

There was another email presented to you - the offer to get tickets to a ball. This is a representation of a so-called spear-phishing attack (read more about it here: http://searchsecurity.techtarget.com/definition/spear-phishing). Let us be completely clear: To the best of our knowledge, there isn't going to be a new spring ball! You couldn't have received the email, as it has not been sent to anyone! There is no point in looking for this email. No sensitive data was stolen from you (but it could have been! Be informed about phishing!) Student guild is in no way connected to our research (although they are aware of it and have graciously allowed us to use this screenshot of a non-existing email for our research). Student guild does not send out fraudulent emails. Somebody else pretending to be from student guild could, though. Here is how this

could have worked (make no mistake, a 'real' email like that, not only a screenshot of one could have easily been sent to your address) –

1. It is *very very* easy to fake a "FROM" email address. So the sender in the presented email could have been faked.

2. A scammer could create an online payment form - could be done in *GoogleDocs* - we've seen it done before; where you are asked to enter your data. It could ask for your Credit Card number, name on card, security number on the back, expiry date and Secured by MasterCard password (full one).

3. The email contains a plausible reason why the usual payment system does not work. It redirects you to a page owned by the scammer (exeterstudentguild.org) that seems very similar to the actual page.

4. The offer is enticing and plausible. Only £3.50 entrance fee (with corporate sponsorship)!

5. The scammer gets away with your credit card data. The logic here is exactly the same - EGO-DEPL group should be more responsive to the offer as the NORM group.

Other scales

There are two more scales and 4 questions from another scale contained in this survey: - "Attitudes towards goods" is actually a materialism scale (see Richins & Dawson article in the bibliography below), which measures, unsurprisingly, how materialistic people are. There is a theory that people will get more materialistic, once their ego is depleted. - "Orientation scale" is actually Kuhl's (1986) action control items, found in Babin and Darden (1995) - this scale tells us whether people are ego depleted or not, i.e. establishes a baseline and, additionally tests to see whether the ego-depleting

video had any effect. - There were four questions in the general questions area - about money choices. This is part of a famous Prospect Theory questionnaire developed and used by Kahneman and Tversky in 1979 (see below for a reference). Those four questions tie this experiment to an older one that we did.

We hope the experiment was not too painful for you and that we have answered some of the questions you might have had about it. If you wish to discuss it further or have any additional questions, do not hesitate to write to us at

D.Modic[AT]exeter.ac.uk (replace the [AT] with @).

Thank you for staying with us so far, we appreciate your help!

--- Sc.Research Team at the University of Exeter, UK.

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