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# Fear and Perceived Likelihood of Victimization in Traditional and Cyber Settings

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## ABSTRACT

*This study considers the influence of perceived likelihood, demographics (gender and education) and personality on fear of victimization and cyber-victimization using a survey design (N=159). The results suggest that perceived likelihood of victimization predicts fear of victimization in traditional contexts. Women tend to be more fearful of victimization in traditional and cyber contexts, confirming previous research. No group differences emerged in relation to education. Self-esteem and self-efficacy were not significant predictors of fear or perceived likelihood of victimization. However, perceived likelihood was a significant predictor of fear of victimization in traditional settings. This may suggest that different variables (such as awareness of vulnerability) may play a role in fear of victimization in cyber settings. Further group comparisons revealed that fear of victimization and cyber-victimization depended on whether or not participants reported high or low perceived likelihood of victimization and internet use. Higher internet use was associated with greater fear of victimization, especially in combination with greater perceived likelihood of victimization. This may suggest an exposure effect, in that being online more frequently may also increase awareness of cyber incidents.*

*Keywords:* Awareness, Cyber-Victimization, Fear of Victimization, Self-Efficacy, Self-Esteem, Victimization

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## 1. INTRODUCTION

Fear of crime is a significant social and political problem (Jackson, 2009). Fear of crime is also referred to as fear of victimization (Addington, 2011). The term therefore refers to the fear of being a victim of crime but not the actual likelihood of being a victim of crime (Ferraro, 1995; Hale, 1996). Nevertheless, fear of crime is also

shaped by the nature, severity and frequency of actual crimes. For example, the more serious a crime, the lower the level of perceived likelihood needed to stimulate some level of fear (Warr, 1984, 1987). These findings follow earlier work that suggested both the seriousness of the offence and the perceived likelihood of victimization were the 'proximate causes' and

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necessary conditions for fear (Warr & Stafford, 1983).

Further evidence suggests that fear is linked to those who perceive themselves as most at risk (Box, Hale, & Andrews, 1988). Perceived risk of vulnerability, also known as perceived likelihood of victimization (Ferraro, 1995), refers to the perceived likelihood or risk an individual has of becoming a victim or having a crime committed against them. In fact, considerably more people experience fear of crime rather than actual criminal victimization (Addington, 2011; Jackson, 2009). One explanation might be that fear includes a sense of vulnerability, both in terms of perceived likelihood of risk and perceived seriousness of the risk (Hale, 1996). Winkel (1998) also referred to perceived likelihood of risk as 'subjective victimization risk' and 'perceived negative impact', with the latter influencing fear more so than subjective victimization risk. This indirectly supports the link between fear and vulnerability to risk. Perceived likelihood of victimization has become one well-established explanatory variable of fear of crime (Chadee & Ying, 2013) that is supported throughout the literature (Chadee, Austen & Ditton, 2007; Chadee & Ying, 2013; Cook & Fox, 2011; Gainey, Alper & Chappell, 2011; Hale, 1996; Lee & Hilinski-Rosick, 2012; Ozascilar, 2013; Warr & Stafford, 1983).

The advancement of technology has also led to new crime types, such as cyber-crime, and new forms of victimization including cyber bullying (Pederson, 2013) or identity theft (e.g., Roberts, Indermaur, & Spiranovic, 2013). The role of the internet is of particular importance when considering research into fear of cyber-victimization (Henson, Reyns & Fisher, 2013). This is because both perpetrators and victims are generally heavy internet users (Walrave & Heirman, 2011) and a high prevalence of cyber-victimization exists amongst university students (Radda & Ndubueze, 2013). Cyber-crime and victimization have therefore also become important in the discussion on fear of victimization (Radda & Ndubueze, 2013). As a result, the impact of the media has also been considered throughout fear of crime literature,

particularly in terms of how this shapes fear of crime. For example, Weitzer and Kubrin (2004) found that those who use the internet were less fearful than those who indicated local news television as their primary news source.

Although fear of victimization in traditional and cyber settings may be predicted by similar variables, the link between perceived likelihood of cyber-victimization and fear of cyber-crime has not been researched as much to date (Henson et al., 2013; Roberts et al., 2013). However, some evidence suggests that traditional predictors of fear of crime (gender, age and location) are not necessarily significant predictors of fear of cyber-crime, such as cyber-identity theft and related fraudulent activity (see Roberts et al., 2013). More research is consequently needed to clarify the relationship of online activity and fear of crime (Kohm, Waid-Lindberg, Weinrath, Shelley & Dobbs, 2012). Cyber-victimization will be referred to as victimization in online settings throughout this paper.

The focus of our article is to examine to what extent findings about victimization and fear of victimization hold when we examine these in traditional as well as cyber settings. Only by establishing whether fundamental effects hold true or not in both settings can we try and build a comprehensive research base that considers victimization in both areas. We consider a variety of standard variables such as demographics but also personality characteristics as potential predictors and grouping variables in the next section.

### **1.1. Differences in Fear of Crime: Role of Demographics**

Several researchers have tried to identify the causes of fear of crime (Chadee et al., 2007) and why certain people are more fearful than others (Warr & Stafford, 1983). We want to consider gender, age, education and personality in relation to fear of victimization and fear of cyber-victimization in our paper.

Demographic characteristics have been shown to play an important role. Past research on crime perception suggests that women and

the elderly were more fearful of victimization than males (Warr, 1984, 1987). These groups, also including young girls, may also be more sensitive to, and aware of risk (see Pederson, 2013). Women in particular express greater levels of fear of crime than males (Chadee & Ying, 2013; Ferraro, 1996; Gainey et al., 2011; Lee, 2007; Lee & Hilinski-Rosick, 2012; Ozascilar, 2013; Sutton, Robinson & Farrall, 2011). For example, Box et al. (1988) found that 50% of women in their sample expressed fear compared to 14% of men. Women also feel they are more at risk (e.g., Jackson, 2009) despite the fact that overall men are more likely to be victims of crime (e.g., Baumer, 1985; Lee, 2007). These gender differences may be subject to crime type. One suggestion is that the overall greater fear of all types of victimization amongst women is driven by the overshadowing fear of sexual assault (e.g., Ferraro, 1996; Ozascilar, 2013) and becoming a victim of a personal crime or attack (e.g., Jackson, 2009). Gender has also been linked to cyber bullying, with either boys or girls believed to be more at risk (Li, 2007; Pederson, 2013; Smith, Mahdavi, Carvalho, Fisher, Russell & Tippett, 2008; Walrave & Heirman, 2011).

The research investigating the relationship between age and fear of crime has been somewhat mixed, with both significant and non-significant findings (Moore & Shepherd, 2007; see also Gainey et al., 2011, and Walrave & Heirman, 2011). Some have found that older people were not more likely than younger people to fear crime (Ferraro & LaGrange, 1992) or cyber-bullying (see Walrave & Heirman, 2011). In fact, younger people were more fearful of several types of crime. This is supported by studies such as Wynne (2008) and Jackson (2009) who found a negative effect of age on worry about crime. These results suggest that young people worry more frequently than older people. On the other hand, others have found that the elderly are more likely to be fearful (Box et al., 1988; Fitzgerald, 2008; Hayman, 2011). One explanation may be the finding by Moore and Shepherd (2007), that the type of crime in question played an important role.

Young people were more fearful of 'personal loss' while older people were more fearful of 'personal harm'.

Education, in an academic sense, appears to be an avenue requiring more research when attempting to identify the factors that predict fear of victimization. Gainey et al. (2011) found that education was consistently associated with fear, with those with a college degree expressing higher levels of fear of crime. Vanderbosh, Van Cleemput, Mortelmans and Walrave as cited by Walrave and Heirman (2011) considered the influence of education on cyber-bullying. They found that those with higher levels of education were less likely to be involved in cyber-bullying. On the other hand, not all studies link education and perceptions of crime risks (see Russo, Roccatto, & Vieno, 2013), suggesting that education may not always link to fear of victimization. Truman (2007) hence suggested that the role of education should be controlled in analyses for where appropriate, as it may also influence media consumption and hence fear of crime. As education may also influence the degree to which individuals have access and use the internet, internet use is another important variable to consider in analyses involving fear and perceived likelihood of cyber-victimization.

The link between internet use and victimization has been explored before (Radda & Ndubueze, 2013), as has the effect of internet use on fear of victimization (e.g., Kohm et al., 2012; Weitzer and Kubrin, 2004). This suggests that internet use is also an important variable that may be linked to both demographics and fear and perceived likelihood of (cyber) victimization.

## 1.2. Differences in Fear of Crime: Role of Personality Characteristics

Personality also affects fear of victimization and vice versa. Researchers have suggested that perceived likelihood of victimization is influenced by personal, social and cognitive factors (Chadee & Ying, 2013). Two related traits are particularly interesting in this debate, self-efficacy (e.g., Ashby & Kottman, 2000; Jackson, 2009; Kokkinos & Kipritsi, 2011;

Thijs & Verkuyten, 2008) and self-esteem (e.g., Blascovich & Tomaka, 1991).

Self-efficacy is the measure of the belief in one's own ability to complete tasks and reach goals (Bandura, 1977). It can be described as the personal assessment regarding one's perceived capabilities to organize and execute courses of action, to attain goals and organize their psychological functioning (Bandura, 1977). Kokkinos and Kipitsi (2011) found that victimization was negatively correlated with overall self-efficacy. Lower perceived self-efficacy and belief in one's capability to defend oneself may further drive fear of crime, particularly amongst women (e.g., Jackson, 2009). Victimization also negatively correlates with overall self-efficacy (Kokkinos & Kipitsi, 2011) and can have a negative influence on perceived academic self-efficacy (see Thijs & Verkuyten, 2008).

Self-esteem refers to the individual's sense of his or her value or worth (Blascovich & Tomaka, 1991; Rosenberg, 1965). Jackson (2009) argued that self-esteem may help explain differences relating to fear of crime. He suggested that the reason females are more likely to be fearful of crime than males is that they have lower perceived self-efficacy and higher perceived likelihood of victimization. Thijs and Verkuyten (2008) found that self-esteem did explain a significant part of the link between victimization and self-efficacy.

### 1.3. Research Gap

We build on previous work that has considered the psychological perspective and predictors of fear of victimization and perceived likelihood (e.g., Chadee & Ying, 2013; Jackson, 2009). In addition, we wanted to examine basic premises about the role of demographics in order to establish a starting point for future work examining effects in traditional as well as cyber settings. Our first goal was therefore to consider the role of gender and education in terms of the level of fear and perceived likelihood of victimization expressed amongst males and females. In addition, we wanted to see if certain demographics and personality characteristics

function in a similar fashion as predictors of fear and perceived likelihood of victimization and cyber-victimization. We excluded age in our paper due to sampling student participants (and student populations characteristically have a more restricted age range).

This study therefore builds upon current literature relating to the influence of gender (Ferraro, 1996; Pederson, 2013) and perceived likelihood of victimization (Ferraro, 1995) on fear of crime as well as exploring more novel variables such as self-efficacy, self-esteem, education and internet use. Exploring contextual effects is important and can add to the small number of studies that have considered the potential variables influencing victimization and cyber victimization (e.g., Henson et al., 2013; Li, 2007; Roberts et al., 2013).

### 1.4. Hypotheses

As a result of our basic-assumptions focus, we first consider demographic variables to set the stage for subsequent hypotheses (as some relationships may be subject to demographics). The first three hypotheses address the generalizability of findings previously observed in traditional settings alone. We decided to examine the effects in both traditional and cyber settings simultaneously in the same sample as this enabled us to account for within-sample differences (which may differ between different samples). It also allowed us to examine the strength of effects for the one sample in both traditional and cyber settings.

We propose the following hypotheses based on the previous research:

**Gender Effects Hypothesis (H1):** Female participants will fear victimization in both traditional and online settings more than male participants.

**Education Effects (H2):** Higher education is associated with lower fear and perceived likelihood of cyber-victimization (also controlling for internet use).

**Fear and Victimization Hypothesis (H3):** Perceived likelihood of victimization pre-

dicts fear of victimization (H3a). Perceived likelihood of cyber-victimization predicts fear of cyber-victimization (H3b). Those who perceive themselves as being more likely to be a victim of crime will be more fearful of victimization.

We also tested several additional hypotheses in order to contribute to the research on cyber settings, in addition to confirming findings in the traditional settings like hypotheses 1 to 3. These hypotheses are listed next:

**Self-Efficacy Hypothesis (H4a):** Self-efficacy predicts fear of victimization and perceived likelihood of victimization in both settings. Those who have low self-efficacy will fear victimization more and judge the likelihood of being a victim as higher.

**Self-Esteem Hypothesis (H4b):** Self-esteem predicts fear of victimization and perceived likelihood of victimization in both settings. Those who have low self-esteem will fear victimization more and judge the likelihood of being a victim as higher and so will fear victimization more.

**Conditional Hypothesis (H5):** Fear of victimization in both settings is subject to the level of internet use and perceived likelihood of victimization.

## 2. METHOD

In order to test our hypotheses, we utilized a survey design to test within-subjects effects.

### 2.1. Participants

Overall 176 participants volunteered. Following deletion of 17 cases due to large parts of missing data, the final total was 159. This included 50 males, 107 females and two participants who chose not to disclose their gender. Participants were between 18 and 55 years old, with the average age being 21 years old ( $M=21.12$ ,  $SD=4.99$ , 7 missing values).

### 2.2. Procedure

The study was published on the designated departmental research platform and using Facebook following ethics approval being granted (this social network is a popular student resource). Participants were invited to complete the online survey hosted on SurveyMonkey as long as they were at least 18 years old and had no previous experience as a victim of crime. When participants had given their consent and a unique identifier of their choice in case of subsequent withdrawal from the study, they were asked to fill out a number of questionnaires described above. The survey consisted of 40 questions and took approximately 15 minutes to complete. A debrief page followed which also thanked them for their participation. All data was treated in accordance with the Data Protection Act (no personal names, addresses or IP information were collected).

### 2.3. Measures

For the purpose of our study, we had to create a number of measures that would capture appropriate facets of situations that individuals may encounter in traditional or cyber settings. The focus here was on creating measures that would be content valid and appropriate in that domain. This also meant that the potential situations or behaviors listed could not necessarily be equivalent or comparable across the traditional or cyber domain, as each domain may feature unique experiences and events.

#### 2.3.1. Perceived Likelihood of Victimization in the Traditional Setting

We used three items to measure perceived likelihood of victimization generally based on the Fear of Victimization Questionnaire (Ferraro, 1995). These three items ask participants the following: (1) “The likelihood of someone stealing my wallet/purse with my personal information in is...”; (2) “The likelihood of me being a victim of some type of aggressive behavior while socializing with friends is ...”, and (3) “The likelihood that I will have property stolen

from my house is...". The five-point response scale ranged from (1) "highly unlikely" to (5) "highly likely". All items were correlated, but we excluded the second item from the final composite due to low reliability ( $\alpha=.59$ ). We therefore used the responses of the two remaining items to create a mean-centered composite, with higher scores suggesting greater perceived likelihood of becoming a victim generally ( $r=.44, p<.001; M=2.31, SD=.82$ ).

### 2.3.2. Perceived Likelihood of Victimization in the Cyber Setting

We used three slightly adapted items from the Fear of Victimization Questionnaire (Ferraro, 1995) to measure perceived likelihood of victimization in the online context. One item for perceived likelihood of cyber victimization was taken from Workman, Bommer and Straub (2008). These were the three items: (1) "The likelihood of someone getting my confidential information online without my consent or knowledge is..."; (2) "The likelihood of me being a victim of verbal aggression while socializing online (e.g. chatting) is...", and (3) "The likelihood that I will have my online photos being copied and used without my consent is...". The five-point response scale ranged from (1) "highly unlikely" to (5) "highly likely". All items were positively and moderately correlated, but we excluded the second item from the final composite due to low reliability ( $\alpha=.56$ ). We used the responses of the two remaining items to create a mean-centered composite, with higher scores suggesting greater perceived likelihood of becoming a victim in online settings ( $r=.374, p<.001; M=2.92, SD=.95$ ).

Please note that we also considered the possibility that the two scales to measure likelihood of victimization in traditional and cyber settings represented one rather than two separate constructs. We used LISREL to conduct a confirmatory factor analysis of the two subscales. Our results support a two-factor solution ( $\chi^2(8) = 17.10, p=.029; RMSEA = .08, 90\% CI [.005, .158], SRMR=.05, CFI=.93, and NFI=.88$ ). The two factors were signifi-

cantly correlated with one another ( $p<.05$ ) as expected. All indicators loaded significantly onto their assigned factors ( $t$ -values  $> 1.96, p<.05$ ). The model fit improved further as soon as we allowed modifications between items of the same subscale. The model fit statistics for a one-factor structure incorporating all items was significantly worse ( $\chi^2(9) = 33.86, p<.001; RMSEA=.13, 90\% CI [.086, .180], SRMR=.08, CFI=.81, and NFI=.77; \Delta\chi^2=16.76, p<.05$ ). As a result, we retained the two subscales rather than merging all items into one scale.

### 2.3.3. Fear of Victimization in the Traditional Setting

We used six items from the Fear of Victimization Questionnaire (Ferraro, 1995). These items were the following: (1) "Rate your fear of being cheated out of your money"; (2) "Rate your fear of having someone break into your house"; (3) "Rate your fear of having your personal property stolen"; (4) "Rate your fear of having your property damaged by strangers"; (5) "Rate your fear of being robbed or mugged on the street"; and (6) "Rate your fear of verbal abuse". The five-point response scale ranged from (1) "not afraid" to (5) "very afraid". We created a mean-composite using all six responses, with higher scores indicating greater fear ( $\alpha=.84, M=2.74, SD=.86$ ).

### 2.3.4. Fear of Victimization in the Cyber Setting

Five items from the Fear of Victimization Questionnaire (Ferraro, 1995) were used. However, we amended them slightly to be appropriate for the online context. These items were the following: (1) "Rate your fear of being a victim of internet fraud"; (2) "Rate your fear of online harassment"; (3) "Rate your fear of having your personal online identity stolen"; (4) "Rate your fear of having your online property (blogs, social networking sites etc.) damaged"; and (5) "Rate your fear of having your stored data accessed illegally". The five-point response scale ranged from (1) "not afraid" to (5) "very



afraid". We created a mean-composite using all six responses, with higher scores indicating greater fear ( $\alpha=.84$ ,  $M=2.50$ ,  $SD=.84$ ).

We made sure to test the extent to which the scales measuring fear of victimization in traditional and cyber settings should have been merged in further analyses. We used LISREL to conduct a confirmatory factor analysis of the subscales. Our results support a two-factor solution ( $\chi^2(43) = 171.59$ ,  $p<.001$ ;  $RMSEA = .14$ , 90% CI [.116, .159],  $SRMR=.09$ ,  $CFI=.92$ , and  $NFI=.90$ ). The two factors were significantly correlated with one another ( $p<.05$ ) as expected. All indicators loaded significantly onto their assigned factors ( $t$ -values  $> 1.96$ ,  $p<.05$ ). The model fit improved further as soon as we allowed modifications between items of the same subscale. The model fit statistics for a one-factor structure incorporating all items was significantly worse ( $\chi^2(44) = 245.56$ ,  $p<.001$ ;  $RMSEA = .17$ , 90% CI [.149, .191],  $SRMR=.09$ ,  $CFI=.88$ , and  $NFI=.85$ ;  $\Delta\chi^2=73.97$ ,  $p<.05$ ). As a result, we retained the two subscales.

### 2.3.5. Self-Efficacy

We used six items from the Schwarzer and Jerusalem's (1995) general perceived self-efficacy scale. An example item was "No matter what comes my way, I'm usually able to handle it." The response options ranged from (1) strongly disagree to (5) strongly agree. We created a mean-composite using all six responses, with higher scores indicating greater self-efficacy ( $\alpha=.880$ ,  $M=3.81$ ,  $SD=.67$ ).

### 2.3.6. Self-Esteem

We used five items from Rosenberg's (1965) self-esteem scale to assess participant's self-esteem. An example item was "I take a positive attitude toward myself." The response options ranged from (1) strongly disagree to (5) strongly agree. We created a mean-composite using all six responses, with higher scores indicating greater self-efficacy ( $\alpha=.88$ ,  $M=3.83$ ,  $SD=.75$ ).

### 2.3.7. Internet Use

This was assessed using a seven item questionnaire adapted from Widyanto and McMurrin (2004) and Butt et al. (2007). We used the following seven items: (1) "When I have free time I always check/use the internet." (2) "One of the first things I do when I wake up is check the internet." (3) "I choose to spend more time online than going out with others." (4) "I find that I stay online longer than I intended." (5) "I find myself anticipating when I will go online again." (6) "I try to cut down the amount of time I spend online and fail." And (7) "I find myself saying 'Just a few more minutes when online'." The response options ranged from (1) strongly disagree to (5) strongly agree. We created a mean-composite using all seven responses, with higher scores indicating greater internet use ( $\alpha=.80$ ,  $M=3.17$ ,  $SD=.77$ ).

### 2.3.8. Control Questions

Two further questions assessed how safe participants felt generally in the home and online to create a baseline overall for each context. The exact items were: (1) "How safe do you feel inside your home?" and (2) "How safe do you feel online?" The response options ranged from (1) very safe to (4) very unsafe. The two items were not significantly correlated with one another ( $r=.131$ ,  $p=.101$ ).

### 2.3.9. Demographics

These included age, gender and highest level of education. The education options included the following: GSCE (high school diploma,  $n=3$ , 1.9%), A-level ( $n=62$ , 39%), undergraduate degree ( $n=89$ , 56%), and postgraduate degree ( $n=3$ , 1.9; one missing value).

## 3. RESULTS

Several measures were used to collect the necessary data. The scale descriptives of these are given in the table below (see Table 1). In terms of the general relationship between our

Table 1. Correlations between all variables of interest

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
1. Fear of victimization	1									
2. Fear of cyber-victimization	.672**	1								
3. Perceived likelihood of victimization	.407**	.240**	1							
4. Perceived likelihood of cyber-victimization	.158*	.261**	.296**	1						
5. Self-esteem	-.018	.077	.071	-.027	1					
6. Self-efficacy	-.149†	-.034	.108	.022	.673**	1				
7. Internet use	.187*	.172*	-.024	.124	-.174*	-.198*	1			
8. Age	-.137†	-.070	.083	.034	.225**	.280**	-.281**	1		
9. How safe do you feel inside your home?	.229**	.038	.277**	.032	-.169*	-.151†	.191*	-.006	1	
10. How safe do you feel online?	.265**	.401**	.105	.481**	-.030	-.009	.062	.033	.131	1

Note: †  $p < .10$ , \*  $p < 0.05$  level, \*\*  $p < .01$ .

measures, we observe significant correlations between all scales measuring fear or perceived likelihood of victimization, with stronger correlations between measures that considered the same context (traditional or cyber setting). In addition, self-efficacy and self-esteem are negatively correlated with internet use.

We should also note that perceptions of safety in the home also correlated with traditional fear of victimization ( $r = .229, p = .004$ ) and perceived likelihood of victimization ( $r = .277, p < .001$ ). Perceived safety online correlated with online fear ( $r = .401, p < .001$ ) and perceived likelihood of cyber-victimization ( $r = .481, p < .001$ ).

In terms of reliability, as reported in the methods sections, most measures performed very well. Although a number of items used to measure perceived likelihood of victimization performed suboptimally. Nonetheless, we decided to continue using the two subscales (each featuring two items each). The inter-item correlations and confirmatory factor analyses

supported the assumptions of moderate consistency in the way which items in each subscale related to each other; while the subscales were related, they were nonetheless distinct from each other.

### 3.1. Hypotheses Testing

#### 3.1.1. Gender Effects Hypothesis (H1)

We first examined the gender effects hypothesis which suggested that female participants will fear victimization and cyber-victimization more so than male participants. We also considered various covariates.

##### 3.1.1.1. Fear of Victimization in the Traditional Setting

We first analyzed fear of victimization using ANCOVA. Significant covariates were self-efficacy ( $F(1, 152) = 4.675, p = .032$ ), self-esteem ( $F(1, 152) = 2.967, p = .087$ ), and perceived safety

at home ( $F(1,152)=5.647, p=.019$ ). Once we had accounted for the influence of these variables, we still observed a significant gender difference ( $F(1,152)=16.535, p<.001$ ). All variables explained 17.5% of variance ( $R^2=.175, R^2_{adj}=.153$ ). Even when we controlled for perceived likelihood of victimization in a follow-up ANCOVA (another significant covariate, ( $F(1,151)=11.826, p=.001$ ), gender continues to make a significant difference in relation to the fear of victimization ( $F(1,151)=16.840, p<.001$ ). The explained variance also increased to 23.5% ( $R^2=.235, R^2_{adj}=.210$ ). Male participants had a significant lower fear of victimization ( $M=2.31, SD=.91, n=50$ ) than female participants ( $M=2.94, SD=.76, n=107$ ).

### 3.1.1.2. Fear of Victimization in Cyber Setting

In the second analysis, we focused on fear of cyber-victimization using ANCOVA. We used the same covariates as above (age, education and internet use were once again not important covariates). Relevant covariates were self-efficacy ( $F(1,151)=2.625, p=.107$ ), self-esteem ( $F(1,151)=4.043, p=.046$ ), and perceived safety at home ( $F(1,151)=25.418, p<.001$ ). Once we had accounted for the influence of these variables, we still observed a significant gender difference ( $F(1,152)=4.629, p=.033$ ). All variables explained 21.6% of variance ( $R^2=.216, R^2_{adj}=.195$ ).

We also considered the role of perceived likelihood of cyber-victimization in a follow-up ANCOVA ( $F(1,151)=1.277, p=.260$ ), however, this variable was not a significant covariate. The explained variance was only slightly higher at 22.2% ( $R^2=.222, R^2_{adj}=.197$ ). Again, gender continued to make a significant difference in relation to the fear of cyber-victimization ( $F(1,151)=4.405, p=.037$ ). Male participants had a significant lower fear of cyber-victimization ( $M=2.18, SD=.86, n=50$ ) than female participants ( $M=2.64, SD=.80, n=107$ ).

Our results are in line with previous evidence regarding gender differences in terms of fear of victimization and cyber-victimization,

with females generally expressing higher fear in both scenarios. Hypothesis 1 is thus supported by our results. The results also confirm that fear of victimization is experienced differently by women and men across both traditional and cyber settings.

## 3.1.2. Education Effects Hypothesis (H2)

In the next step, we wanted to examine the extent to which to which education plays a role in terms of lower fear and perceived likelihood of cyber-victimization. We decided to exclude the data from six respondents who had completed GCSEs or a postgraduate degree at the time as these two groups were too small for subsequent analyses. This left two groups, those who had completed their A-Levels ( $n=62$ ) and those who had completed their undergraduate degree ( $n=89$ ). Various covariates were considered, including internet use.

### 3.1.2.1. Fear of Victimization in Cyber Setting

Only one covariate was a significant predictor of fear of cyber-victimization, namely gender ( $F(1,146)=5.864, p=.017$ ) and general perceived safety online (the control variable;  $F(1,146)=24.020, p<.001$ ). However, the results suggest that education did not play a significant difference in terms of fear of cyber-victimization ( $F(1,146)=.116, p=.734$ ). In an online setting, those with an undergraduate education actually rated their fear of cyber-victimization as similar ( $M=2.53, SD=.83, n=89$ ) to those that had obtained A-levels ( $M=2.45, SD=.84, n=62$ ).

### 3.1.2.2. Perceived Likelihood of Victimization in Cyber Setting

Only one covariate was a significant predictor of perceived likelihood of cyber-victimization, namely perceived safety online (the control variable;  $F(1,148)=3.063, p<.001$ ). The results suggest that the perceived likelihood of cyber-victimization was only marginally different depending on educational attainment to date ( $F(1,148)=3.063, p=.082$ ). Both variables

together explained 23.1% of the variance ( $R^2=.231$ ,  $R^2_{adj}=.221$ ). In our case, those with an undergraduate education actually rated their perceived likelihood of cyber-victimization higher ( $M=3.08$ ,  $SD=.98$ ,  $n=89$ ) than those who had obtained A-levels ( $M=2.79$ ,  $SD=.86$ ,  $n=62$ ).

This result contradicts our predictions of group differences based on education in that the results were not significantly different for fear of victimization and the opposite of what we had predicted for likelihood of victimization. Hypothesis 2 is therefore not supported by our results.

### 3.1.3. Fear and Perceived Likelihood of Victimization Hypothesis (H3)

In this hypothesis we wanted to test whether perceived likelihood of victimization predicts fear of victimization and cyber-victimization using regression. It was predicted that those who perceive themselves as being more likely to be a victim of crime would be more fearful of victimization. Hypothesis 3 is therefore in part an extension of previous analyses conducted for hypothesis 1. Having asserted that gender played a role, we now also consider control variables in the analysis in addition to gender.

#### 3.1.3.1. Fear of Victimization in the Traditional Setting

We first wanted to examine how the perceived likelihood of victimization related to the fear of victimization expressed by our participants. In the first part of the model, we considered other possible predictors that could play a role in predicting fear of victimization ( $p<.05$ ). We included gender ( $b=.593$ ,  $\beta=.323$ ,  $t=4.323$ ,  $p<.001$ ), internet use ( $b=.174$ ,  $\beta=.155$ ,  $t=2.064$ ,  $p=.041$ ), and perceived safety at home (control question;  $b=.206$ ,  $\beta=.149$ ,  $t=1.958$ ,  $p=.052$ ) in the first step ( $R^2=.172$ ,  $R^2_{adj}=.156$ ,  $F(3,153)=10.577$ ,  $p<.001$ ). When we added perceived likelihood of victimization in the second step, we see a significant model improvement ( $R^2\Delta=.114$ ,  $p<.001$ ). The model predicted 28.5% of the variance observed overall ( $R^2=.285$ ,  $R^2_{adj}=.266$ ,  $F(4,152)=15.169$ ,  $p<.001$ ). As expected, per-

ceived likelihood of victimization was a significant positive predictor of fear of victimization ( $b=.371$ ,  $\beta=.354$ ,  $t=4.914$ ,  $p<.001$ ). The results confirm previous results and hypothesis 3a.

#### 3.1.3.2. Fear of Victimization in Cyber Setting

Next, we examined how the perceived likelihood of cyber-victimization related to the fear of cyber-victimization expressed by our participants. In the first part of the model, we considered alternative predictors that may also play a significant role in predicting fear of cyber-victimization ( $p<.05$ ). This excluded self-efficacy and self-esteem. We included gender ( $b=.309$ ,  $\beta=.170$ ,  $t=2.296$ ,  $p=.023$ ), internet use ( $b=.155$ ,  $\beta=.140$ ,  $t=1.944$ ,  $p=.054$ ), and perceived safety online (control question;  $b=.419$ ,  $\beta=.357$ ,  $t=4.801$ ,  $p<.001$ ) in the first step ( $R^2=.214$ ,  $R^2_{adj}=.198$ ,  $F(3,153)=13.861$ ,  $p<.001$ ). When we added perceived likelihood of cyber-victimization in the second step, we noted no significant model improvement ( $R^2\Delta=.003$ ,  $p=.422$ ). The regression results indicated that the overall model explained 21.7% of the variance observed overall ( $R^2=.217$ ,  $R^2_{adj}=.196$ ,  $F(4,152)=10.534$ ,  $p<.001$ ). In contrast to our hypothesis, perceived likelihood of cyber-victimization was not a significant predictor of fear of cyber-victimization ( $b=.059$ ,  $\beta=.066$ ,  $t=.805$ ,  $p=.422$ ). The results thus do not support hypothesis 3b.

### 3.1.4. Self-Efficacy Hypothesis (H4a)

Our next hypothesis stated that self-efficacy would predict fear of victimization and perceived likelihood of victimization in both settings. We expected that those who have low self-efficacy will fear victimization more and perceive the likelihood of being a victim as higher.

We first examined self-efficacy in relation to fear of victimization. Self-efficacy was only a marginally significant predictor of fear of victimization in traditional settings ( $b=-.191$ ,  $\beta=-.149$ ,  $t=-1.884$ ,  $p=.061$ ) but only explained 2.2% of variance on its own ( $F(1,157)=3.550$ ,

$p=.061$ ). However, it was not a significant predictor in relation to fear of cyber-victimization ( $b=-.043$ ,  $\beta=-.034$ ,  $t=-.422$ ,  $p=.673$ ) and did not explain a significant amount of variance on its own ( $R^2=.001$ ,  $R^2_{adj} = -.005$ ,  $F(1,157)=-.422$ ,  $p=.673$ ). These results suggested that self-efficacy did play a very small role in terms of predicting fear of victimization, but its role was rather insubstantial. It played no role in predicting fear of cyber-victimization.

We next examined self-efficacy in relation to perceived likelihood of victimization. Our results revealed that self-efficacy did not play even a marginal role in relation to perceived likelihood in either setting; as a result, these results are not reported. Our findings suggest that self-efficacy did not play a significant role in predicting fear or perceived likelihood of victimization in either setting. The results therefore do not support hypothesis 4a.

### 3.1.5. Self-Esteem Hypothesis (H4b)

Our next hypothesis stated that self-esteem would predict fear of victimization and perceived likelihood of victimization in both settings. Those who have low self-esteem will fear victimization more and perceive the likelihood of being a victim as higher.

We first examined self-esteem in relation to fear of victimization (traditional and online). We found that self-esteem did not play a significant role as predictor. We obtained similar nonsignificant results for self-esteem in relation to perceived likelihood of victimization (traditional and online). As a result, these results are not reported and do not support hypothesis 4b.

### 3.1.6. Conditional Hypothesis (H5)

We proposed that fear of victimization and cyber-victimization may be subject to the level of internet use, self-esteem and perceived likelihood of victimization. Given that internet use may increase the horizon of awareness for participants, we felt it would be important to consider the interaction of this variable with fear and perceived likelihood of victimization in traditional and cyber settings. In order to de-

termine if this was the case, we used mean split to differentiate participants according to their low and high level of self-esteem and perceived likelihood of victimization. This resulted in four categories (more details Tables 2 and 3).

#### 3.1.6.1. Fear of Victimization in the Traditional Setting

Using ANCOVA with gender as a significant covariate, we observed a significant group difference ( $F(3,152)=7.950$ ,  $p<.001$ , *partial*  $\eta^2=.136$ ). The variables explained a significant amount of variance ( $R^2=.237$ ,  $R^2_{adj} = .216$ ). A significant post-hoc difference was observed between participants in group 1 and 3 ( $p<.01$ ) as well as group 1 and 4 ( $p=.018$ ). An additional significant group difference arose in terms of group 2 and group 3 ( $p=.009$ ). In terms of general fear of victimization, we observed two group differences. First, participants with low internet use but high likelihood of victimization were also more afraid of victimization than participants reporting low likelihood of victimization. Second, participants who differed in terms of both internet use (low and high) and likelihood of victimization (high or low) also reported different levels of fear of victimization. Participants with high likelihood of victimization but low internet use had higher fear scores than participants with low likelihood of victimization but high internet use (see Table 2). The results therefore support hypothesis 5.

#### 3.1.6.2. Fear of Victimization in Cyber Setting

Using ANCOVA with gender as a significant covariate, we observed a significant group difference ( $F(3,151)=3.560$ ,  $p=.016$ , *partial*  $\eta^2=.066$ ). The variables explained a significant amount of variance ( $R^2=.129$ ,  $R^2_{adj} = .106$ ). A significant post-hoc difference was observed between participants in group 1 and 3 ( $p=.050$ ) as well as group 1 and 4 ( $p=.023$ ). The groups that both featured low internet use, but had either low or high perceived likelihood of victimization, differed significantly in their level of fear of cyber-victimization. Again, when perceived likelihood of cyber-victimization was high, they

*Table 2. Descriptive statistics for fear of becoming a victim (real)*

Categories	MN	SD	n
low PLVR - low INT (group 1)	2.32	.90	37
low PLVR - high INT (group 2)	2.59	.87	46
High P LVR - low INT (group 3)	3.19	.61	38
high PLVR - high INT (group 4)	2.90	.79	36
Total	2.74	.86	157

*Note.* P LVR = Perceived likelihood of victimization. INT = internet use.

also had greater fear of cyber-victimization. Even when internet use was high, high perceived likelihood of cyber-victimization resulted in a similar level of fear of cyber-victimization (see Table 3). The results consequently support hypothesis 5.

Our descriptive results are in line with previous research that suggests that internet use may play a role in terms of fear of victimization, although the significant post-hoc group comparisons seemed to derive primarily from different levels of perceived likelihood of victimization. We observed support for conditional effects that consider both internet use and perceived likelihood of cyber-victimization (online), supporting the conditional hypothesis 5.

#### 4. DISCUSSION

The focus of our research was to consider, in line with previous research, the extent to which certain findings observed in traditional settings would also be present in cyber settings. We first considered fundamental effects related

to demographics. That is, our first goal was to examine the extent to which gender and education played a role in the expression of fear and/or perceived likelihood of victimization and cyber-victimization expressed amongst young males and females. Another goal was to explore how fear and perceived likelihood related to one another in either traditional or cyber settings.

In order to add to the evidence base, the role of self-efficacy and self-esteem were also explored as some evidence exists indicating that these variables may influence fear and perceived likelihood. In addition, the question arose as to whether or not different levels of internet use and perceived likelihood could jointly influence fear. We first consider findings in relation to demographic, fear and victimization, and lastly results pertaining to personality effects.

The results of the gender effects hypothesis (H1) suggest that female participants showed greater fear of victimization and cyber-victimization than male participants, even after we considered self-efficacy, self-esteem, safety at home or online, and perceived likelihood

*Table 3. Descriptive statistics for fear of cyber-victimization*

Categories	MN	SD	N
low PLVO - low INT (group 1)	2.14	.80	34
low PLVO - high INT (group 2)	2.41	.73	36
high PLVO - low INT (group 3)	2.67	.90	40
high PLVO - high INT (group 4)	2.68	.82	46
Total	2.50	.85	156

*Note.* PLVO = Perceived likelihood of cyber-victimization. INT = internet use.

of victimization and cyber-victimization. This supports our hypothesis and matches previous findings of gender differences (e.g., Chadee & Ying, 2013; Ferraro, 1996; Gainey et al., 2011; Lee, 2007; Jackson, 2009; Lee & Hilinski-Rosick, 2012; Sutton et al., 2011). It also confirms that gender effects can be expected in both traditional and cyber settings, confirming an observation from traditional studies.

The second hypothesis on education effects (H2) focused on cyber-fear and perceived likelihood of victimization, as education has been shown to influence victimization in areas such as cyber-bullying (Walrave & Heirman, 2011; Vandebosch et al., as cited by Walrave and Heirman, 2011). In addition, education about crime has been shown to influence fear of crime (Gainey et al., 2011). The analysis of education effects showed no significant differences in terms of the fear of cyber-victimization. These results do not support the findings of Gainey et al. (2011). Still, they are in line with a report by Russo et al. (2013). Fear of cyber-victimization was at a similar level for individuals with either A-Level or an undergraduate education. However, we saw a marginally significant difference in terms of perceived likelihood of cyber-victimization. The results suggested that undergraduates perceived their likelihood of becoming a cyber-victim higher than those who had obtained A-levels. This result was opposite to what we expected, which means our hypothesis was not supported. Although this result was influenced by how safe they generally felt online, it is possible that more educated participants use the internet in ways that makes them feel more vulnerable. This suggestion would be in line with past research demonstrating that education is related to fear (Gainey et al., 2011). It is also possible that participants with A-Levels may still be living at home, which might reduce their perception of risk overall. The result suggests that some education findings may not generalize as readily, possibly because the circumstances vary by which an individual could become a victim in traditional vs. cyber settings (both in terms of exposure to and awareness of risk).

We further examine whether perceived likelihood of victimization and cyber-victimization predicts fear of victimization and cyber-victimization. The main proposition was that those who perceive themselves as being more likely to be a victim of crime will be more fearful of victimization. The results suggest that, as expected, fear of victimization was significantly predicted by perceived likelihood of victimization. The findings match previous research. Those who perceived themselves as most likely to be victims also showed a higher fear of victimization (Box et al, 1988; Cook & Fox, 2011; Gainey et al., 2011; Lee & Hilinski-Rosick, 2012; Ozascilar, 2013; Warr & Stafford, 1983; Winkel, 1998). This provides further evidence for the transferability of findings from the traditional to the cyber domain.

The result also continued to be significant when we had considered the role of gender, internet use and perceived safety in the home or online. The same participant variables were also significant predictors of fear of cyber-victimization. At the same time, perceived likelihood of cyber-victimization was not a significant predictor of fear of cyber-victimization. This suggests that our results only support hypothesis 3 when we focus on victimization, but not when we consider fear and perceived likelihood of cyber-victimization. A number of explanations could explain why our results differ between the two contexts. One issue may be the measure we used. We adapted an existing measure to assess perceived likelihood of cyber-victimization and fear of cyber-victimization. Although the original measure has been used previously and performed well, it is possible that the new measure did not capture all pertinent aspects of cyber-victimization. Another possibility is that our participants were largely unaware of the risks associated with online activities, cyber-victimization and bullying online. As a result, the results for their perceived likelihood of cyber-victimization and fear of cyber-victimization may reflect less experience and awareness of cyber-crime than more traditional offline crime.

An additional area of interest was to consider the role of both self-efficacy (H4a) and self-esteem (H4b) as predictors of both fear and perceived likelihood of victimization and cyber-victimization. We expected that those who have low self-efficacy or self-esteem will fear both traditional and online victimization more and judge the likelihood of being a victim as higher. In contrast to our hypothesis, we found no consistent or significant evidence that these variables were significant predictors. As a result, these hypotheses were not supported. However, when these two variables were considered as covariates in the analysis of gender effects (H1) in relation to fear of victimization, they played a significant role. Self-esteem was also a significant covariate in the analysis of gender effects (H1) in relation to fear of cyber-victimization. As a result, these variables appear to play a role only in the presence of other variables in the equation, but are too weak as predictors on their own. A number of potential explanations can be provided for these results. One possible explanation is that our participants may have felt similarly self-efficacious. Or, as outlined in previous settings, demographics may play a larger role than this personality trait. In addition, participants in our sample had high overall levels of self-efficacy and self-esteem. This may have restricted variance. Another possible explanation for the results could be the measures used. Nevertheless, other researchers have used similar measures to ours and found some link support for a relationship between self-efficacy, self-esteem and victimization (Thijs & Verkuyten, 2008). Future research in this area may help explain why the research findings continue to be mixed in relation to these variables.

In our final analysis, we wanted to consider the possibility of conditional effects (H5). We proposed that fear of victimization and cyber-victimization may be subject to the level of internet use and perceived likelihood of victimization and cyber-victimization. Past research has proposed that those who use the internet as a source of information tend to be more fearful (see also Radda & Ndubueze, 2013; Kohm et

al., 2012; Weitzer & Kubrin, 2004). This led to the consideration of the role of internet use in combination with the perceived likelihood of victimization in the exploration of fear. Cyber-victimization would not be possible without internet use so it was important to examine the relationship between these two variables. Our results suggested that, fear of victimization may depend on whether or not a participant's internet use and perceived likelihood of victimization is low or high. The groups with higher perceived likelihood of victimization would always report higher fear of victimization.

The results for cyber-victimization resulted in similar conclusions. Differences arose between groups when they had different levels of perceived likelihood of cyber-victimization. The groups that both featured low internet use, but either low or high perceived likelihood of cyber-victimization, differed significantly in their level of fear of cyber-victimization. Again, when perceived likelihood of cyber-victimization was high, they also had greater fear of cyber-victimization. This suggests that while internet use plays a role, it is only in combination with perceived likelihood of cyber-victimization that we see a difference in terms of fear of victimization. It is also worth noting that internet use was weakly and positively correlated with both fear of victimization and cyber-victimization. When we examined predictors of fear of victimization and cyber-victimization, internet use was a significant predictor in the first part of the model, before perceived likelihood of was considered. It is possible that internet use also exposes individuals to more information about threats, in addition to potential areas of vulnerability.

#### 4.1. Implications

Most of the research on cyber-victimization has considered it in relation to cyber-bullying and used adolescents for participants (e.g. Walrave & Heirman, 2011). Our study is an exception, in that we look at victimization more generally amongst adults. Moreover, the consideration of both contexts, traditional or online, provides a



useful starting point to test the transferability and generalizability of findings obtained in traditional to online settings.

We demonstrate the latter point in terms of our results that provide consistent support for gender differences in both contexts. To date, less research exists regarding the influence of gender on fear of cyber-victimization. Also, the research findings have not been so consistent, with discrepancies between whether girls or boys are more likely to be at risk and/or fear victimization (Walrave & Heirman, 2011). Our results are consistent for both contexts, thus adding to the literature. Gainey et al. (2011) found that the influence of gender was explained away by perceived risk which may represent an important element in all contexts.

In terms of educational research, the influence of academic education on fear of crime has been overlooked, although some research has been conducted on how education about crime influences fear of crime (see Gainey et al., 2011). Russo et al. (2013) found that having a poor education was not associated with people's increase in crime risk perception. Our results suggest that other variables may explain fear of victimization amongst individuals with higher than lower educational attainment. It is possible that differences in education only play a role the sample varies significantly more in terms of their educational qualifications.

The findings on self-esteem and self-efficacy may be surprising, but at the same time, the results show that these variables were not significant predictors in their own right. It is possible that the influence of self-esteem and self-efficacy on fear of victimization depends on various other variables that may reduce the influence of self-esteem and self-efficacy. That is, other variables may reduce the influence of these variables on fear of victimization. One such variable might be physical strength and the ability to defend oneself against attack (Jackson, 2009) which may not necessarily be correlated with general self-efficacy. Another variable is gender which we controlled for in most analyses (except for the gender hypothesis). While the difference is not significant, the current study

did find that females had slightly lower self-efficacy than males, offering some support for the findings by Jackson (2009).

## 4.2. Limitations and Future Research

A number of limitations and future areas of research can be identified. Some of our scales had low reliability coefficients, although we went to some length to conduct various analyses to ensure that the final set of items had the appropriate psychometric or factor-specific characteristics to be used in the analysis of our hypotheses.

As with most social science studies, the use of self-reports is problematic as this may increase social desirability responding (Sutton et al., 2011), a concern certainly also in terms of the degree to which males would admit to being afraid of becoming a victim. Future research may consider using alternative indicators of experience with crime, self-efficacy and internet use in addition to self-reports.

In addition, sampling participants from a population that is more age diverse may allow for the exploration of age effects overall. We also excluded participants based on past experience of crime. This may be a variable worth considering in diverse samples as experience of different crimes (see Moore & Shepherd, 2007) may explain differences in fear of victimization but also self-efficacy and self-esteem (the latter two variables were also very weakly but positively correlated with age). Other variables, such as knowledge about crime, could also be examined. For example, participants could be made to read some crime statistics and see whether this increased, decreased or had no significant effect on fear of victimization.

Finally, future research is needed to examine whether other context-specific variables exist in relation to fear and perceived likelihood of victimization. Finally, more research on potential interaction effects of different variables may be warranted as our results suggest that some differences in fear of victimization may

only emerge when we consider several different variables working together.

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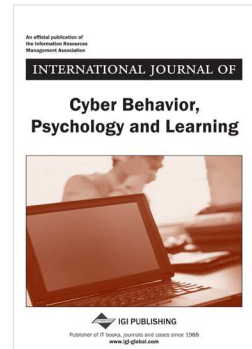
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