**‘Fear’ of Crime:**

**Role of Defensive Personality Factors for Concern About Crime**

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**Abstract**

Research into ‘fear of crime’ often interchangeably uses the terms ‘anxiety’, ‘fear’ and ‘worry’. However, neuropsychological and personality research makes a crucial distinction between fear, anxiety and worry. Theoretically, it is likely that anxiety (rumination on the past and worry about the future) rather than fear (i.e., *immediate* reaction to high intensity threat) is a better predictor of ‘fear’ of crime. We studied the relationship between anxiety, fear and anger (using measures from Reinforcement Sensitivity Theory) and *concerns* about becoming a victim of crime. We also investigated the relationship between responses to hypothetical threat scenarios and general concerns about crime. In our sample (*N* = 250), we found, contrary to our predictions, that personality traits related to general fearfulness were predictive of concerns about crime – more so than traits related to anxiety or anger. Responses to hypothetical threat scenarios were predictive of concerns about crime, but less so than trait fear. Overall, our results suggest that it may, after all, be correct to suggest that concerns about becoming a victim of crime are more to do with being afraid than anxious or angry and we discuss the theoretical implications of this effect.

Keywords; fear of crime, anxiety; anger; survey methodology; threat scenarios

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 **Introduction**

There is surprisingly little research into the psychology of ‘fear of crime’, despite its salience in society. Assessing the public’s perceived fear of becoming a victim of crime is important to demographers, social scientists and, for policy reasons, politicians. Academics have previously highlighted concerns with the methodology used in fear of crime surveys (Ferraro & Grange, 1987; Gray, Jackson, & Farrall, 2008), but less attention has been paid to the psychological implications of surveying specifically ‘fear’ or ‘anxiety’ about crime. These avoidance processes are distinct psychological constructs (Perkins, Kemp, & Corr, 2007) and, thus, there may be different responses to fear of crime measures by those who are dispositionally more or less fearful or anxious. There has also been limited exploration of alternative methods (to self-report) of capturing concern about becoming a victim of crime. For example, one could use responses to hypothetical threatening situations to obtain insight into which traits and emotions are associated with concern about crime. The current study uses personality theory that differentiates trait avoidance responses to investigate individual differences that may explain concerns about crime. We also investigate the utility of threat scenarios (Perkins & Corr, 2006) at predicting general concerns about crime.

Previous work has demonstrated that fear of crime changes the way people explore their neighbourhoods (see Hale, 1996) and engage with healthy activity programmes (Dawson, Hillsdon, Boller, & Foster, 2007; Foster, Knuiman, Hooper, Christian, & Giles-Corti, 2014; Kramer, Maas, Wingen, & Kunst, 2013). Parents’ fear can lead to restrictions on children’s independence (Foster, Villanueva, Wood, Christian, & Giles-Corti, 2014) and there is some evidence that adults experience long-term psychological stress in response to their fear of becoming a victim of crime (White, Kasl, Zahner, & Will, 1987). Studies have suggested that fear of crime may be related to one’s proximity to crime events (within 1.6km; Zhao, Lawton, & Longmire, 2015) or general neighbourhood ‘incivility’ (Lewis & Maxfield, 1980). Other findings indicate an individual’s identity and self-perceptions of vulnerability predict their fear of crime more than actual crime rates (Valera & Guàrdia, 2014). Various individual characteristics, such as mental health (Acierno, Rheingold, Resnick, & Kilpatrick, 2004), belief in the ability to protect oneself (Jackson, 2009) and notably age and sex (Reid & Konrad, 2004), appear correlated with fear of crime. In general, the overall literature researching ‘fear of crime’ is diverse and much of the psychology of the phenomenon still needs to be studied. In particular, we argue that more work is needed on the subtle methodological and theoretical differences that can change the way respondents consider ‘fear’ and ‘crime’.

 Ferraro and Grange (1987) conducted a critical literature review of the ‘fear of crime’ and perceived risk of victimhood measures. They highlighted six different question methodologies. They found that questions differed in terms of the ‘level of reference’; whether the perceived risk of being a victim of crime was in reference to the ‘general’ population (i.e. risk to neighbourhood) or to ‘personal’ risk (i.e., risk to ‘you’). Furthermore, the type of perception being assessed varied: from asking for evaluative, probabilistic, ‘judgments’, ‘value’-oriented subjective judgments, to ‘affective’-emotional questions, focused on mood. There are distinct differences between how a respondent might report an evaluation of the cold, probabilistic, risk of a general population and how they might report an emotive self-referenced fear or worry about crime. Gray et al. (2008) have also highlighted that general worry questions are not sufficient when asked “how often are you worried?” due to variance in the interpretation of the question. It is also necessary to be specific about crime types, as respondents disproportionately fear aggressive-violent crimes (Riggs & Cook, 2015) and general questions about crime may miss the finer detail of the perceptions and emotions related to different types of crime (e.g., property or social crimes). The wording of these survey measures can also impact how participants respond. The above critiques focus on individual participants’ responses to different structures of questions. Less attention has been paid to the wording around ‘fear’ or ‘anxiety’, which are often used interchangeably in fear of crime surveys.

Fear and anxiety are psychologically and neurochemically distinct processes (McNaughton & Gray, 2000; Perkins et al., 2007). Fear is the response to immediate danger, with associated defensive behaviours (i.e., fight, flight and freezing) functioning to move the organism away from a perceived threat. Anxiety, on the other hand, refers to an unresolved state of approach/avoidance conflict, produced by the perception of the presence of both potential punishment and reward of approximately equal intensity. These fear and anxiety responses have been shown experimentally to produce different functional behaviours; fear being active avoidance and escape from immediate threat, while anxiety being cautious approach to potential threat as indicated by reward-punishment conflict. For example, we would experience fear from an aggressive-looking dog running towards us with teeth showing (we would take flight, freeze or prepare to fight), but we would be anxious about a forthcoming interview for an much sought after position, leading to cognitive processes relating to resolving the conflict (e.g., extensive preparation and rehearsal), entailing rumination and worry. At extreme levels, these emotions and defensive reactions can be maladaptive and a clinical problem. From well-designed behavioural experiments, we know that fear and anxiety reactions are affected by different classes of drugs which, further, lends support to the claim that they are functionally and neuropsychological distinct emotions/behaviours (see Corr & McNaughton, 2012; McNaughton & Corr, 2004). Thus, when studying everyday concerns about becoming a victim of crime, we may expect long-term anxiety to predict concern more than momentary fear responses.

In personality models, fear and anxiety form part of the Reinforcement Sensitivity Theory of personality (RST). RST highlights three principal systems that explain perceptions and reactions of the world based on approach-avoidance processes (Corr, 2004; McNaughton & Gray, 2000): the Behavioural Approach System (BAS, related to reward, or attractor stimuli, and approach behaviour); the Fight/Flight/Freeze System (FFFS, related to punishment, or repulsor stimuli, and active avoidance/escape behaviour); and the Behavioural Inhibition System (BIS, related to goal conflict, e.g., approach/avoidance conflict, and passive avoidance ad conflict resolution). There are stable individual differences in BAS, BIS or FFFS tendencies that can be assessed with personality factors, for example as seen in the Reinforcement Sensitivity Theory of Personality Questionnaire (RST-PQ, Corr & Cooper, 2016). Of interest to the current work, is the separation of trait BIS, related to anxiety, and trait FFFS, related to fear. FFFS responds to environmental information that is related to proximate threats and encourages active avoidance and escape behaviours, and as such this ‘fear’ system is conceptually unlikely to be related to ‘fear of crime’. On the other hand, the BIS system’s response to unresolved conceptual threats (something that may or may not happen or is distant in time or space) suggests that those who have stronger BIS tendencies might be those who are more worried about becoming a victim of crime.

The BIS and FFFS are conceptually linked to other personality trait models that have been related to fear of crime, such as the Big Five’s Neuroticism (see Klama & Egan, 2011) and the HEXACO’s Emotionality (see Ellis & Renouf, 2018) - however, both of these traits blur the line between fear and anxiety. Similarly, the language used in fear of crime surveys also mixes these distinct psychological constructs. For example, Gray et al. (2008) asked participants how *worried* they are about being a victim of crime and follow up with “on the last occasion how *fearful* did you feel?” (italics ours) with response options on a scale of *not at all worried* to *very worried.* Whilst in lay terms, these processes may be interchangeable, from a psychological perspective, we should be interested in the distinction between these processes, as they have different implications not only for understanding but also for intervention and public policy. In the current study, we investigate the relationship between these fear (FFFS) and anxiety (BIS) traits and a neutrally framed question about how ‘concerned’ respondents feel about crime.

An interesting alternative approach to studying ‘fear’ of crime was raised in Ditton, Bannister, Gilchrist, and Farrall's, (1999) paper on anger. In their research, they asked participants about the frequency at which they thought about, and felt afraid of, various crime types. Additionally, they also asked participants “'In your everyday life, does the thought of [offence group] make you ANGRY?” (emphasis from the original, p. 87). They found that participants were more likely to report feeling angry about housebreaking, car crime, assault and vandalism than experiencing fear. In support of this fear-anger association, Ditton et al. (1999) found that anger and fear about differing crime types were correlated, suggesting that there is shared variance between these two affective states. Here, we are also interested in exploring the effect of dispositional anger on predicting responses to concerns about crime measure. Relatedly, the RST-PQ measure that we use in our study includes a dimension named Defensive Fight. As discussed by (Corr & Cooper, 2016) and elaborated elsewhere (Corr, 2016), although defensive fight at the *behavioural* level belongs to the FFFS – as shown in experimental animal studies – when assessed by questionnaire in human beings, it tends to correlate more with the BAS. For purposes here, it is sensible to keep separate FFFS/fear and Defensive Fight as the measurement of Defensive Fight contains items related to retributive aggressive responses (“I can be an aggressive person when I need to be”, “If I feel threatened I will fight back”). This domain of RST might be able to explain the relationship between aggression and concerns about crime from an RST perspective.

Other research has investigated how individuals think about non-impending crimes. In particular, the distinction between fear and anxiety responses to threatening scenarios has been studied through the use of the Threat Scenario Questionnaire (TSQ, Perkins & Corr, 2006). In this study, participants were asked to report the ‘intensity’ and ‘direction’ (away, toward or freezing) with which they would react to hypothetical situations. In this paper, we evaluate if responses to hypothetical events may share variance with general concerns about becoming a victim of crime. It could be the case that particular directions and intensities towards the threatening scenarios relate to concerns about crime. Such an effect would be useful as it could avoid the risks contained in the subtlety of ‘fear’ of crime questions. Additionally, Perkins and Corr (2006) demonstrated that high intensity ‘flight’ responses in the TSQ were related to greater scores on measures of fear and anxiety. With our intended dataset, we can also attempt to replicate their findings with the contemporary RST-PQ measures of fear (FFFS) and anxiety (BIS).

**Current study**

Here, we have four principal questions, all exploring the relationship between inclination to different affective states and concerns about becoming victims of crime.

First, we are interested in the relationship between dispositional fear and anxiety and an individual’s concern about crime. We predict that the RST’s trait FFFS and BIS will be predictors of concern about crime, and we would conceptually expect anxiety (BIS) to be a stronger predictor of the two personality factors.

Second, building on the work by Ditton et al. (1999), we will test if the subdomains of the Anger Rumination Scale (Sukhodolsky, Golub, & Cromwell, 2001) and the RST-PQ’s Defensive Fight contribute additional predictive value over-and-above BIS and FFFS traits.

Thirdly, we will study the relationship between responses to hypothetical threatening scenarios and concern about crime. We predict that those who report a stronger threat response in the TSQ scores will be those who are more concerned about crime.

Fourthly, we will collect data that allows us to revisit the research by Perkins and Corr (2006) on responses to hypothetical threat. We will investigate if the contemporary RST-PQ (Corr & Cooper, 2016) can explain variance in the TSQ. We predict that the RST-PQ’s FFFS, BIS and Defensive Fight will explain variance in the Direction and Intensity of TSQ responses.

**Method**

All our data can be found on the Open Science Framework here:<https://osf.io/4cgvj/?view_only=7cf2c38c56544cc698423c744f14916a>.

**Participants**

Recruitment and data collection were all conducted online. Adverts were placed on websites for voluntary research participation. Sample size was determined by having sufficient participants to detect the smallest effect of interest (*r*= .20) given a literature typical 80% power (β = .20) and α= .05. This procedure suggested a sample size of, at least, 193. Further, we followed guidance by Schönbrodt and Perugini, (2013) who noted that correlation estimates do not stabilise until 250 observations. Thus, we stopped data collection after 250 participants had completed the study. The majority of the sample reported being female (*n* = 166, male = 82, other= 2), speaking English as their first language (*n* = 196) and living in the UK (*n* = 136, not in UK but in Europe = 35, other = 79). Participants were between 18 and 68 years old (*M*Age= 33.59. *SD* = 12.12, did not report = 17).

**Procedure and materials**

After providing informed consent, participants first reported their demographic information (age, sex, first language and country of residence). Next, participants completed the RST-PQ, the concern about crime measure, the TSQ and finally our respondents also completed the Anger Rumination Scale.

**The Reinforcement Sensitivity Theory-Personality Questionnaire (RST-PQ).** We used the 73-item RST-PQ (Corr & Cooper, 2016) which includes measures of BIS, FFFS, four Behavioural Approach System traits and Defensive Fight. The RST-PQ is a series of declarative statements (e.g., “If I feel threatened, I would fight back”). Respondents are asked how accurate these statements are as descriptions of themselves on a four-point scale of *Not at all* (0) to *Highly* (3). We calculated average response to items in a factor for analysis, and as such participant scores can be understood as being *not at all* (0) to *highly* (3) like the trait. We included the full questionnaire for data collection, but only the BIS, FFFS and Defensive Fight traits are of interest in the current study. The BAS traits data is available in our open access data set linked above.

Scores were computed for trait BIS, which measures anxiety and rumination (23-items, *M*BIS = 1.47, *SD* = 0.67, Skewness = 0.10, Kurtosis = -0.88, Cronbach’s α = .94), trait FFFS, testing for fearful avoidance responses (10-items, *M*FFFS = 1.28, *SD*= 0.60, Skewness = 0.25, Kurtosis = -0.51, Cronbach’s α = .76) and dispositional Defensive Fight, which assess aggressive reactivity to potential harm (8-items, *M*DF = 1.79, *SD* = 0.58, Skewness = -0.14, Kurtosis = -0.46, Cronbach’s α = .82).

**Concern about crime.** Our measure of concern about crime was adapted from Gray et al.’s(2008) suggested revisions to the British Crime Survey. Gray et al.’s assessment of fear of crime was measured with answers to three questions: ‘In the past year, have you ever felt worried about [crime type]’; if “yes”, respondent are then asked, ‘How frequently have you felt like this in the last year?’ (answer is given as a count); and ‘On the last occasion how fearful did you feel?’ (answer is given on a scale from *not very worried* to *very worried*).

Essential to our study is the recognition that fear and worry are distinct processes. It may be the case that asking a question about ‘fearfulness’ but providing ‘worry’ response anchors could lead to confusing responses. Here, we reframe the questions to be focused on ‘concern’ rather than worry or fear. We also condense the first two questions into one by allowing a ‘0 times’ option and allow any non-0 response as a ‘yes’ response to the first question. Thus, we ask our participants two questions for each type of crime: “How many times have you felt concerned about becoming a victim of the following crimes over the past year? Please give your answer as an approximate number (i.e. "1" or "10" or "100"”), with an open text response and “To what extent did you feel concerned at such times?” on a *1= Not at all* to *5= Very* scale.

We received answers to the open response question “How many times have you felt concerned about becoming a victim of the following crimes over the past year?” which were outside our coding criteria. Whilst the majority of responses were the requested concrete numbers (“0”, “1”, “15”), other responses required coding into numeric responses (“Never” becomes 0, “2-3” becomes 2.5). There were other responses that were not codable or appropriate answers to the question (“Whenever walking home late”, “Occasionally on the train”, “Sometimes”, “a lot”, “all the time”). These were excluded from analysis. It should be noted that higher frequency reports of concern (such as “a lot”) were more often not codable than the low frequency (“rarely”). As such, in our coding of our data we lost more data from the higher reports of concern. In total, 18% of responses to the concern questions were removed. These data are coded as missing and are distinct from reports of ‘0’ frequency for fear of crime in the analysis. Statistical reporting throughout this paper identifies the changes in sample size due to this data cleaning, when necessary.

We asked participants to respond to their level of concern about eight crimes. These were chosen to focus on street crimes (‘street mugging by a stranger’, ‘street assault by a stranger’, ‘being the victim of verbal abuse in the street’), home violations (‘housing being burglarised, whilst you are absent)’, ‘stranger breaking into your house (whilst you are present)’, ‘your property falling victim to malicious fire-setting behaviour (arson)’), ‘being blackmailed’ and the media-salient ‘being a victim of a large scale event (i.e. terrorism or riot)’. We chose a variety of crimes that focused on events that may happen in different settings- at home, on the streets or at a distance.

**The Threat Scenario Questionnaire (TSQ).** TheTSQ was presented and analysed in the same approach as suggested by Perkins and Corr (2006). Participants were provided text descriptions of 12 brief threatening scenarios (i.e. “*You are sleeping in bed during the night, but suddenly wake up thinking you have heard a suspicious noise. It is dark and you are alone”* or “*You are alone in an elevator late at night. As it stops and the doors open, a menacing stranger rushes in to attack you, blocking the door*”). The same 10 possible responses to each scenario are presented after each text. These range from ‘*Hide*’ to ‘*Attack or struggle*’ to ‘*Beg, plead for mercy, or negotiate*’.

Perkins and Corr created a coding scheme reflective of the direction (higher score suggests moving away from threat) and intensity (high score indicating more high energy ‘attack’ responses, low score reflecting lower energy ‘beg, plead’) of the response to the hypothetical threat. By the nature of the coding, participants’ TSQ Direction score is a value between 12 (away from threat) to 24 (towards threat). TSQ Intensity scores can be between 12 (low intensity, i.e. ‘risk assess’) and 36 (high intensity, i.e. ‘attack’). In our sample, the average response to the TSQ Direction was inclined towards away from threats (*M*Direction = 16.53, *SD* = 1.99, Min = 12.00, Max = 24.00) and average TSQ Intensity was middling (*M*Intensity = 22.82, *SD* = 3.17, Min = 14.00, Max = 33.00).

**The Anger Rumination Scale (ARS).** The 19-item ARS (Sukhodolsky, Golub & Cromwell, 2001) measures four subdomains which assess an individual’s likelihood to focus on angry moods and past anger experiences. Participants reflect on the frequency of anger experiences they have experienced on a scale of *Almost Never* (1) to *Almost Always* (4). It assesses Angry Afterthoughts, with items such as ‘Whenever I experience anger, I keep thinking about it for a while’ (6-items, *M*Afterthoughts = 1.08, *SD* = 0.77, Skewness = 0.43, Kurtosis = -0.58, Cronbach’s α = .90). Thoughts of Revenge is measured with items such as ‘I have long living fantasies of revenge after the conflict is over’ (4-items, *M*Revenge = 0.81, *SD* = 0.68, Skewness = 1.05, Kurtosis = 0.99, Cronbach’s α = .78). The Angry Memories factor includes questions such as ‘I ruminate about my past anger experiences’ (5-items, *M*Memories = 1.13, *SD*= 0.74, Skewness = 0.34, Kurtosis = -0.49, Cronbach’s α = .88). The Understanding of Causes is assessed with 4-items, including ‘I analyse events that make me angry’ (*M*Causes = 1.30, *SD* = 0.76, Skewness = 0.18, Kurtosis = -0.64, Cronbach’s α = .81).

**Results**

**Descriptive statistics for concerns about crime and the ‘Concern’ variable**

Table 1 reports the nature of the concern about crime reported by participants. Firstly, they were asked to report how frequently they felt concerned about the particular crime over the last year. There was a high number of ‘0’ or ‘never concerned about [crime type]’ responses. Participants who reported feeling concerned about a crime at least once were most often reporting many events of feeling concerned over the last year. For example, of those reporting being concerned about mugging at least once, the average report was around 19 occasions of feeling concerned (see Table 1). However, these reports were highly variant between participants, with a large sample standard deviation in the number of times participants felt concerns. This large variance is explained more by the few high-end responders, with only 8.70% of participants reporting more than 10 events of feeling concerned about the average crime (see Table 1). Crime that participants most often being reported being concerned about was a large event (e.g., terrorism or riot) and the least was concern about arson.

Intensity of concern was reported only for those participants who reported feeling concerned at least once over the last year. Intensity of concern is reported in Table 1, but not further analysed here due to insufficient number of responses for meaningful statistical analysis.

Our principal interest is to study the relationship between personality traits and dispositional concern about crime. For this aim, we created a variable reflective of participants’ general concern about crime. To create this variable, we first removed participants who did not report for three or more crimes, leaving a sample of *N* = 218 who report being concerned (or not) for six more crimes. We then corrected for the skew in the frequency of concern responses by recoding all non-‘never’ concern responses into a single ‘has some concern about crime’ variable. The outcome is a series of binary variables which code participants as having shown *some* (1) or no (0) concern about the particular crimes over the past year for each crime type. To reflect the participants’ general concerns about crime, the average of their binary responses is computed. This resultant ‘concern about crime’ variable is the proportion of the crimes participants responded to that they reported feeling concerned about at least once over the last year. A participant that showed some concern about all of the crimes they reported on would have a score of ‘1’ and a participant that had no concern about the crimes they reported on would have a score of ‘0’. The Concern variable (*M* = 0.58, *SD* = 0.26, min = 0.14, max = 1.00) was suitable for parametric analysis, with limited skewness (-0.05, s.e. = 0.17) and acceptable kurtosis (-0.95, s.e. = 0.33).

**[Table 1 here]**

**Dispositional fear and anxiety and concern about crime**

First, we constructed a base model (‘Model 1’) containing the known predictors of concern about crime, age and sex (Reid & Konrad, 2004) This model explained a significant, albeit small, proportion of variance (see Table 2). This variance in concerns about crime was predicted by female participants reporting more concern about crime. There was no effect of age.

A comparison model (‘Model 2’, see Table 2) was built including the RST-PQ BIS and FFFS traits. This model was a significant improvement on Model 1, explaining 5% of the variance in concerns about crime, primarily due to the effectiveness of trait FFFS. BIS did not predict concerns about crime. Overall, this suggests that dispositional ‘fear’ is predictive of concerns about crime, albeit with a small *R*2.

Pairwise correlations show that the direct relationships between concern about crime and BIS (*r*(250)= .17, *p*= .013) and FFFS (*r*(250)= .21, *p*= .002) were generally small.

**[Table 2 here]**

**Dispositional anger and concern about crime**

 As expected, the RST-PQ’s Defensive Fight shared variance with the ARS’ Angry Afterthoughts (*r*(250) = .33, *p* < .001), Thoughts of Revenge (*r*(250) = .46, *p* < .001), Angry Memories (*r*(250) = .28, *p* < .001) and Understanding of Anger Causes (*r*(250) = .27, *p* < .001). The RST-PQ’s BIS, designed to include rumination tendencies (like the ARS) also correlated with all ARS facets (all *r*≥ .45, all *p* < .001). Trait FFFS showed smaller, but still notable, correlations with the ARS measures (all *r*≥ .17, all *p* ≤ .007).

 Model 3 presented in Table 2, tested the effectiveness of the trait anger-like items at predicting concern about crime beyond the fear and anxiety measures used above (Model 2). Model 3 was not a significant improvement over Model 2, in fact the adjusted *R*2 of the anger model was smaller.

 In pairwise correlations, the concern about crime measure was a weak (ARS-Causes; *r* = .15, *p* = .026; ARS-Revenge; *r* = .16, *p*= .019, ARS-Memories; *r* = .15, *p*= .025) or non-significant (ARS-Afterthoughts; *r* =.11, *p*= .105) correlate of the ARS measures.

 These results would suggest that trait FFFS is a superior predictor to Defensive Fight and Anger Rumination. However, in pairwise correlations, there was evidence that increased trait-anger was related to concerns about crime.

**Threat scenario questionnaire and concern about crime**

One way to measure general concerns without the explicit ‘fear’ and ‘anxiety’ wording could be to use proxy measures of general defensiveness. With this in mind, we investigated the effectiveness of the Perkins and Corr’s (2006) TSQ at predicting participants concern about crime. We built a regression model where the computed TSQ Direction and Intensity scores were used to predict concerns about crime. This model explained approximately 4% of the variance in concerns about crime (*R*2Adj = .04, *F*(2,215) = 4.90, *p* = .008). In this model, the TSQ Intensity (i.e, preference to ‘attack’ rather than ‘risk assess’ in the hypothetical scenarios) was a significant predictor of concern about crime (βUnstandardised = .02, *s.e.* =.01, *t* = 3.02, *p* = .003), but TSQ Direction (i.e. towards or away from the hypothetical threat) was not (βUnstandardised = -.01, *s.e.* =.01, *t* = 1.51, *p* = .133).

Table 2 tests Model 4, containing the TSQ scores and the RST-PQ’s FFFS and BIS, against the successful Model 2. Despite the TSQ scores being predictors of concern about crime when tested alone, the FFFS trait is the most dominant predictor in Model 4, to the extent that the TSQ Intensity is no longer a significant predictor.

These results show that TSQ Intensity, the tendency to react more forcefully against hypothetical threats, predicted concern about crime. However, response to these hypothetical scenarios was a less powerful predictor of concerns about crime than dispositional fearfulness.

**Additional analyses: Threat Scenario Questionnaire and the RST-PQ**

Perkins and Corr (2006) found that TSQ Direction and Intensity correlated with BIS measures. They also found that fear, as measured by the Fear Survey Schedule, did not predict TSQ scores. The contemporary RST-PQ contains an updated measure of BIS and FFFS as well as a further relevant Defensive Fight measure. With these updated measures, we tested to see if BIS, FFFS and Defensive Fight would predict TSQ scores. The models using these three traits explained a significant portion of the variance (see Table 3) for both the TSQ Intensity and Direction. Trait FFFS positively predicted TSQ Intensity (‘Freeze’ more than ‘Beg/plead/negotiate’) and Direction (‘Run’ more than ‘look for a weapon). Increased trait Defensive Fight was related to a lower TSQ Direction score (i.e. moving towards rather than away from a hypothetical threat). BIS was not a significant predictor of TSQ scores.

There results suggest that the RST-PQ’s FFFS and DF traits are useful for distinguishing inclination to approach or avoid a hypothetical threat. Further, FFFS is a strong predictor of the intensity by which someone responds to a hypothetical threat. Unexpectedly, these results are the opposite of what was found in the previous research; where fear was not a predictor before, it was here, where anxiety and older BIS measures were predictors before, they were not here.

**[Table 3 here]**

**Discussion**

 Contrary to our expectations, ‘concern’ about crime is most strongly related to dispositional fear (as measured with the RST-PQ’s FFFS), and not trait anxiety. Anger Rumination and Defensive Fight did not meaningfully explain variance in concern about crime either. The intensity of a hypothetical response to a threatening scenario did predict concern about crime, however it was a weaker predictor than FFFS. Across all models, the important personality trait for explaining concern about crime in our data was trait fear, which would suggest that there is a conceptual legitimacy to studying ‘fear of crime’.

 In theoretical terms, finding FFFS as a strong predictor of concern about crime is unexpected. Perhaps this effect was driven by items in the RST-PQ that assess fear in a way that is related to vulnerability concerns. There are two questions in the FFFS which would appear to be similar to some of our target crime types; ‘I would instantly freeze if I opened the door to find a stranger in the house’ and ‘I would run fast if I knew someone was following me late at night’. With the item similarity perhaps explaining some shared variance, it is perhaps more interesting to consider that variance in anxiety (BIS) was a poor predictor of concern about crime. Whilst we had previously considered concern about becoming a victim of crime as a thought process that could lead to rumination, perhaps the concern itself is not anxious. The fear of becoming a victim could be a defensive reaction to real or perceived environmental threats and would lead to individuals engaging in avoidant behaviours. Anxiety and rumination would, perhaps, be more pertinent to outdoor behaviours and how one would travel. The BIS system is driven by unresolvable conflict and, perhaps, when individuals consider the perceived prevalence of crime around them, they consider this a concrete risk. Thus, those more inclined to fearful responses are those who are more likely to report more concern about crime. Future research could consider the role that rumination (as an aspect of BIS) may have on the situations where anxiety and rumination are more relevant, such as the choice to avoiding certain streets or transport options, due to perceived potential risk. Thus, there could be personality-related differences in the behavioural response to fear of crime.

It is further important to highlight that the prediction value of trait FFFS was not particularly strong (in all models βUnstandardised ≤ .08) and the models only explained 5-7% of the variance in concerns about crime. This is notably less than, for example, the 19% of variance in ‘fear’ of crime explained by models using HEXACO’s Emotionality in previous research (Ellis & Renouf, 2018). An explanation for this could be due to our phrasing of our dependent variable rather than our predictor. It is possible that, had we asked participants about ‘fear’ of crime, our predictors might have explained more variance. More broadly, it could be that ‘concern’ is too atypical a term for fear or worry about crime and this led our participants to respond unusually, which could explain our relatively bimodal response to the concern about crime questions. Alternative future methodologies could ask participants open-endedly to report their own feelings about crime. It would then be of interest to try and classify differences in word use using personality traits.

 Previous research has highlighted that individuals pair ‘anger’ with their perceived likelihood of becoming a victim of crime, much like fear (Ditton et al., 1999). However, in our study, even using a measure of dispositional anger which included rumination, we found no evidence that trait anger affected concerns about crime. It could well be the case that it is only situational anger and not dispositional anger that predicts being concerns about crime. It could be the reactive anger of being aware of local crime that drives the sentiment more than a property of the individual. Our trait measure of inclination towards reactive or retributive anger (Defensive Fight) was not a successful predictor of concern about crime either. However, Defensive Fight was a notable predictor of responses to the TSQ, predicting tendency to react towards hypothetical threats in the presented scenarios. Defensive Fight is an under researched element of the dispositional RST framework and more research to explore a trait that separates fight from flight responses could improve understanding of trait threat sensitivity.

When we investigated what personality traits predicted the TSQ, we found different results to Perkins and Corr (2006). In their multiple regressions using Carver and White’s BIS and the Fear Survey Schedule, they found that BIS predicted defensive direction but not intensity and fear predicted neither. We found, using our updated RST-focused measures, that it was trait FFFS that notably predicted (low intensity, evasive) responses to the TSQ but not BIS. The differences in results could be due to the updated measure of BIS that we used in our study. The Carver and White measure of trait BIS is not a reflection of the contemporary understanding of RST (Heym, Ferguson, & Lawrence, 2008) and perhaps the RST-PQ better demonstrates personality traits pertinent to threat responses. We did find that the TSQ responses related to general concern about crime, suggesting some utility in scenario-based measures for investigating concern about crime. However, the FFFS scores of participants were superior predictors of concern than these tests, suggesting there is much more room for improvement in using the TSQ to predict general concern. With advances in technology, such as virtual reality simulations, future research could continue to study the FFFS and BIS distinction in TSQ responding using more engaging presentations of the scenarios. This would avoid the variance in how participants may imagine the hypothetical scenarios and would avoid undue measurement error. This technological update to the TSQ could also better predict general concern about crime.

 In summary, we studied the role of trait fear, anxiety and anger and scenario-based responding predicted concerns about crime. We found that concern about becoming a victim of crime was strongest in those who were more inclined towards ‘fear’ (FFFS). Responses to a hypothetical threatening event was an effective predictor of concern but not more so than fear. It is therefore worth focusing on ‘fear of crime’ as a distinct process and future research should avoid blurring ‘fear’ and ‘anxiety’ about crime. It may benefit future research in ‘fear of’ and ‘worry about’ crime to be clearer on the terminology they are using, so as not to confuse two distinct processes.

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| Table 1. *Descriptive statistics for the participant-reported frequency of concerns about the crime types and the intensity to which they were concerned during those events.* |
|  | Frequency of concern over last year | Intensity of concern |
| Crime Type  | *N* | % Reporting 0 events of concern | Mean (SD) of non-0 responses | % Reporting >10 events of concern | *n* | Mean (SD) |
| Mugging | 225 | 45.33% | 18.83 (92.52) | 8.89% | 123 | 2.46 (1.07) |
| Assault | 225 | 48.00% | 13.81 (31.55) | 9.78% | 117 | 2.66 (1.32) |
| Burglary | 228 | 44.30% | 14.20 (37.46) | 10.09% | 127 | 2.50 (1.25) |
| Home Intrusion  | 228 | 52.19% | 14.31 (28.49) | 10.97% | 110 | 2.76 (1.40) |
| Arson | 225 | 81.78% | 9.07 (21.35) | 1.78% | 42 | 1.81 (1.44) |
| Large Event | 219 | 31.96% | 11.57 (25.45) | 10.96% | 150 | 2.65 (1.37) |
| Blackmail  | 227 | 71.81% | 12.66 (24.62) | 4.85% | 65 | 2.17 (1.57) |
| Verbal Abuse  | 228 | 47.80% | 16.63 (30.89) | 12.28% | 120 | 2.39 (1.34) |
| *Note:* Some *n* for responses to crime type are lower than sample *N* for frequency due to providing text or non-codable responses to the questionsAll *n* for intensity are lower than sample *N* for intensity as only those participants reporting having experienced concern (non-0 responses) will have an intensity to report. |

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| Table 2. Regression models predicting concerns about crime with increasing model content. |
|  | Model 1 | Model 2 | Model 3 | Model 4 |
| **Model summaries** |
| *R*2Adj a | .025\* | .050\*\* | .044\* | .066\*\* |
| Model change (Δ*R*2) a,b |  | .034\* | .017 | .025 |
| **Predictors (as βUnstandardised)** |
| Age | -.00 | -.00 | -.00 | -.00 |
| Sex (male= 1, female= 0) | -.09\* | -.06 | -.06 | -.04 |
| RST-PQ – FFFS |  | .07\* | .08\* | .07\* |
| RST-PQ – BIS |  | .03 | .01 | .02 |
| RST-PQ - DF |  |  | -.01 |  |
| ARS – Afterthoughts |  |  | -.06 |  |
| ARS – Revenge  |  |  | .05 |  |
| ARS – Memories |  |  | .00 |  |
| ARS – Causes |  |  | .05 |  |
| TSQ – Direction |  |  |  | -.02 |
| TSQ – Intensity |  |  |  | .01 |
| Notes.All models are predicting the ‘Concern’ variable. Blank cells indicate that this predictor was not included in this model.\**p*< .05, \*\**p*< .01, \*\*\**p*< .001a *R*2 values are reported to three decimal places for rounding clarity.b Model change for Model 2 is tested against Model 1. Model change for Models 3 and 4 are tested against Model 2RST-PQ= Reinforcement Sensitivity Theory – Personality Questionnaire. ARS= Anger Rumination Scale, TSQ= Threat Scenario Questionnaire. FFFS= Fight/Flight/Freeze System, BIS= Behavioural Inhibition System, DF= Defensive Fight |

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| Table 3. Regressions with RST-PQ traits predicting direction and intensity of response to the Threat Scenario Questionnaire |
| Regression aspect | TSQ Direction | TSQ Intensity |
| *R*2Adj  | .05\*\* | .06\*\*\* |
| βUnstandardised FFFS | .54\* | 1.00\*\* |
| βUnstandardised BIS | -.07 | .59 |
| βUnstandardised DF | -.68\*\* | .01 |
| *Note:* \*p< .05 \*\*p< .01 \*\*\*p<.001FFFS= Fight/Flight/Freeze System, BIS= Behavioural Inhibition System, DF= Defensive Fight, TSQ= Threat Scenario Questionnaire |