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An evaluation of factors relating to fear of crime

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ABSTRACT

Fear of crime (FoC) is becoming increasingly prevalent within research, despite the decrease in crime rates. This study has aimed to evaluate the relationship between gender, existing victimisation of crime and violent crime, mental health, personality type and FoC.

Participants were recruited via opportunity sampling (N = 223). All participants completed an online battery of pre-existing self-report questionnaires. The personality types that were assessed were neuroticism, extraversion and conscientiousness. Current anxiety and depression levels were attained for mental health.

Independent *t*-tests revealed females to score significantly higher FoC than males, in line with previous findings. Non-victims were found to score higher FoC than victims. Thus highlighting the importance of manipulating factors within victimisation. Pearson's *r* correlation established FoC to comprise significant relationships with anxiety, depression and neuroticism. Contradictory to previous findings, neuroticism was found to negatively predict FoC over extraversion and conscientiousness, using multiple regression analysis.

It can be concluded that gender, victimisation, mental health and personality are individually related to FoC. Thus illustrating its diversity, and its impact at both individual and social levels. Nonetheless, further research expanding the reasons underlying FoC, would add to the current knowledge base.

KEY WORDS:	FEAR OF CRIME	VICTIMISATION	MENTAL HEALTH	PERSONALITY	GENDER

Introduction

Traditionally, fear of crime (FoC) has been defined as a fear of becoming a victim of crime, as opposed to the actual probability of becoming a victim of crime (Hale, 1996). Hollway and Jefferson (1997) state that FoC is premised on rational individuals who miscalculate their risk of victimisation, thus ensuing FoC and behaviour modification. Hale (1996) outlines the notoriety of FoC as a prevalent social problem, and such anxieties can have negative effects on the individual and society. Adams and Serpe (2000) found that feelings of vulnerability and high FoC could have a major impact on life satisfaction. Although high FoC appears as a negative concept, Jackson, Grey and Farrall (2009) argue that worrying is in fact socially beneficial, and may aid in preventing actual victimisation. Media influence may be a potential source in elucidating FoC (Heath and Gilbert, 1996), as only violent crimes reach the headlines. Thus providing an exaggerated association between crime and violence (Jackson, 2011).

Although research has highlighted the eminence of FoC within society, the measures used to test FoC have been questionable (Visser, Scholte and Scheepers, 2013). Research on FoC has predominately been tested using quantitative measures, which has led researchers to state that FoC is commonly being misrepresented (Farrall *et al,* 1997). For example, Baumer (1987:254) noted, "Most research on this topic [fear of crime] has been descriptive, seldom multivariate and distinctly theoretical." Baumer signifies the lack of universal meaning through flawed methodology and analysis. FoC surveys typically ask participants to summarise their level of fear in response to a specific crime. However, Tourangeau, Rips and Rasinski (2000), argue these *intensity* measures, may also include attitudes towards risk, as well as measuring everyday fears. Despite criticism, researchers continue to use surveys, as these have been reliable in attaining accurate findings (Jackson, 2005).

Research on FoC has focused on many different contributory factors, including gender differences (LaGrange and Ferraro, 1989; Lane and Fox, 2013), victimisation (LaGrange and Ferraro, 1992), mental health (Stafford, Chandola and Marmot, 2007) and personality type (Klama and Egan, 2011). Gender differences for FoC consistently find females to report higher levels of FoC than males. LaGrange and Ferraro (1989) found women reported higher levels of FoC and perceived risk than males, with subsequent research yielding similar results (Eitle and Taylor, 2008; Franklin and Franklin, 2009). This gender divide is not confined to western countries (Toch and Maguire 2014). English and Ray (2010) found females in 93 out of 105 countries to report higher FoC than males, indicating gender differences are salient regardless of demographic and cultural differences.

In account of the gender divide, Pain (1991) argues that women's FoC should be measured separately from men's FoC, stating, "It [women's FoC] differs in its extent, its nature, its relation to actual risks, its effects, and its potential for structural analysis" (Pain, 1991:415). Lane and Fox (2013) attribute this to the shadow of sexual assault theory, whereby females will report higher FoC, as a result of a primary concern over sexual violence. As a consequence, this may

heighten their fear of other victimisations. Lane, Gover and Dahod (2009) suggest sexual violence is the most feared of all crimes. Although sexual violence is a predominant fear, the actual risks of sexual violence are low, and are principally committed within private spaces as opposed to outdoor (Pain, 1991).

However, Snedker (2012) contends that it is subjective evaluations of vulnerability that determine male and female's FoC, and the theory linking female FoC to fear of sexual assault has little evidence for support. Correspondingly, elderly females have consistently been found to have high FoC, yet they do not rate sexual assault as their primary concern (Hollway and Jefferson, 1997). Considering males become victims of crime more often than females (Schreck and Posick, 2014), further explanations have been theorised according to stereotypes. Goodey (1997) argues that it is gender stereotypes and social desirability that influences male responses on FoC surveys. Thus proposing that males will underreport their true FoC. Snedker (2006) claims that paternal roles characterise fear for males, and maternal roles for women, therefore enforcing gender stereotypes. These ideologies are in line with the social notion that women are 'fearful' and men are 'fearless' (Cops and Pleysier, 2011).

Conversely, the ethnography of male fear can also have implications for the results of male FoC. Moore and Breeze (2012) point out that males express a higher FoC when using public toilets. In support of this, Brown and Benedict (2012) found males reported a higher perceived risk of crime compared to females, contradicting previous research. Moreover, Lee (1982) did not find females to report higher FoC than males.

A further notable factor that may influence FoC scores is existing victimisation. Wilcox, Quisenberry and Jones (2003) report that FoC is related positively to victimisation rates. Zarafonitou (2008) suggests that victims of crime were up to three times more fearful, than non-victims of crime. The aftermath of criminal victimisation has found to impact upon psychosocial functioning, including an increase on perceived risks of subsequent victimisation and high fear of crime (DeLisi *et al.,* 2014). However, Garofalo and Laub (1978) contend that the relationship between victimisation and FoC is ambiguous.

The difficulties that victims encounter vary between types of crimes committed and the individual's psychological response. Wilcox-Rountree (1998) reported participants who had experienced mugging or physical assault scored higher on FoC questionnaires than those who had not. However, no research has compared FoC scores of victims of crime, and victims of violent crime. Hanslmaier (2013) found that FoC and victimisation experiences may lower life satisfaction, and can lead to further health issues, even implicating a reduced mental health.

Stafford, Chandola and Marmot (2007) highlight the relationship between FoC and mental health. FoC may be associated with poorer mental health, reduced physical functioning and lower quality of life. The research found FoC was associated with the subscales anxiety and depression. However, the

direction of causality is unknown. Anxiety is a common substrate of FoC, as anxious individuals tend to display more fearful characteristics (Hatemi *et al.,* 2013). Klama and Egan (2011) found those higher in FoC were 1.5 times more likely to have a common mental health disorder and links were also found between high FoC, anxiety and depression. The significance of fear of crime on mental health highlights the importance of fear reduction initiatives within the public health domain, and society (Lorenc *et al.,* 2012).

Nonetheless, other factors can correlate alongside fear of crime to agitate anxiety and depression, such as the environment in which a person lives, social issues and daily exposure to crime (Whitely and Prince, 2005). Furthermore, evidence to support the relationship between FoC and mental health is limited (Jackson and Stafford, 2009). Anxious traits have also been found to exist in personality traits, such as neuroticism (Kotov *et al.*, 2010).

The characteristics of personality type gives rise to prospective relationships between personality type and fear of crime. For example, Bienvenu et al., (2004) found lower order facets of extraversion and conscientiousness, to be associated with major depressive disorder (MDD), and social anxiety. Klama and Egan (2011) also found neuroticism to be associated with anxiety and depressive disorders, whilst extraversion and conscientiousness were not. Coen *et al.,* (2011) state that neuroticism correlates positively with anxiety. Despite the support, Olvet and Hajcak (2012) note that neuroticism may simply be a risk factor for anxiety and depression, as opposed to an explicit relationship. Although the inter-causal link between mental health, personality and FoC has not been established in the present study, the reasons underlying the relationship between personality type and FoC, may be explained in relation to the traits that personality types possess.

Limited research has been conducted to address the relationship between personality type and FoC. Neuroticism has previously been found to relate to high FoC. Lindesay (1997) suggested high neuroticism and other co-morbid psychiatric illnesses influence high FoC for elderly participants. In support of Lindesay's findings, Klama and Egan (2011) also established neuroticism to correlate positively with high FoC. Furthermore, high extraversion and high conscientiousness were found to correlate negatively, indicating a person high in extraversion and conscientiousness will have lower FoC. Klama and Egan note that conscientious individuals are more mindful of the threat of crime, thus taking precautionary actions and becoming less fearful.

Existing literature has highlighted the various factors that may relate with FoC. The current study aims to build upon previous research by Klama and Egan (2011) by exploring the relationships between gender, victimisation, mental health, personality type and FoC. A flaw within Klama and Egan's study was the use of an abridged Hospital Anxiety and Depression scale (HADs) (Zigmond and Snaith, 1983), and the sample was restricted to University students. As a result of this, the current study also used HADs to measure anxiety and depression, but ensured the full use of the questionnaire to provide accurate results. Furthermore, participants were not restricted to students. Consequently, the current research aimed to provide an extensive

overview of the factors involved in FoC, extending the current plethora of FoC research.

The following hypotheses have been tested:

1-tailed

1) Females will have higher levels of FoC than males

2) Victims of crime will have higher levels of FoC than non-victims of crime

3) Victims of violent crime will have higher levels of FoC than non-victims of violent crime

4) Neuroticism will be the highest indicator of FoC.

2-tailed

5) There will be an interaction effect between victimisation, gender and FoC

6) There will be a difference between anxiety and FoC scores

7) There will be a difference between depression and FoC scores

8) There will be a difference between extraversion and FoC scores

9) There will be a difference between neuroticism and FoC scores

10) There will be a difference between conscientiousness and FoC scores

Method

Design

An online survey based design was employed, combining three pre-existing and well-established questionnaires. These assessed personality type (neuroticism, extraversion and conscientiousness), current mental health (anxiety and depression), and fear of crime (FoC). The dependent variable was FoC; the independent variables were gender, and victimisation of crime and violent crime. The correlational variables were personality type and mental health. All participants completed the same survey; therefore, an independent measures design was utilised.

Materials

Questionnaires assessing personality, mental health and FoC were administered online with the inclusion of participant forms (see appendix 5). In addition to the three questionnaires, participants were required to indicate their gender, and existing victimisation of crime and violent crime. The constitution of violent crime was included for clarification. This was derived from the Victim Support website (Victim Support, 2013).

International Personality Item Pool **(**IPIP; Appendix 2)

The IPIP was derived from Costa and McCrae's NEO-PI five-factor model of personality (Costa and McCrae, 1992), in order to be used legally within

research (Goldberg et al., 2006). Three out of the original five personality domains were assessed. These were neuroticism (N), extraversion (E) and conscientiousness (C). Each domain consisted of 10 statements, with a corresponding five-point likert scale, ranging from very inaccurate to very accurate, and participants were requested to indicate their response (see appendix 2). In order to determine high and low levels of personality, standard deviations were conducted to indicate the normative ranges, and scores above or below these were deemed high and low.

The IPIP scales have been found to yield high reliability and validity, with comparable results on correlation between the IPIP markers and two leading personality measures: the EPQ-R and NEO-FFI (Gow et al., 2005). A smaller version of the IPIP, with only 20 items, has also been validated across five studies, with test-retest results similar to those found with the larger parent IPIP measure E: $r = .89$, C: $r = .79$ and N: $r = .87$ (Donnellan, 2006). This confirmed the use of the smaller IPIP scale with only 10 items for each domain. The original internal consistency found by Goldberg et al., (2006) revealed high reliability using Cronbach's alpha, (N: $\alpha = .86$; C: $\alpha = .81$; E: $\alpha = .86$). Good internal consistencies were also found for this study (N: $\alpha = .88$; C: $\alpha = .86$; E: $\alpha = .84$). The high validity and reliability indicate a psychometrically sound measure of personality, therefore it was deemed appropriate for use in this study.

Hospital Anxiety and Depression Scale (HADS; Appendix 3)

The original HADS by Zigmond and Snaith (1983) is copyrighted and researchers are unable to use it without prior consent. However, the HADS used within this survey was obtained through a public NHS website, (NHS, 2013). This was a 14-item questionnaire, combining seven questions on anxiety and seven questions on depression. Participants were required to indicate which of the four corresponding answers were most relevant to them at that current time. Each of the four answers had the scoring of 0-3, and the sum of the answers revealed the level of anxiety and depression (0-7 = normal, 8-10 = borderline abnormal and 11-21 = abnormal).

Due to the nature of HADS, the reliability and validity must be high in order to be used within health settings. A literature review highlighted the efficacy of HADS in assessing the symptom severity and caseness for anxiety and depression. This was used for somatic, psychiatric and primary care patients, as well as the general population (Bjelland et al., 2002). Stafford, Berk and Jackson (2007) found HADS to have good criterion validity and excellent internal consistency, for screening depression in patients with coronary artery disease. Spinhoven et al., (1997) revealed high internal consistencies, yielding anxiety (HADS-A) $\alpha = .84$, and depression (HADS-D) $\alpha = .79$. Similar results were found for this study (HADS-A) $\alpha = .83$, (HADS-D) $\alpha = .74$.

Fear of Crime (FoC; Appendix 4)

The final questionnaire measuring FoC was devised by Ferraro and LaGrange (1992), which also incorporated risk of crime. However, only the 10 FoC

statements were used. Participant's level of FoC was determined from their responses to the statements using a 10-point likert scale, ranging from not afraid at all, to very afraid. Ferraro and LaGrange found the statements to have a strong internal consistency α = .90, mirroring the results found for this study α = .94. It was noted that the measurement of FoC raises concerns surrounding the methodology, and how FoC can be misrepresented. Nevertheless, this questionnaire has been successfully used in previous research, and is one of few that claim accuracy with measurement (Ferraro and LaGrange, 1992; Klama and Egan, 2011). It was on this basis, that this particular FoC measure was superior to other generalised measures, such as the British Crime Survey.

Participants

An opportunity sample was enlisted for recruitment of participants over the age of 18 (N = 234) via a hyperlink to the online survey, posted on the social networking site Facebook. However, due to missing data, 11 had to be removed, leaving only fully completed responses (N = 223). This method of recruitment permitted a wider variety of ages and socioeconomic statuses, hopefully enabling a heterogeneous sample. In order for the results to reflect both female (F) and male (M) populations, participants were approximately equal weighted (M = 127; F = 96). Participants remained anonymous throughout to ensure social desirability bias was kept to a minimum. Social desirability may serve to invalidate the data if measures are not taken to reduce this effect. Phillips and Clancy (1972) illustrate the inaccuracy of self-report surveys on mental health, demonstrating that social stigma surrounding mental health can effectively 'dumb down' true responses.

Procedure

In order for the survey to be uploaded, ethical approval forms were first completed and signed off to ensure the appropriate methodology and participant selection (see appendix 6). A pilot study was carried out (N = 10), (see appendix 9) in order for any feedback to be considered. Two necessary changes were made. With regards to IPIP statement 33, 'I shirk my duties' was changed to 'I shirk/avoid my duties' as the terminology of 'shirk' was unclear to some participants. The removal of 'panhandler' was also removed from FoC statement 48, as this was deemed unnecessary and confusing.

The three questionnaires were then combined to form one survey, with inclusion of gender and victimisation questions. The survey was built using survey monkey, an online website tool, and a hyperlink was then issued for participants to click on and be directed to the survey.

Results were then exported from survey monkey into Microsoft Excel in order to adopt numerical values, and to reverse the negative statements. The finalised data set was then imported into SPSS for subsequent data analysis and manipulation. The primary task involved computing the descriptive statistics for each variable, and ensuring the variables met the criteria for parametric tests. This involved analysing visual graphs, and determining the skewness, kurtosis and Shapiro-Wilk values for each variable. Cronbach's alpha determined the internal consistency for each scale, and this was then

compared against the original α scores found in previous literature. The scales revealed α = > .70, which determined a strong internal consistency for each scale. Independent *t*-tests were conducted to determine whether there is a statistically significant difference between the means of gender and FoC, and victimisation and FoC. In order to measure the linear relationship between mental health and FoC, and personality and FoC, a Pearson product-moment correlation coefficient was computed. A three-way analysis of variance (ANOVA) was then formulated to test for any interaction effects between victimisation, gender and FoC. Finally, multiple regression analysis was used to indicate which personality variable is the highest indicator of FoC.

In order to comply with the British Psychological Society's (BPS) ethical guidelines, participants were fully informed of the aims and objectives of the study with a participant information sheet. A debrief form was also issued at the end of the survey, with contact details if participants wished to gain any further information. Participants were not required to provide names or personal information, therefore participant consent was provided by means of completing the survey. This was outlined in the consent form. Participants were still able to withdraw from the study by simply exiting the browser, and this was made clear on the participant information sheet. Participant forms can be found in appendix 5**.** Furthermore, it was requested and advised, that persons under the age of 18 should not take part. The signed AEAF and ECF ethics forms can be found in appendix 6.

Results

Descriptive Statistics

Questionnaire data was entered into Microsoft Excel to assign numerical values and reverse the relevant statements. This was then imported into SPSS. As parametric tests require certain criteria to be met, tests for normality, homoscedasticity and collinearity were conducted. Visual representations were considered in the form of histograms, in order to ascertain skewness with any of the variables (See appendix 1). An example of a variable revealing an appropriate, normally distributed curve is illustrated in figure 1 below.
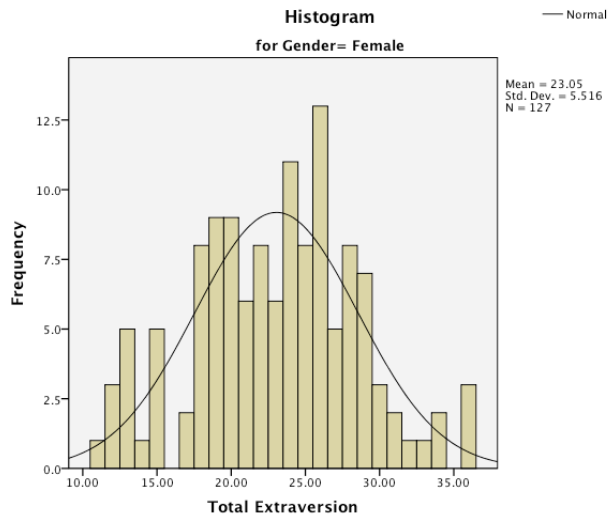
Figure 1: Histogram illustrating the normal distribution curve for female extraversion scores.

The histograms revealed skewness with anxiety and depression, therefore it was considered necessary to test for normality using skewness, kurtosis and Shapiro-Wilk. These results are shown below in table 1.

Table 1

Tests of Normality using Skewness, Kurtosis and Shapiro-Wilk

	Gender					
	Male			Female		
N = 223: Scale	Skewness	Kurtosis	Shapiro-Wilk (Sig.)	Skewness	Kurtosis	Shapiro-Wilk (Sig.)
Total Extraversion	1.47	-.21	.145	-.13	.54	.165
Total Neuroticism	-.91	-1.37	.06	-1.51	-.82	.14
Total Conscientiousness	.92	-.76	.157	1.55	-1.30	.03*
Total Depression	3.93*	3.04*	.00*	5.07*	2.06*	.00*
Total Anxiety	-2.7*	.47	.00*	2.62*	-.50	.00*
Total Foc	2.10*	-1.10	.00*	-1.77	-1.54	.01*

Note. * These values do not fall within the recommended range to claim normality

Skewness and kurtosis values were calculated by hand, by dividing the skewness statistic with the standard error, to determine the skewness value. This was then repeated to calculate the kurtosis value, replacing the skewness statistic with the kurtosis statistic and dividing this value with the standard error. The original output can be found in Appendix 8. According to

Kim (2013), a skewness and kurtosis value between -1.96 and 1.96 is acceptable, and a Shapiro-Wilk value of p >.05 is also considered to be within the range of normality. As illustrated in Table 1, conscientiousness, depression, anxiety and FoC do not fall within the recommended range to claim normality. However, Pallant (2007) argues that parametric tests are robust enough to withstand such violations; therefore slight deviations can be tolerated. The means (*M*) and standard deviations (*SD*) for each variable are shown below in table 2.

Table 2

Descriptive statistics for personality, mental health and FoC

N = 223: Scale	*M*	*SD*
Total Extraversion	23.66	6.35
Total Neuroticism	33.34	8.00
Total Conscientiousness	23.89	7.21
Total Depression	3.83	3.10
Total Anxiety	7.29	4.06
Total FoC	52.74	23.89

As each scale was measured using different likert scales and subsequent numerical values, this explains the variation between the variables. The personality variables E, N and C were assigned values 1-5 in accordance with the 5-point likert scale. The HADS variables, anxiety and depression, were assigned values 0-3, and the FoC scale 1-10.

Internal Consistency

Internal consistency was measured using Cronbach's alpha to determine the reliability of each scale. This was compared to the official alpha (α) scores found by the original researcher of the scale. The Cronbach's alpha and the 95% confidence interval for alpha are presented in table 3.

Table 3

Internal Consistency using Cronbach's Alpha

$N = 223$: Scale	Official α	Obtained α	95% Confidence Interval for alpha	
			Lower	Upper
Total Extraversion	.86	.84*	.80	.87
Total Neuroticism	.86	.88*	.85	.90
Total Conscientiousness	.81	.86*	.83	.89
Total Depression	.79	.74	.68	.79
Total Anxiety	.84	.83*	.79	.86
Total FoC	.90	.94*	.93	.95

Note: *F* test with true value = .70, * *p* < .001

It has been suggested by Coolican (2009), that $\alpha \geq .70$ shows high internal consistency, and as illustrated in table 3, both the official α scores and the obtained α scores all exceed .70. Each scale is significantly above .70, p < .001, with the exception of depression, p = .08. These findings confirm the appropriate use of the measures within this study.

Independent *t*-tests

Independent sample *t*-tests were conducted to compare mean FoC scores with the means of gender and victimisation, testing hypothesis (H) 1, H2 and H3. Levene's test was non-significant, p > .05, therefore equal variances were assumed for all variable scores. The original SPSS output figures have been converted from 2-tailed to 1-tailed to fit with the directional hypotheses.

The mean FoC scores for females (*M* = 61.95, *SD* = 21.57) were higher than the mean FoC scores of males (*M* = 40.55, *SD* = 21.29), resulting in a mean increase (M = 21.40, SD = 0.28) for females scoring higher FoC than males. This increase was statistically significant, *t* (221) = 7.38, p < .001 (one-tailed). The mean difference (mean difference = 21.40, 95% *CI*: 15.68 to 27.11) was small (Cohen's *d* = 0.99). This result supports H1, that females will have higher FoC scores than males.

The mean FoC scores for non- victims of crime (*M* = 56.99, *SD* = 25.20), was higher than mean FoC scores for victims of crime (*M* = 50.32, *SD* = 22.86) resulting in a mean increase (M = 6.67, SD = 2.34) for non-victims of crime scoring higher FoC than victims of crime. This increase was statistically significant, *t* (221) = 2.02, p < .05 (one-tailed). The mean difference (mean difference = 6.67, 95% *CI*: .16 to 13.19) was very small (Cohen's *d* = 0.28). This result however does not support H2, as it was hypothesised that victims

of crime would have higher FoC scores than those who were not a victim of crime, yet the results claim the opposite.

The mean FoC scores for non-victims of violent crime (M = 54.54, SD = 24.24), was higher than mean FoC scores for victims of violent crime (M = 49.19, SD = 22.94) resulting in a mean increase (M = 5.35, SD = 1.30) for non-victims of violent crime scoring higher for FoC than victims of violent crime. This increase was non-significant, t (221) = 1.59, p > .05 (one-tailed). The mean difference (mean difference = 5.35, 95% CI: 1.30 to 12.01) was very small (Cohen's d = 0.23). Similarly, this finding does not support H3. It was hypothesised that victims of violent crime would have higher FoC than non-victims of violent crime. However, as this t-test was non-significant, no conclusions can be drawn.

Three-way Analysis of Variance (ANOVA)

A three-way between subjects ANOVA was carried out to test H5, to ascertain if there would be any interaction effects between victimisation and gender, on FoC scores. The ANOVA showed that the main effects for victimisation of crimes and victimisation of violent crimes were non-significant. Interaction effects between gender and victim of crime; gender and victim of violent crime; victim of crime and violent crime and gender; victim of crime and victim of violent crime, revealed no significant interaction. However, there was a statistically significant main effect for gender F (1, 216) = 44.96, p = < .001; although the effect size was small (partial eta squared = .17). As a result, this finding does not support H5.

Pearson's product moment correlation coefficient (Pearson's *r*)

The relationship between FoC and personality type (E, N and C), and FoC and mental health (HADS-A and HADS-D) was investigated using Pearson's *r*. This tested H6, H7, H8, H9, and H10.

Preliminary analyses were performed to ensure no violations of the assumptions of normality (see table 1), linearity and homoscedasticity. Visual representations of linearity and homoscedasticity can be seen in figures 2-4 and appendix 7.

(H6) There was a statistically significant, strong positive correlation between FoC and anxiety, r (223) = .403, p < .001 (two-tailed), with high levels of anxiety associated with high FoC scores. Therefore, this supports H6, as a difference was found between anxiety and FoC. This statistically significant correlation is illustrated in figure 2.

(H7) There was a statistically significant, but weak positive correlation between FoC and depression, r (223) = .207, p $\leq$ .001 (two-tailed), with high levels of depression associated with high FoC scores. This finding also supports H7, as a difference between depression and FoC was found. This statistically significant correlation is illustrated in figure 3.

(H8) There was a non-significant, weak positive correlation between FoC and extraversion, r (223) = .019, p > .05 (two-tailed). H8 was not supported. The non-significant scatter plot can be found in Appendix 7.

(H9) There was a statistically significant, moderate negative correlation between FoC and neuroticism, r (223) = -.364, p < .01 (two-tailed), with low levels of neuroticism associated with high FoC scores. This finding supports H9, as a difference between neuroticism and FoC was found. This statistically significant correlation is illustrated in figure 4.

(H10) There was a non-significant, weak negative correlation between FoC and conscientiousness, r (223) = -.106, p > .05 (two-tailed). H10 was not supported. The non-significant scatter plot can be found in Appendix 7.
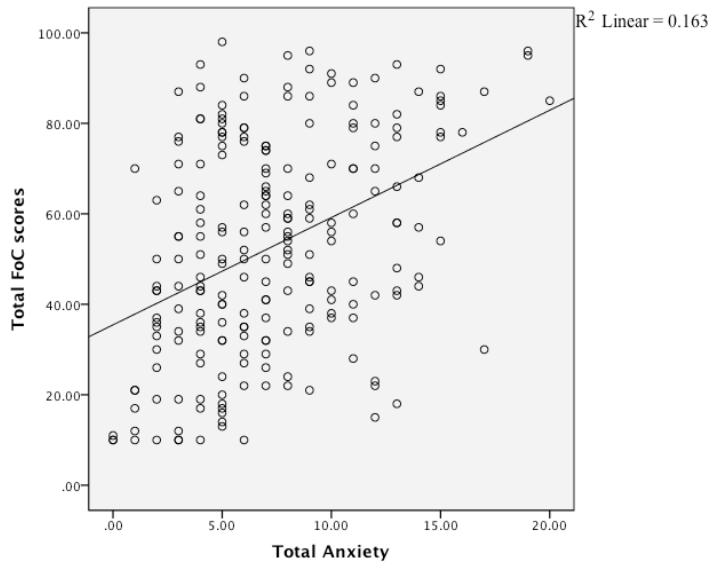

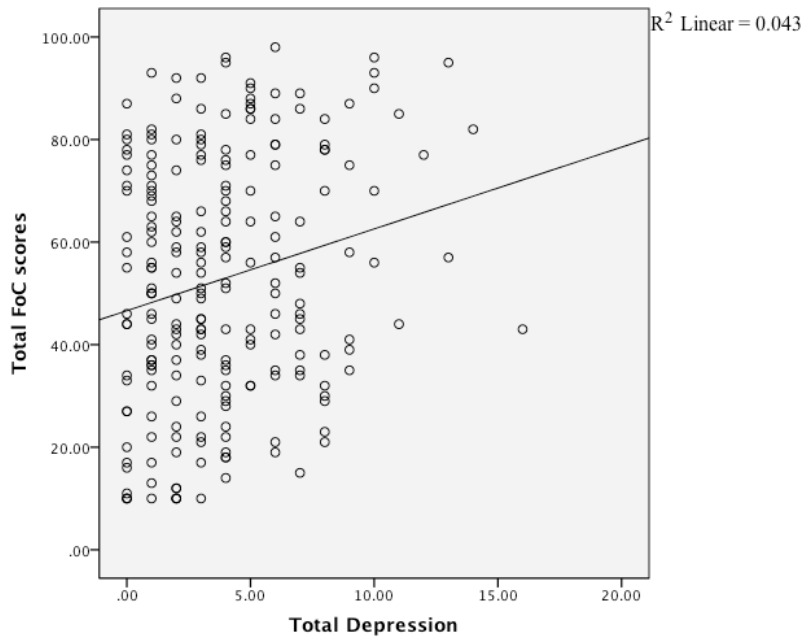Figure 2: Plots illustrating the positive relationship between FoC and anxiety

Figure 3: Plots illustrating the positive relationship between FoC and depression
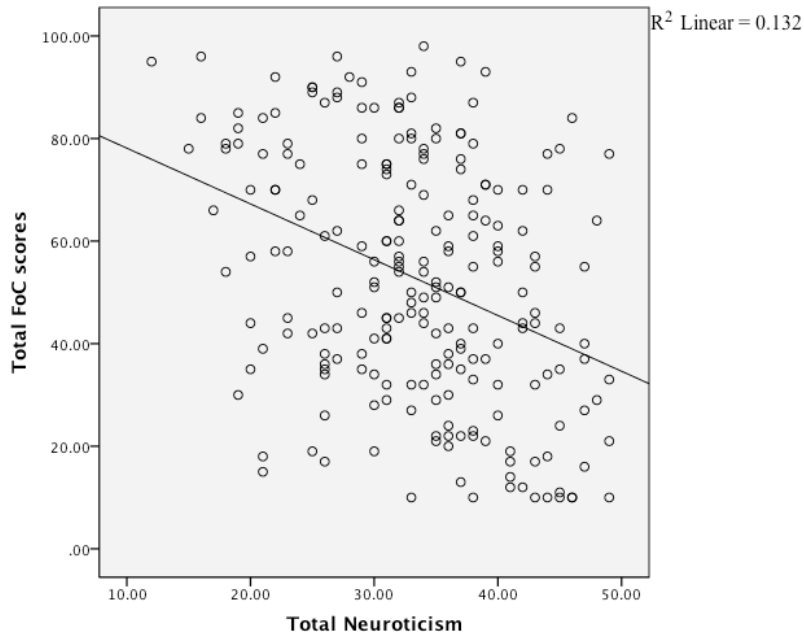

Figure 4: Plots illustrating the negative relationship between FoC and neuroticism

Multiple Regression Analysis

Multiple regression analysis was conducted to test H4 with the correlational variables E, N and C, against the criterion variable FoC, in order to determine if any of the correlational variables were able to predict FoC, specifically neuroticism. In order for multiple regression to be an accurate analysis, the variables must not have a high degree of collinearity, therefore tolerance and variance inflation factor (VIF) were inspected. According to Coolican (2009), VIF = $\geq$ 10, and tolerance = $\leq$ .2, indicates existence of multicollinearity, however the current results reveal VIF = < 10 (E = 1.092, N = 1.117, C = 1.077) and tolerance = >.2 (E= .916, N = .896, C = .929).

The unstandardised regression coefficients (*B*) and intercept, the standardised regression coefficients (β), absolute t-values and the significance level for each correlational variable are shown in table 4.

Table 4

Summary of regression analysis for variables predicting FoC scores

N = 223: Scale	*B*	β	*t*	Sig.
(Constant) Intercept	115.51			
Total Extraversion	-.211	-.06	-.87	.384
Total Neuroticism	-1.27	-.43	-6.54	.000*
Total Conscientiousness	-.65	-.20	-3.07	.002**

Note. * p <.001. ** p <.05

The dependent variable was FoC. R^2 = .174, adjusted R^2 = .163

The prediction model was statistically significant $F(3,219)$ = 15.394, p < .001, and accounted for approximately 17% of the variance of FoC (R^2 = .174, adjusted R^2 = .163). FoC was chiefly predicted by neuroticism (β = -.43, *t* = -6.54, p < .001). However, this was found to negatively predict FoC, indicating low neuroticism scores predict high FoC scores. This supports H4, as it was hypothesised that neuroticism would be the highest indicator of FoC. Previous literature states that neuroticism predicts FoC positively. An assessment of this surprising finding is examined within the discussion section of this report.

 Total conscientiousness was also found to be significant (β = -.20, *t* = -3.07, p < .05), whilst also displaying a negative correlation. This infers that low conscientiousness scores may predict high FoC scores.

Total extraversion positively predicted FoC, demonstrating that high extraversion scores predict high FoC scores, however this was found to be non-significant (β = -.06, *t* = -.87, p > .05). The effect size was very small f^2 = .21.

Discussion

The present study explored the potential relationships between gender, victimisation, mental health, personality type and FoC. Independent *t*-tests revealed significant differences between male and female FoC scores, with females scoring higher. Thus providing further support that females consistently report higher levels of FoC than males. The findings support hypothesis (H) 1, and are in line with previous research, such as LaGrange and Ferraro (1989); Eitle and Taylor (2008); Franklin and Franklin (2009), who found females reported higher FoC than males. This study challenges past research that did not find females to score high FoC (Lee, 1982). Previous research has been limited in finding contradictory results irrespective of the evidence that males become victims of crime and violent crime more often than females (Schreck and Posick, 2014). This unusual relationship has posed a somewhat paradox within fear of crime literature, with many attempting to address the underlying reasons, such as the shadow of sexual assault theory (Lane and Fox, 2013) and gender stereotyping (Goodey, 1997; Snedker, 2006; Cops and Pleysier, 2011).

As the current study did not differentiate between sexually violent crimes and non-sexually violent crimes, it is unknown whether the shadow of sexual assault theory has any bearing on the gender divide. The FoC questionnaire however, does contain a sexually related question, enquiring about the level of fear of being raped or sexually assaulted. This may indicate that this question alone may have drastically increased overall female FoC scores. As this was not examined, this cannot be assumed. Furthermore, questions to detect lying and biased responses were not used, signifying socially desirable responses may have been present, potentially invalidating the overall male scores. As a result of this, caution must be taken when interpreting the differences. Although a difference was found that supports previous literature, it cannot be anticipated that females will have a higher overall FoC in all future scenarios tested. On consideration of these findings, further research addressing the differences between male and female FoC would serve beneficial.

Literature on FoC and victimisation has regularly found a positive relationship (Wilcox, Quisenberry and Jones, 2003; DeLisi *et al.,* 2014). Zarafonitou (2008) stated victims of crime were three times more likely to report high FoC than non-victims of crime. Independent *t*-tests were also used to test differences between victims of crime and FoC, and victims of violent crime and FoC. Violent crime was incorporated into the survey as little differentiation has previously been made between crime and violent crime. Wilcox-Rountree (1998) argue FoC varies depending on the type of crime that was committed against the victim.

The findings do not support previous literature, and subsequently reject H7 and H8. The results revealed a statistically significant difference between victims of crime and FoC, with non-victims of crime reporting higher FoC than victims of crime, conflicting with previous research. Non-victims of violent crime also scored higher than victims of violent crime, however as this test was non-significant, no conclusions can be drawn. Nevertheless, these

findings are in line with Garofalo and Laub (1978) who state the relationship between victimisation and FoC is ambiguous. The individual coping styles in response to victimisation should be assessed, as victims of crime may develop coping skills thus decreasing their FoC. Future research may want to address coping styles in association with victimisation and FoC, to account for variations in the results such as those reported within this study.

Additionally, interaction effects between gender, victimisation and FoC were also tested using a three-way ANOVA, and as anticipated based on the aforementioned t-tests, no significant interaction effects were found. Only one main effect of gender was found to be significant, indicating the relationship between gender and FoC is superior to that of victimisation and FoC. As a result, this rejects H5.

Mental health and FoC has become an increasing area of research, specifically anxiety and depression. Studies have revealed subscales of anxiety and depression are linked with FoC (Stafford, Chandola and Marmot, 2007; Hatemi *et al.*, 2013). A Pearson product-moment correlation coefficient (Pearson's r) revealed a statistically significant, strong correlation between anxiety and FoC. This demonstrates high anxiety correlates with high FoC, thus supporting previous research by Klama and Egan (2011), who found participants reporting high FoC were 1.5 times more likely to suffer from anxiety and depression. This finding also upheld H6, as a difference was revealed between anxiety and FoC.

H7 was also supported, as a difference between depression and FoC was found using Pearson's r, revealing a statistically significant positive correlation. Although statistically significant, the correlation was weak. This further supports the findings from Stafford, Chandola and Marmot (2007) and Klama and Egan (2011). Conversely, this correlation was not as strong as anxiety, suggesting the relationship between depression and FoC is not strongly supported.

Furthermore, in line with Jackson and Stafford (2009), the direction of causality between mental health and FoC is unknown, and evidence to support the relationship is limited. Similarly, it is uncertain if any other factors correlate alongside FoC to increase anxiety and depression. Whitely and Prince (2005) argue the environment in which a person lives, social issues and exposure to crime can all have an effect on the relationship between FoC and mental health. Therefore, interpretations of these present findings must not be overemphasised. A future study using a clinical sample, with patients clinically diagnosed with anxiety and depression may aid in understanding the relationship further.

In addition to mental health, personality type was also assessed to ascertain if there would be differences between extraversion, conscientiousness, neuroticism, and FoC scores. Klama and Egan (2011) found neuroticism positively correlated with FoC, whilst extraversion and conscientiousness negatively correlated with FoC. Surprisingly, neuroticism was found to correlate negatively with FoC, contradicting the previous findings. This infers that a person high in neuroticism would report low FoC scores. Although this

was not anticipated, H9 was supported, as a difference between neuroticism and FoC was found. Extraversion correlated positively, whilst conscientiousness correlated negatively. Nonetheless both of these results were non-significant, thus rejecting H8 and H10. A potential reason for these non-significant findings may be attributed to the distribution of FoC scores, as these were skewed slightly. If the data was modified to be normally distributed, these results may change.

Klama and Egan (2011) also stated neuroticism would be the best predictor of FoC; therefore H4 was tested to establish if neuroticism would be the highest indicator of FoC. Neuroticism was found to predict FoC over extraversion and neuroticism, although this was a negative relationship. This supports H4 as neuroticism was the highest indicator of FoC. Conscientiousness was found to predict FoC negatively, demonstrating low conscientiousness, may predict FoC scores. Extraversion was found to predict FoC positively, however this result was non-significant. To date, it has proved difficult to find research that has found high neuroticism to relate with low FoC. This highlights the abnormality of the results found within this study.

 Not only are these findings not in line with past research, neuroticism has consistently been associated with anxious traits (Kotov *et al*, 2010; Klama and Egan, 2011; Coen *et al.,* 2011). Therefore, it was anticipated that as anxiety correlated positively with FoC, so too would neuroticism. Considering the support for neuroticism and FoC, it was initially assumed that data had been entered incorrectly; for that reason, the data was fully inspected. However, all data, numerical values and reverse coding were accurate. Negative scoring also eliminates response bias, therefore increasing the accuracy of responses. The IPIP scale was also a highly reliable and valid measure. However, as noted by Olvet and Hajcak (2012), neuroticism may simply be a risk factor for anxiety, rather than an absolute causal relationship. A potential route to examine these findings further would be to replicate this study.

Limitations and future research

The primary limitation of this study was the use of self-report surveys. All battery of questionnaires were self-report, and this can elicit social desirability bias, and a lack of understanding surrounding the questions. According to Sudman, Bradburn and Schwartz (1996), participants who fill out self-reports are "cognitive misers", potentially misinterpreting the question, under or over estimating and having to judge the connotation of the questions for themselves. However, the anonymity of participants may have helped overcome social desirability. If this study were to be replicated, lie scales should be used throughout to maintain accurate responses only.

Lorenc *et al.,* (2013) argue that qualitative data on FoC in the UK is commendable in comparison with quantitative data. It has the ability to explore a wide range of topics, with the potential to reveal greater accuracy of results. Therefore, future research should consider incorporating qualitative data within the design of the study. Multi-trait and multi-method should also be included to counter any method effects.

A further limitation of this study was the recruitment of participants. As this was an opportunity sample recruiting through social media, the range of the participants is unknown, and it could have been restricted to only a particular demographic group and age range. However, recruiting through social media seemed to be the most effective method of recruiting a wider cohort of participants.

Potential future research could consider a wider range of factors, alongside those listed within the current study. Fear of crime should be measured separately between males and females, in an attempt to establish if the shadow of sexual assault theory has any bearing on the results. A clinical sample may also prove beneficial, and the findings from a clinical sample may be of interest to professionals who aim to decrease fear of crime within communities and mental health settings.

Conclusion

The findings from the current study have been found to partially support previous literature implicating gender, victimisation, mental health and personality type as factors related to FoC. A current theme throughout is the diversity of FoC, and the impact high FoC can have on mental health. This research has aided in understanding the relationships between the different variables and FoC, whilst subsequently demonstrating the need for further research, to provide a more comprehensive overview of FoC.

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