LSE Research Online

[Jonathan Jackson](), Ioanna Gouseti

Threatened by violence: affective and cognitive reactions to violent victimization

Article (Accepted version)
(Refereed)

http://eprints.lse.ac.uk

Threatened by Violence:
Affective and Cognitive Reactions to Violent Victimization

Jonathan Jackson[1], Department of Methodology and Mannheim Centre for Criminology, LSE
Ioanna Gouseti, Department of Methodology, LSE

Abstract

Stranger violence can have a variety of different physical, psychological, social and economic effects on the victim. In this paper we address one possible impact: namely, a heightened sense of uncertainty, risk and fear of violent crime. Drawing on recent advances in the psychology of risk, we make three contributions. First, we differentiate in our analysis between primary experience of violence (where the individual in question has been attacked by a stranger in the local streets) and secondary experience of violence (where the individual knows somebody who has been attacked in the local streets by a stranger). Second, we assess whether risk perception (beliefs about the likelihood, impact and controllability of future victimization) mediates the empirical links between primary and secondary experience of violence and worry about violent crime. Finally, we examine whether victimization experience seems to have a greater impact on risk perception and worry among people with a high need for cognitive closure (who are averse to uncertainty and desire order and structure in their lives). Our findings indicate a number of potentially important mediating and moderating effects regarding the impact of stranger violence on fear of violent crime. We conclude with some implications for research and policy.

Key words: victimization; fear of crime; risk perception; need for cognitive closure
.

This is a pre-publication version of a paper accepted by the Journal of Interpersonal Violence

---
[1] Dr Jonathan Jackson, Department of Methodology, LSE, Houghton Street, London WC2A 2AE, United Kingdom, Tel: 0044 207 955 7652, Email: j.p.jackson@lse.ac.uk

Introduction

Violence can have a variety of different physical, psychological and socio-economic effects on victims, communities and societies (Denkers & Winkel, 1998; Green & Diaz, 2007; McCann, Sakheim, & Abrahamson, 1988). Violence damages educational attainment and income realization in early adulthood (Macmillan, 2001a), exacerbates unemployment or occupational maladjustment after the incident (e.g., (Hanson, Sawyer, Begle, & Hubel, 2010; Mezey, Evans, & Hobdell, 2002; Resick, Calhoun, Atkeson, & Ellis, 1981), and harms psychological wellbeing and interpersonal relations (Becker, Skinner, Abel, & Cichon, 1986; Bunch, Clay-Warner, & Mcmahon-Howard, 2013; Burnam *et al.*, 1988; Golding, 1999; Green & Pomeroy, 2007; Hanson *et al.*, 2010; Lurigio, 1987; Macmillan, 2001b; Yap & Devilly, 2004). Violence can also impair the socio-economic conditions of individuals and families, especially in conjunction with existing problems of poverty and addiction (Denkers & Winkel, 1998; Kilpatrick, Acierno, Resnick, Saunders, & Best, 1997; Koss, Woodruff, & Koss, 1990; Norris & Kaniasty, 1994).

One of the peculiarities of violent victimization pertains to its long-term aftermath. Victims of violent crime tend to suffer its effects for longer periods of time compared to victims of other crimes (Davis, Taylor, & Lurigio, 1996; Hanson *et al.*, 2010; Macmillan, 2001a; Norris & Kaniasty, 1994). Turner *et al.* (2006) found that cumulative exposure to different types of victimization over a child's life-course constitutes a substantial source of depression, aggression and other mental health risks. Other studies have shown that violent victimization and exposure to violence in the community can have independent and cumulative effects on adolescent mental health, with symptoms ranging from depression, anxiety and post-traumatic stress disorder to substance abuse and criminal offending (Kilpatrick *et al.*, 1985; Kort-Butler, 2010; M. Kunst, Winkel, & Bogaerts, 2010). In work investigating the pathways to self-harm (other than suicide) among women, Nada-Raja & Skegg (2011) found that past victimization and post-traumatic stress disorder were significant predictors of self-harm. One possible explanation of the long-term effect of violence on mental health and well-being is that violence can shatter the belief in personal invulnerability and create a sense of uncertainty and disempowerment (Green & Pomeroy, 2007; Janoff-Bulman & Frieze, 1983; Macmillan & Hagan, 2004).

In this paper we assess some of the empirical links between prior violent victimization, people's subjective risk judgements, and the frequency with which they worry about violent victimization. Building on extant work into fear of crime and the psychology of risk (Custers & Van den Bulck, 2012; Jackson, 2011; Jackson, 2013; Killias, 1990; Shippee, 2013; Warr, 1985, 1987; Winkel, 1998) we consider two potential downstream effects of stranger violence: first, that victimization experience links to people's subjective sense of the likelihood, impact and uncontrollability of violence; and second, that this seemingly elevated sense of risk in turn explains variation in worry about crime. We also examine whether people's need for cognitive closure alters the fitted relationship between victimization experience, risk perception and worry. According to prior theory (e.g. Kruglanski & Webster, 1996) people who are high in need of cognitive closure prefer definite knowledge, dislike uncertainty, and are motivated to attain and maintain closure (i.e., an answer to an ambiguous situation). We explore the relevance of such motivated tendencies and proclivities regarding knowledge and certainty to the estimated impact of violent victimization. We examine whether people with a high need for cognitive closure seem to be especially troubled by the sense of uncertainty and threat that the experience of crime can create.

Following a common empirical strategy in the fear of crime literature we compare average levels of risk perception and worry about future victimization among people who have (a) experienced primary violent victimization in the past five years, (b) experienced secondary violent victimization in the past five years, and (c) not experienced primary of secondary victimization in the past five years. Drawing on data from a national probability survey of the general populations of Italy, Bulgaria and Lithuania, and building on prior research into the impact of victimization, we differentiate between primary experience of stranger violence over the past five years (where the individual in question has been physically attacked in the local streets by a stranger) and secondary experience of stranger violence over the past five years (where the individual knows of someone who has been physically attacked in the local streets by a stranger). Using structural equation modelling to estimate additive and interactive statistical effects, we examine empirical associations between violent victimization, need for cognitive closure, risk perception

2

and worry about future victimization. While we analyse observational data, we hope that our findings nevertheless shed light on how victimization experience links to the salience and appraisal of risk regarding future victimization.

The paper proceeds as follows. After giving a brief sketch of how the various predictions come together to form a coherent whole, we describe more fully each of the three main objectives. We then outline the methodology. Following a presentation of findings, our concluding remarks focus on future avenues of research, as well as some policy implications of our results.

An overview

Figure 1 gives an overview of the three main objectives of the study in the form of potential pathways between victimization experience and worry. Note that because we employ data from a national probability survey of three European countries, our empirical strategy involves estimating conditional correlations in the various populations of interest. With that caveat set, consider some possible empirical links between the constructs depicted in Figure 1.

INSERT FIGURE 1 ABOUT HERE

We first examine whether primary and secondary victims of violence are more worried about crime than non-victims, and if they are, whether seemingly elevated perceptions of risk among victims explain some or all of the statistical effects. Following recent criminological research into the psychology of risk, we define subjective risk as perceptions of the likelihood and controllability of the uncertain and undesirable event, as well as perceptions of the impact of the event if it were to occur (see *inter alia* Acuña-Rivera, Brown, & Uzzell, 2014; Custers & Van den Bulck, 2012; Ireland, 2011; Jackson, 2006, 2009; Killias, 1990; Killias & Clerici, 2000; Shippee, 2013; Warr & Stafford, 1983; Warr, 1987). Conceiving of personal threat as not just one's subjective probability of a negative uncertain event, but also one's beliefs about its controllability and consequences, we examine whether victims of violence (compared to non-victims) tend to see violence as more likely, as more consequential for the victim, and as more difficult to control. We also assess whether varying levels of risk perception help to explain why victims of violence worry more than non-victims. Might experience of violence be related to higher on average subjective risk? Might heightened subjective risk in turn be related to higher average levels of worry about violent attack?

The second objective is to examine 'risk sensitivity' (Warr, 1985) in the context of interpersonal violence. Risk sensitivity is the idea that likelihood and other risk judgements (like impact) 'multiply' to generate emotional response (meaning an interactive, rather than additive, statistical effect should be observed). Imagine a hypothetical dial that you can use to shift up or down the level of everyone's subjective probability of violent victimization. Turn the dial up and everyone's perceived likelihood goes up. Turn the dial down and everyone's perceived likelihood goes down. According to the risk sensitivity model, turning the dial up will result in higher expected levels of worry for the entire group, but the increase in average levels of worry will be especially strong among those who associate violence with especially serious personal consequence (Warr, 1987), who believe that violence is difficult to control (Jackson, 2011), and who already have an aversion to ambiguity (Jackson, 2013).

As the dial is turned up, the increased likelihood brings the event closer to oneself subjectively and emotional response heightens. But the frequency and impact of worry is expected to be stronger among individuals who believe that violence has an especially severe impact on the victim and who represent the event as highly difficult to control. Why might risk sensitivity be relevant to the relationship between the experience of violence and worry about violent victimization? It seems to us plausible that, as a result of their experience, primary and secondary victims tend to represent the expected impact of violence as higher and its controllability as lower compared to people without direct or vicarious experience. The very fact that the event has transpired may raise (on average) the possibility that it could happen again; may make it seem (on average) more difficult to control by the victim because it has occurred already; and may make the consequences (on average) seem more severe. If this is so – and if perceived control and perceived consequence strengthen the fitted relationship between subjective

probability and affect (Warr, 1987: 38; Jackson, 2011: 516) – then we might reasonably conclude that victims of violence are more 'sensitive to risk' than non-victims. Victims (a) see their risk to be higher than non-victim, and (b) these constitutive elements of risk perception subsequently combine interactively to predict frequent worry about crime.

The third objective is to consider the relevance of need for cognitive closure to the potential impact of violent victimization and worry about crime. Psychological research has shown that people vary in their basic need to believe that things are stable, certain and predictable. Need for cognitive closure refers to an epistemic function of closed-mindedness (versus open-mindedness) that shapes how people make sense of and form knowledge about the world (Kruglanski & Webster, 1996; Kruglanski, 2004). On the one hand, people with a high need for cognitive closure are said to prefer their world to be 'black-and-white,' i.e. clear, understandable and easily categorizable. On the other hand, people with a low need for cognitive closure seem to prefer variety, flexibility of thought and uncertainty (and as such tolerate ambiguity). Prior criminological work (Jackson, 2013) has found that need for closure moderated the observed association between perceived likelihood and worry about crime. Might need for cognitive closure also moderate the estimated impact of violent victimization? We assess whether victims who prefer definite knowledge and eschew uncertainty seem to be especially affected by the sense of risk and unpredictability that violence conceivably brings into their lives.

Having presented a general overview of the three objectives of the present study, we expand upon each in more detail in the next three sections. The first relates to the idea that risk perception links prior victimization experience to worry about future victimization.

Objective 1: Does risk perception mediate the relationship between victimization and worry?

The association between previous victimization and fear of crime is one of the most studied topics in the fear of crime literature, and most of this work distinguishes between types of crime (e.g., violent and property crime) and between direct (primary) versus indirect (secondary) victimization (see Brunton-Smith & Sturgis, 2011; Drakulich, 2014; Riggs & Cook, 2014; Rountree, 1998; Tyler, 1980). Out of this body of research has come a good deal of evidence that the more experience people have of victimization the more fearful they are on average, albeit with a fair amount of variation in the strength of the estimated effects (Balkin, 1979; Covington & Taylor, 1991; Garofalo, 1979; Kury & Ferdinand, 1998; Liska, Sancirico, & Reed, 1988; Rountree, 1998; Skogan & Maxfield, 1981; Skogan, 1987; Stafford & Galle, 1984). Moreover, hearing about events and knowing others who have been victimised is also associated with greater fear of crime (Chiricos, Eschholz, Gertz, & Chiricos, 1997; Covington & Taylor, 1991; Ferraro, 1995; Kinsella, 2012; LaGrange *et al.*, 1992; Skogan & Maxfield, 1981; Tyler, 1980, 1984; Winkel, 1998).

Given the focus of the current study on worry about future victimization, it is important to define worry clearly. To do this we draw on Berenbaum's (Berenbaum, 2010: 963) *initiation-termination two phase model*. Berenbaum defines worry as repetitive and anxiety-producing thoughts that have three characteristics: '…(1) the repetitive thoughts concern an uncertain future outcome; (2) the uncertain outcome about which the person is thinking is considered undesirable; and (3) the subjective experience of having such thoughts is unpleasant.' Uncertainty is central to this definition. As Berenbaum (ibid: 964-965) puts it 'If one is certain that an undesirable future event will occur, one can anticipate it and grieve about it, but one cannot worry about it…As it turns out, remarkably few outcomes are certain relative to the number of outcomes that are uncertain.'

Berenbaum's model draws attention not just to the links between perceived threat and emotion (people worry about an uncertain future event that poses a threat to something of value) but also to worry as a dynamic process that unfolds over time. On the one hand, worry is initiated by the perceived probability and cost of undesirable future outcomes, as well as the salience of risk and threat; one may start to worry about an event that suddenly seems likely, costly and salient. On the other hand, people continue to worry unless they can come to accept the uncertain future possibility and have taken whatever efforts they can to prevent or cope with the threat; one may stop worrying when one becomes comfortable with the possibility that the threat might still be realized. From a psychological perspective, this acceptance of threat is linked to one's desire for certainty, beliefs about the value of worrying, a

4

perseverative-iterative style (i.e., the tendency to focus on an object of concern by repeatedly thinking about the next possible step in a chain of connected outcomes), and a sense of closure in one's role to prevent or cope with the threat (i.e., the sense that every possible preventative or coping action has been taken).

While we do not address many of the more intricate aspects of Berenbaum's account of worry and the worry process, we do use this theoretical model to guide our understanding of the links between prior experience of crime and worry about future victimization. Figure 2 summarizes the first objective, which is to investigate whether primary and secondary victimization predict worry about future victimization directly (bypassing risk perception) and indirectly (where the estimated statistical effects run via risk perception). Note (a) that there are multiple pathways linking previous victimization to risk perception to worry about violence (these are posited mediational paths running from both primary and secondary victimization via the three different dimensions of risk perception) and (b) that the two pathways denoted 'B' link primary and secondary victimization directly to worry (these are posited statistical effects bypassing risk perception).

<center>INSERT FIGURE 2 ABOUT HERE</center>

According to the proposed pathways from victimization experience to risk perception to worry, primary and secondary victims of stranger violence are expected to have higher on average levels of worry about violent victimization (in the case of primary victims of it happening again, and in the case of secondary victims of it happening to oneself) than non-victims because of a seemingly heightened sense of personal risk. In particular, primary and secondary victimization experience may shape people's beliefs about the likelihood, impact and controllability of stranger violence (higher average levels of perceived likelihood, higher average levels of perceived consequence, and lower average levels of perceived control), leading the two victim groups to have heightened levels of risk perception compared to the non-victim group. Risk perception may then be strongly associated with worry about future victimization, with higher levels of worry being expressed by the two victim groups compared to the non-victims. Given the dynamic nature of the worry process, a heightened sense of risk may at first initiate worry but then maintain the worry process through a continuing sense of threat.

Having considered the possibility that risk perception mediates the estimated statistical effects of victimization on worry, we consider next the potential direct effect of victimization experience on worry (see the two 'B' pathways in Figure 1). Why might past experiences of stranger violence predict worry about falling victim of violence directly, i.e., irrespective of perceived risk? Berenbaum's model is again instructive in that the definition of threat includes not just probability and impact, but also the salience of risk and threat. The addition of salience in the definition reflects a rather fundamental point: namely '…that the number of variety of undesirable outcomes that could befall individuals is unlimited. As a result, humans are constantly surrounded by potentially threatening stimuli. Despite this, most people most of the time, are not aware of the threats to their safety and well-being. In order to perceive a threat one must be aware of its presence' (Berenbaum, ibid: 966).

From this perspective, one may view any number of future uncertain events as likely and costly, but one might also have to see a particular event as salient to be worried about that transpiring rather than another event. In the current context it is plausible that primary and secondary victimization experience makes crime salient, thereby explaining any direct statistical effect of victimization experience on worry that bypasses risk perception. While this is pure speculation, it may be that salience works in part via affective imagery, i.e. mental representations of the risk that have feelings attached because of prior experience and prior learning (Slovic *et al.*, 1998). It seems to us plausible that experiencing directly the event and hearing about somebody else being physically attacked generates representations of violence that have an affective charge, which in turn heightens salience. [2]

---

[2] Given the situated nature of fear of crime in public space, it is also possible that victims of crime 'see' social and physical cues in their environment differently to non-victims because of the salience and affective imagery. For instance, victims may more actively look for signs of criminal threat in their environment, and to more readily interpret ambiguous cues as signs of potential danger. We know from a variety of different studies that different people can come to different conclusions about the same

Objective 2: Are victims sensitive to risk?

At the heart of the idea of risk sensitivity (Warr, 1985, 1987) is two linked ideas: (a) that 'perceived likelihood multiplies with perceived consequence' to produce the emotional appraisal of threat; and (b) that different social groups associate victimization with different levels of expected consequence (and, in an extension of this work, with different levels of expected controllability). The risk sensitivity perspective seeks thus to explain why different groups will be differentially fearful even if they see the likelihood of crime to be equally low or equally high (Chadee, Austin, & Ditton, 2007; Custers & Van den Bulck, 2012; J. Jackson, 2011; Warr, 1987)

In the first study on this topic, Warr (1985) considered the idea that females tended to see crimes as more serious than males partly because they tended to view certain types of crime as a prelude to more serious ones (so-called 'perceptually contemporaneous offenses' since one event is judged to covary with another event). He found that the association between perceived likelihood and worry was stronger among people who believed a particular crime was especially serious – and was associated with other crimes (e.g., where burglary could also lead to sexual assault). He concluded with the notion that people are 'sensitive to risk' when they associate a particular event with very serious consequences, such that an increase in the subjective probability of a hazard will have an especially strong impact on fear of (or worry about) future victimization.

This work has since been extended to include perceived control and need for cognitive closure. First, Jackson (2011) found that a sense of personal consequence and a sense of control moderated the observed association between perceived likelihood and worry. The observed correlation between perceived likelihood and worry about future victimization was stronger among people who associated criminal victimisation with strong personal consequences and among people who believed these events were difficult to control. Second, Jackson (2013) found that need for cognitive closure strengthened the observed correlation between perceived likelihood and worry. The observed correlation between perceived likelihood and worry about future victimization was stronger among people who had a strong need for certainty, order and structure.

To our knowledge the idea that victims are more sensitive to risk than non-victims has not yet been studied. To fill this gap we test two connected predictions:

1. that victims tend to believe that victimization is less controllable and more serious in its impact (compared to non-victims); and,
2. that perceived likelihood, perceived control and perceived consequences have interactive estimated effects on worry about crime. More specifically, that the association between worry and perceived likelihood is higher among people who view the consequences to be high and the controllability to be low.

We predict that the relation between perceived likelihood and worry about stranger violence will be stronger among the two victim groups compared to the non-victim group, (a) because victims have an elevated sense of the consequences of victimization and a lower perceived level of control, and (b) because perceived consequence and perceived control moderate the estimated relationship between perceived likelihood and worry.

Figure 3 gives an overview of the basic elements of the risk sensitivity model, with victim groups added as predictors of risk perception. Interpreting the model through the lens of observational data, we might say that victims may worry more (compared to non-victims) about a risk that they all construe at a given and fixed level of likelihood, because victims tend to represent the consequences attached to the risk as more serious than non-victims, and because victims tend to represent the event as less controllable than non-victims. Viewed through the lens of experimental data, we might say that a given exogenous increase in the subjective probability of victimization may have a bigger impact on the

---

environmental cues in the context of difference, deviance, disorder and crime (Harcourt, 2001; Ross & Mirowsky, 2009; Sampson & Raudenbush, 2004). It is for future research to examine whether victimization experience is relevant here.

affective response of victims than it would have on the affective response of non-victims, again because victims tend to construe the event as more severe in its consequences and more difficult to control.

INSERT FIGURE 3 ABOUT HERE

Objective 3: Does the need for cognitive closure heighten the estimated impact of victimization on risk perception and worry?

The final part of our framework focuses on people's aversion to uncertainty and their preference for definite knowledge. According to Kruglanski and Webster (1996: 278) need for cognitive closure is:

> '…a desire for definite knowledge on some issue and the eschewal of confusion and ambiguity … need for closure is presumed to exert its effects via two general tendencies: the urgency tendency, reflecting the inclination to attain closure as quickly as possible, and the permanence tendency, reflecting the tendency to maintain it for as long as possible.'

Might the associations between victimization, perceived risk and worry be moderated by need for cognitive closure? Might, in other words, the impact of violent victimization on risk perception and worry depend upon a psychological proclivity to order and certainty in people's lives?

INSERT FIGURE 4 ABOUT HERE

Prior theory suggests that need for cognitive closure could moderate the estimated statistical effects of primary and secondary victimization (Figure 4). Recall that our definition of worry stresses uncertainty in the face of a negative outcome possibly being realised. By heightening subjective risk, primary and secondary victimization brings uncertainty into people's lives, where what was previously a rather abstract and irrelevant potential event suddenly becomes something psychologically present and real. In the immediate aftermath of victimization, one would predict that people with a high need for cognitive closure will be motivated to act in ways that reduce the uncertainty, by e.g., seeking information about the danger in an attempt to reduce their risk status, and trying to do all that they can do to stop worrying (because they are averse to uncertainty).

Yet, theory also predicts that people with a high need for cognitive closure will use less complex information-seeking strategies, to employ more basic heuristics, and to more readily 'seize' on media representations of crime and 'freeze' on the sense of risk and harm (cf. Kruglanski & Webster, 1996). They are expected to process less information before committing to a judgement; to base judgements on early cues; to rely on stereotypes rather than de-individuating information; and to be motivated to keep close to initial impressions rather than correct them in the light of subsequent evidence.

Accordingly, we predict that victimization experience has stronger statistical effects on risk perception and worry among people with a high need for cognitive closure (Figure 4). People with a high need for cognitive closure may 'seize' and 'freeze' on information from the experience itself and from that sought in the aftermath. They try to make sense of the sudden salient risk, yet ironically, their aversion to uncertainty and rush to try to reduce uncertainty may, if anything, increase subjective threat and produce more powerful affective imagery. Take secondary victimization experience: people with a high need for cognitive closure may be motivated to find out as much as possible about their own personal risk as a way of getting closure, yet their strategies for searching for information may lead them to find out more about the event and 'freeze' on frightening details. This may help to only increase risk salience and thus only to heighten their worry about future victimization.

Finally, we posit a statistical interaction between need for cognitive closure and perceived likelihood on worry (Figure 4). As mentioned earlier Jackson (2013) found that need for cognitive closure increased the fitted relationship between perceived likelihood and worry. This suggests that risk sensitivity is not just about representations of the impact and the controllability of a given personal threat, but also about the individual differences in need for order, certainty and predictability.

Present Study

To recap, we examine first whether primary and secondary victims tend to see their personal risk of future victimization to be higher than non-victims, and whether perceived risk and victimization in turn predicts worry; second, whether primary and secondary victims are more sensitive to risk than non-victims; and third, whether need for cognitive closure impacts on the associations between prior victimization, risk perception and worry.

Method

Our data come from a nationally representative survey of adults in Italy, Bulgaria and Lithuania, conducted between October and November 2010 as part of the project Euro-Justis (Hough & Sato, 2011), which was funded by the European Commission under the 7th Framework Programme. The Italian sample comprises 522 individuals, aged 16 and over, with a response rate of 28%. The sample was selected via quota sampling, using regions and city sizes (interlocked), gender and age (interlocked), education level and occupation as quotas. The 111 sampling points were selected randomly. The Bulgarian sample covers the entire population of Bulgaria aged 18 and over, with a response rate of 63%. The sampling method followed was a two-stage random route cluster sample; first, selecting 126 random nationwide sample of clusters based on a list of electoral sections and second, selecting the 1,008 participants themselves. The Lithuanian sample comprised 1,021 individuals, with a response rate of 37%, using multi-stage random sampling, covering 18 towns and 54 villages. Table 1 presents the demographic composition of the three samples.

INSERT TABLE 1 ABOUT HERE

Measures

Worry about stranger violence. Our measures focus on the frequency of worry in the past year and the negative impact of worry on one's quality-of-life. Echoing the European Social Survey indicators of worry about crime (for more details, see Jackson & Kuha, 2014), respondents were first asked: 'During the last 12 months have you ever felt worried about being physically attacked in the street by a stranger?'. Those answering yes in the filter question were then asked 'How many times have you felt like this in the past 12 months?': 'all or most of the time' ($n=$ 31), 'some of the time' ($n=$ 104), 'just occasionally' ($n=$ 39) and 'never' ($n=$ 922). Participants who answered yes to the filter question were also asked whether their worry about being physically attacked in the street by a stranger had an effect on their quality of life': 'not at all' ($n=$ 295), 'a little' ($n=$ 437),'moderately' ($n=$ 239), 'quiet a bit' ($n=$ 39), and 'very much' ($n=$ 17).

Risk perception. Perceived likelihood, control and consequence were each measured using a single indicator: 'How likely do you think it is that you will be physically attacked in the street by a stranger during the next twelve months?' [1= 'definitely not going to happen' ($n=$ 574); 2 ($n=$ 759); 3 ($n=$ 969); 4 ($n=$ 190); 5= 'certain to happen' ($n=$ 48)]; 'To what extent do you feel personally able to control whether or not you will be physically attacked in the street by a stranger during the next twelve months?' [1= 'not at all able'($n=$ 556); 2 ($n=$ 553); 3 ($n=$ 881); 4 ($n=$ 415); 5= 'to a very great extent' ($n=$ 143)]; and 'To what extent do you think your life will be affected if you are physically attacked in the street by a stranger during the next twelve months?', [1= 'not affected much at all' ($n=$ 170); 2 ($n=$ 277); 3 ($n=$ 607); 4 ($n=$ 666); 5= 'affected to a very great extent' ($n=$ 828)].

Need for cognitive closure. For reasons of space a shortened version of the standardized scale of the 'need for cognitive closure' (with 42 items), was used, covering four of the five dimensions of the construct (see Mannetti, Pierro, Kruglanski, Taris, & Bezinovic, 2002). Respondents were asked to express their agreement or disagreement, with the following statements: 'I enjoy having a clear and structured mode of life' (*order*) ['disagree strongly' ($n=$ 13), 'disagree' ($n=$ 141),'neither agree nor disagree' ($n=$ 449), 'agree' ($n=$ 1,077), and 'agree strongly' ($n=$ 744)]; 'I don't like to go into a situation without knowing what I can expect from it' (*predictability*) ['disagree strongly' ($n=$ 18), 'disagree' ($n=$ 93),'neither agree nor disagree' ($n=$ 311), 'agree' ($n=$ 1,354), and 'agree strongly' ($n=$ 736)]; 'I don't like situations that are uncertain' (*ambiguity*) ['disagree strongly' ($n=$ 24), 'disagree' ($n=$ 76),'neither agree

nor disagree' (*n*= 302), 'agree' (*n*= 1,426), and 'agree strongly' (*n*= 691)]; and 'I dislike questions which could be answered in many different ways' (*closed-mindedness*) ['disagree strongly' (*n*= 43), 'disagree' (*n*= 201), 'neither agree nor disagree' (*n*= 551), 'agree' (*n*= 1,140), and 'agree strongly' (*n*= 504)].

   Violent victimization. Two survey questions were used to examine primary and secondary experience of stranger violence. In line with the International Crime and Victim Survey (van Dijk, van Kesteren, & Smit, 2007), respondents were asked if they had fallen victim of physical assault in the street by a stranger in the last 5 years (primary victimization); they were also asked if they knew someone in their area who had fallen victim of physical assault in the street by a stranger in the last 5 years (secondary victimization). Pooling the data, there were 116 primary victims, 645 secondary victims and 92 who had both been a victim of physical assault and knew someone in the locality who had been a victim of physical assault.

Analytical strategy
To model statistical associations between latent constructs and manifest indicators, we employ a combination of path analysis and structural equation modeling (SEM, see Bartholomew, Knott & Moustaki, 2011). Full information maximum likelihood (FIML) estimation was used to include each respondent's answers in the likelihood function of all fitted models, under the assumption that the missing data were Missing at Random (MAR, in the sense of Rubin, 1976).[3] Data were pooled from the three countries, with fixed effects for country membership included in the fitted models. Following Jackson (2013) we assume that, while country of residence might predict levels of worrying, country membership will not moderate the strength of the associations between the factors of current interest, e.g., perceived likelihood and worry about victimization. Finally, all models were fitted with and without socio-demographic covariates, namely gender, age and country of residence. The effect on the key parameter estimates of theoretical interest was, in all cases, inconsequential.

<div align="center">**Results**</div>
Testing additive and interactive statistical effects of risk perception on worry about stranger violence (see Figure 5), our findings echo previous research into fear of crime (e.g. Custers & van den Bulck, 2013). We see that perceived likelihood is a strong predictor of worry about victimization (*b*= .21, *p*<.001), as is perceived consequence (*b*= .12, *p*<.001) and perceived controllability (*b*= -.18, *p*<.001). From the two estimated interaction effects, we also see that the association between perceived likelihood and worry is weaker when people feel that violence is controllable (*b*= -.03, *p*<.05), and stronger when people feel that violence has serious consequences (*b*= .05, *p*<.001). Of course, these interaction effects are to be interpreted symmetrically. Thus, at high levels of perceived likelihood, the negative association between perceived controllability and worry is stronger and the positive association between perceived consequence and worry is stronger.

<div align="center">INSERT FIGURE 5 ABOUT HERE</div>

   Figure 6 adds victimization experience to the model. The pathways from primary victimization to cognitive and affective reactions to violent victimization can be summarized as follows. First, primary victimization is associated with higher fitted levels of perceived likelihood of falling victim of stranger violence (*b*= .46, *p*<.001), *p*<.001), higher fitted levels of perceived consequences (*b*=.16, *p*<.001) and lower fitted levels of perceived controllability (*b*= -.28, *p*<.001). Second, these three aspects of perceived risk have additive and interactive statistical effects on worry. Third, there is a significant (and large) direct statistical effect of primary victimization on worry (*b*= .78, *p*<.001).

<div align="center">INSERT FIGURE 6 ABOUT HERE</div>

---

[3] The number of missing values for the individual indicators ranged from 1 to 125, with no respondent having missing values on all manifest variables.

What about secondary victimization (Figure 6)? Having heard about others' physical assault in the local streets by a stranger is related to higher fitted levels of perceived likelihood of falling victim of stranger violence ($b= .25$, $p<.001$), and higher fitted levels of perceived consequences ($b=.22$, $p<.001$), but not to lower fitted levels of perceived controllability ($b= .04$, $p=.33$). Moreover, there is a significant direct statistical effect of secondary victimization on worry ($b= .37$, $p<.001$).

Recall the first objective of the current study, which was to assess (a) whether primary and secondary victimization predicts risk perception and worry about violence, and (b) whether risk perception mediates some of the statistical effects. Our analysis indicates that both are occurring. What about the second objective – to assess whether victims of crime can be called 'sensitive to risk', in the sense that they hold representations of crime (specifically about its impact and controllability) that heightens the link between subjective probabilities and affect. Combining the finding that perceived consequence of violent victimization interacted with perceived likelihood to predict worry (see Figure 5) with the higher expected levels of risk perception (likelihood and consequence) among primary and secondary victims, we can infer that primary and secondary victims are sensitive to risk.

Primary and secondary victims are more likely to perceive the consequences of a violent victimization as serious compared to non-victims, and these perceptions strengthen the fitted association between perceived likelihood and worry. This implies, for instance, that primary and secondary victims will worry more than non-victims *at the same level of subjective likelihood*, because they tend to represent the impact of the event as more severe in its consequences than non-victims.

The final step is to add need for cognitive closure. We find a statistically significant interaction – using latent moderated structural equations, taking into account the non-normality caused by the latent nonlinear terms (*see* Klein & Moosbrugger, 2000) – between need for cognitive closure and perceived likelihood when predicting worry ($b=.17$, $p<.01$).[4] We also test a series of interaction effects involving need for cognitive closure and victimization experience (primary and secondary). Table 2 summarises the results.

INSERT TABLE 2 ABOUT HERE

We find no statistical interaction involving need for cognitive closure and primary victimization experience, and only one statistical interaction involving need for cognitive closure and secondary victimization experience. Among people with a high need for cognitive closure, the association between secondary victimization experience and worry is stronger, compared to people with a lower need for cognitive closure ($b=.34$, $p<.05$). If one interprets a statistical effect of victimization experience on worry (one that bypasses risk perception) as a heightened sense of risk salience, then it seems from the current analysis that secondary victimization creates a stronger sense of risk salience among people who desire order in their lives and dislike uncertainty and ambiguity, resulting in stronger affective responses. Hearing about someone in the neighbourhood being attacked by a stranger in public space may generally creates affective imagery of risk that increases the salience of threat, but this may be especially true among people who are averse to the uncertainty that secondary victimization brings. We discuss this further in the discussion section.

Discussion

Summary and directions for future research

In this study we have built upon a massive amount of research showing that victimization can be a traumatic experience with a variety of negative consequences (Denkers & Winkel, 1998; Green & Diaz, 2007; Norris & Kaniasty, 1994). Drawing upon extant work into the psychology of risk, we have linked direct and indirect victimization to people's feelings and thoughts about the subjective threat of falling victim of stranger violence. Our starting premises have been (a) that the experience of crime can shape perceptions of risk and threat; (b) that perceptions of risk and threat comprise not just people's assessments of the likelihood of victimization, but also their beliefs about the seriousness of the

---

[4] Main effects of need for cognitive closure and perceived likelihood were $b=.27$, $p<.01$ and $b=.20$, $p<.001$ (respectively). Please contact the first author for full details of this particular fitted model.

consequences if they were to fall victim and their sense of control over the event occurring; (c) that these perceptions are correlated with emotional reactions to risk; and (d) that need for cognitive closure may also alter the impact of victimization experience on perceived risk and worry about violent crime.

Applying these ideas to stranger violence in public space, we have made three empirical contributions. First, we have shown that primary and secondary victimization experiences are strongly associated with higher levels of worry. While this may not be terribly surprising to many readers, compared to prior work the statistical effects of violent victimization on worry about violent victimization were relatively large in magnitude. We recommend that future research assesses whether this is because physical attack in the local streets by a stranger is a particularly serious and frightening crime.

We also found that the association between victimization experience and worry was only partly mediated by higher fitted levels of perceived likelihood of falling victim of violence, perceived consequence, and perceived controllability (in the case of primary victimization). There were strong direct effects of victimization on worry. More work is needed to assess the meaning of the effects of victimization experience on affect that bypass risk perception. In our view, Berenbaum's (2010) model of worry can guide such work. On his account, threat comprises not just likelihood and impact but also salience. It may be that primary and secondary victimization experience raises the salience of victimization (by generating affectively laden representations of violence, i.e. mental imagery, of the uncertain event) in a way that initiates and helps to maintain worry about victimization above and beyond any effects of risk perception.

Second, our study has extended the risk sensitivity framework of Warr and others (Jackson, 2011, 2013; Warr, 1985, 1987). Our data indicate that both primary and secondary victims of violence were sensitive to risk, in that they tended to see the consequences to be higher than non-victims, which in turn seemed to strengthen the conditional correlation between perceived likelihood and worry. This adds to prior evidence that particular social groups (e.g., women) are sensitive to risk because they tend to associate particular crimes with relatively severe consequences (Warr, 1985). We recommend future work attempts to replicate this finding, turns to examine whether other groups are sensitive to risk, and moves to experimental designs to the core idea that it is not just 'likelihood + impact = affect' but rather 'likelihood x impact = affect.'

Third, we showed that need for cognitive closure moderated only one of the estimated effects of victimization experience. According to Kruglanski and Webster (1996), people with a high need for cognitive closure rush to answers and certainty, form judgments quickly and strongly, and prefer not to alter their swiftly formed beliefs in the wake of alternative or supplement evidence. Our analysis was guided by the idea that victimization experience brings uncertainty and ambiguity into people's lives; that people with a high need for cognitive closure are motivated to reduce that uncertainty and ambiguity; and that if they cannot do so, they will find the threat particularly unsettling. In accordance with this, we found that high need for cognitive closure seemed to alter the modelled relationships between secondary victimization experience and worry about future victimization. That this was not the case with primary victims suggests something specific about mediated or indirect experience in the context of need for cognitive closure and worry about violent victimization. It is for future research to examine whether secondary victimization hinders the acceptance of non-negligible risk, whereas primary victimization does not.

One line of future work could focus on need for cognitive closure and information searching and processing in the context of secondary victimization. People with a high need for cognitive closure have a preference for definite knowledge and an aversion to ambiguity. Hearing about local crime events may present a particularly strong threat to their sense of stability and certainty, who may be especially motivated to find out more about crime in order to reduce the sense of threat. Psychological theory predicts that these individuals will first 'seize' on information that permits a judgment on the topic of interest, and second 'freeze' on such judgment, becoming relatively closed-minded to alternative information (Kruglanski & Webster, 1996; Kruglanski, Pierro, Mannetti, & De Grada, 2006). By seizing and freezing on information that makes the risk of victimization more personally relevant, these

individuals might ironically find it difficult to reduce uncertainty and difficult to become comfortable with non-negligible risk, meaning that worry about crime becomes more persistent over time.

Limitations

There are, of course, limitations to the study that must be acknowledged. The first stems from its observational nature. While experimental design generates the leverage to isolate and detect causal effects, violent victimization does not lend itself to ethical manipulation under experimental conditions. Modelling naturally occurring variation in general and special populations is thus particularly important. Moreover, this was the first study to assess the links between victimization experience and fear of crime in the form that we developed (i.e., bringing in risk perception and need for cognitive closure). We see the value of an observational snapshot that can highlight regularities for further work to explore in more detail using different methodologies.

The second limitation is our inability to track the dynamics of worry over time. Future research might explore covariates that are related to wider worrying mechanisms, such as need for cognitive closure, using longitudinal research designs. Psychological work shows, for example, that acceptance of non-negligible risk might decrease worrying. The acceptance that stems from one's need for cognitive closure has been found to relate to factors, such as disinclination of problem solving approaches to risks, a tendency to avoid exposure to risk, and levels of concreteness of perceived threat and emotional clarity (Borkovec *et al.*, 2004; Davey, 1994; Gohm & Clore, 2002; Stober & Borkovec, 2002). Longitudinal studies could pave the way for the development of more integrated, interdisciplinary approaches to fear of crime.

The third limitation relates to the nature of the explanatory variables that are included in our analysis, and which focus at the individual-level. Future research might examine whether other types of covariates (e.g., community-level and/or societal-level) influence the pathways explored in the current study. One example of such factors is the environmental and social characteristics of one's local area, which have been found to predict fear of crime (see Wyant, 2008; Brunton-Smith, Jackson, & Sutherland, 2014; Brunton-Smith & Sturgis, 2011). Does victimization experience increase people's perception of neighbourhood disorder and social disorganization, with knock-on effects on risk perception and worry about victimization? Another example is national levels of welfare state provision. Previous research has shown, for instance, that welfare security arrangements are negatively related to fear of crime (Hummelsheim, Hirtenlehner, Jackson, & Oberwittler, 2011). Future work may analyse both the neighbourhood and national context of fear of crime using an ambitious multi-level framework.

Lessons for policy

Albeit not within the scope of the current study, our findings do have policy implications. A common wisdom in victim-support services is that abnormal events, such as criminal victimization, increase negative affect (e.g., worry), and thus the key objective of these interventions is to bring the affective reactions back to 'normal' levels (Winkel, 1998, p. 481). In our view, a victim-support policy that focuses solely on negative affectivity and overlooks factors of a more cognitive and behavioural nature, might fail to address victims' real needs. In a study exploring the associations between the combination of negative affectivity and social inhibition, and post-traumatic stress disorder (PTSD) among victims of violence, Kunst *et al.* (2011) found that it is not so much the negative affect per se that makes it more likely for victims of violence to develop PTSD, but the strategies that they adopt (or not) in order to cope with the violent victimization, such as the degree of expressing emotions and inhibiting behaviours in social interactions.

Importantly, PSTD and poor well-being of victims have been found to relate to factors, such as catastrophizing, social inhibition, beliefs about the value of worrying, intolerance of uncertainty and so on. In a study that investigated the prevalence of PTSD among victims of violence who applied for state compensation with the Dutch Victim Compensation Fund (Kunst *et al.*, 2010: 1646), it was found that if additional factors (such as age, sex, acquaintance with the perpetrators) to negative affectivity are assessed properly in the examination of the application phase, victims likely to develop PTSD, and who

remain unidentified in the first stage of the process, may still be identified and referred to the appropriate support services before their files are closed.

Our study indicates that the affective response of victims of violence may partly be mediated by risk perception, such as the likelihood and the impact of violent victimization, and that the affective response of secondary victims of violence may also be partly moderated by their need for certainty, order and structure. These findings indicate that cognitive factors are important in explaining the underlying mechanisms of the association between experience and affect. Therefore, to help victims of violence to cope effectively with the immediate damage caused by the victimization experience, and to prevent the development of more persistent mental health problems and damages in their well-being, screening them for cognitive factors, such as risk perception and need for closure appears to be important. Victim support policies should focus on such cognitive parameters, which might prevent victims from coming to terms with non-negligible risk, and thus contribute in 'delayed' (rather than immediate) but persistent emotional reactions to violent victimization.

<div align="center">**References**</div>

Acuña-Rivera, M., Brown, J., & Uzzell, D. (2014). Risk perception as mediator in perceptions of neighbourhood disorder and safety about victimisation. *Journal of Environmental Psychology*, *40*, 64–75. doi:10.1016/j.jenvp.2014.05.002

Balkin, S. (1979). Victimization Rates , Safety and Fear of Crime. *Social Problems*, *26*(3), 343–358.

Bartholomew, D., Knott, M., & Moustaki, I. (2011). *Latent variable models and factor analysis: A unified approach* (3rd ed.). Wiley.

Becker, J. V, Skinner, L. J., Abel, G. G., & Cichon, J. (1986). Level of postassault sexual functioning in rape and incest victims. *Archives of Sexual Behavior*, *15*(1), 37–49. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/3964069

Berenbaum, H. (2010). An initiation-termination two-phase model of worrying. *Clinical Psychology Review*, *30*(8), 962–75. doi:10.1016/j.cpr.2010.06.011

Brunton-Smith, I., Jackson, J. and Sutherland. A. (2014). 'Bridging Structure and Perception: On the Neighbourhood Ecology of Beliefs and Worries about Violent Crime', 54, 4, 503-526, *British Journal of Criminology*, doi: 10.1093/bjc/azu020.

Brunton-Smith, I., & Sturgis, P. (2011). Do Neighborhoods Generate Fear of Crime? an Empirical Test Using the British Crime Survey. *Criminology*, *49*(2), 331–369. doi:10.1111/j.1745-9125.2011.00228.x

Bunch, J., Clay-Warner, J., & Mcmahon-Howard, J. (2013). The Effects of Victimization on Routine Activities. *Criminal Justice and Behavior*, 0093854813508286–. doi:10.1177/0093854813508286

Burnam, M. A., Stein, J. A., Golding, J. M., Siegel, J. M., Sorenson, S. B., Forsythe, A. B., & Telles, C. A. (1988). Sexual assault and mental disorders in a community population. *Journal of Consulting and Clinical Psychology*, *56*(6), 843–50. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/3264558

Chadee, D., Austin, L., & Ditton, J. (2007). The Relationship Between Likelihood and Fear of Criminal Victimization. Evaruating Risk Sensitivity as a Mediating Concept. *British Journal of Criminology*, *47*, 133–153. doi:10.1093/bjc/azl025

Chiricos, T., Eschholz, S., Gertz, M., & Chiricos, T. E. D. (1997). Crime , News and Fear of Crime : Toward an Identification of Audience Effects. *Social Problems*, *44*(3), 342–357.

Covington, J., & Taylor, R. B. (1991). Fear of Crime in Urban Residential Neighborhoods: Implications of Between- and Within-Neighborhood Sources for Current Models. *The Sociological Quarterly*, *32*(2), 231–249. doi:10.1111/j.1533-8525.1991.tb00355.x

Custers, K., & Van den Bulck, J. (2012). The Cultivation of Fear of Sexual Violence in Women: Processes and Moderators of the Relationship Between Television and Fear. *Communication Research*, *40*(1), 96–124. doi:10.1177/0093650212440444

Davis, R. C., Taylor, B., & Lurigio, A. J. (1996). Adjusting to criminal victimization: the correlates of postcrime distress. *Violence and Victims*, *11*(1), 21–38. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/8870213

Drakulich, K. M., (2014). Concerns for self or family? Sources of and Responses to Altruistic Fear. *Journal of Interpersonal Violence, 6,* doi: 10.1177/0886260514539842

Denkers, A. J. M., & Winkel, F. W. (1998). Crime Victims' Well-Being and Fear in a Prospective and Longitudinal Study. *International Review of Victimology*, *5*(2), 141–162. doi:10.1177/026975809800500202

Farrall, S. D., Jackson, J., & Gray, E. (2009). *Social Order and the Fear of Crime in Contemporary Times*. Oxford University Press.

Ferraro, K. F. (1995). *Fear of Crime: Interpreting Victimization Risk*. State University of New York Press.

Garofalo, J. (1979). Victimization and the Fear of Crime. *Journal of Research in Crime and Delinquency*, *16*(1), 80–97. doi:10.1177/002242787901600107

Golding, J. M. (1999). Intimate Partner Violence as a Risk Factor for Mental Disorders : A Meta-Analysis, *14*(2).

Green, D. L., & Diaz, N. (2007). Predictors of Emotional Stress in Crime Victims: Implications for Treatment. *Brief Treatment and Crisis Intervention*, *7*(3), 194–205. doi:10.1093/brief-treatment/mhm010

Green, D. L., & Pomeroy, E. (2007). Crime Victimization: Assessing Differences Between Violent and Nonviolent Experiences. *Victims & Offenders*, *2*(1), 63–76. doi:10.1080/15564880600922117

Hale, C. (1996). Fear of Crime: A Review of the Literature. *International Review of Victimology*, *4*(2), 79–150. doi:10.1177/026975809600400201

Hanson, R. F., Sawyer, G. K., Begle, A. M., & Hubel, G. S. (2010). The Impact of Crime Victimization on Quality of Life, *23*(2), 189–197. doi:10.1002/jts.

Hough, M. (1995). A*nxiety About Crime: Findings from the 1994 British Crime Survey*. Home Office Research Study No. 147. London: Home Office.

Hough, M., & Sato, M. (2011). *Trust in justice : why it is important for criminal policy , and how it can be measured. Final report of the Euro-Justis project*.

Hummelsheim, D., Hirtenlehner, H., Jackson, J. and Oberwittler, D. (2011). 'Social Insecurities and Fear of Crime: A Cross-National Study on the Impact of Welfare State Policies on Crime-Related Anxieties', *European Sociological Review*, 27, 3, 327-345, doi: 10.1093/esr/jcq010.

Ireland, J. L. (2011). The importance of coping, threat appraisal, and beliefs in understanding and responding to fear of victimization: applications to a male prisoner sample. *Law and Human Behavior*, *35*(4), 306–15. doi:10.1007/s10979-010-9237-1

Jackson, J. (2006). 'Introducing Fear of Crime to Risk Research', *Risk Analysis*, 26, 1, 253-264, doi: 10.1111/j.1539-6924.2006.00715.x.

Jackson, J. (2009). A psychological perspective on vulnerability in the fear of crime. *Psychology, Crime & Law*, *15*(4), 365–390. doi:10.1080/10683160802275797

Jackson, J. (2011). Revisiting Risk Sensitivity in the Fear of Crime. *Journal of Research in Crime and Delinquency*, *48*(4), 513–537. doi:10.1177/0022427810395146

Jackson, J. (2013). Cognitive closure and risk sensitivity in the fear of crime. *Legal and Criminological Psychology*. Wiley-Blackwell. Available online ahead of print publication.

Jackson, J. and Kuha, J. (2014). 'Worry about Crime in a Cross-National Context: A Model-Supported Method of Measurement Using European Social Survey Data', *Survey Research Methods*, 8, 2, 109-126.

Janoff-Bulman, R., & Frieze, I. H. (1983). A Theoretical Perspective for Understanding Reactions to Victimization. *Journal of Social Issues*, *39*(2), 1–17. doi:10.1111/j.1540-4560.1983.tb00138.x

Killias, M. (1990). Vulnerability: towards a better understanding of a key variable in the genesis of fear of crime. *Violence and Victims*, *5*(2), 97–108. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/2278956

Killias, M., & Clerici, C. (2000). Different measures of vulnerability in their relation to different dimensions of fear of crime. *British Journal of Criminology*, *40*, 437–450.

Kilpatrick, D. G., Acierno, R., Resnick, H. S., Saunders, B. E., & Best, C. L. (1997). A 2-year longitudinal analysis of the relationships between violent assault and substance use in women. *Journal of Consulting and Clinical Psychology*, *65*(5), 834–47. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/9337502

Kilpatrick, D. G., Best, C. L., Veronen, L. J., Amick, a E., Villeponteaux, L. a, & Ruff, G. a. (1985). Mental health correlates of criminal victimization: a random community survey. *Journal of Consulting and Clinical Psychology*, *53*(6), 866–73. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/4086687

Kinsella, C. (2012). Re-locating Fear on the Streets : Homelessness , Victimisation and Fear of Crime. *European Journal of Homeleness*, *6*(2), 121–136.

Klein, A., & Moosbrugger, H. (2000). Maximum likelihood estimation estimation of latent interaction effects with the LMS method. *Psychometrika*, *65*(4), 457–474.

Kort-Butler, L. A.. (2010). Experienced and vicarious victimization: Do social support and self-esteem prevent delinquent responses? *Journal of Criminal Justice*, *38*(4), 496–505. doi:10.1016/j.jcrimjus.2010.04.019

Koss, M. P., Woodruff, W. J., & Koss, P. G. (1990). Relation of criminal victimization to health perceptions among women medical patients. *Journal of Consulting and Clinical Psychology*, *58*(2), 147–52. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/2335630

Kruglanski, A. W., & Webster, D. M. (1996). Motivated closing of the mind: "seizing" and "freezing". *Psychological Review*, *103*(2), 263–83. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/8637961

Kruglanski, A. W. (2004). *The Psychology of Closed-mindedness*. New York: Psychology Press.

Kruglanski, A. W., Pierro, A., Mannetti, L., & De Grada, E. (2006). Groups as epistemic providers: need for closure and the unfolding of group-centrism. *Psychological Review*, *113*(1), 84–100. doi:10.1037/0033-295X.113.1.84

Kunst, M. J. J., Bogaerts, S., & Winkel, F. W. (2011). Type D Personality and Posttraumatic Stress Disorder in Victims of Violence : A Cross- Sectional Exploration. *Clinical Psychology and Psychotherapy*, *22*(June 2010), 13–22.

Kunst, M., Winkel, F. W., & Bogaerts, S. (2010). Prevalence and predictors of posttraumatic stress disorder among victims of violence applying for state compensation. *Journal of Interpersonal Violence*, *25*(9), 1631–54. doi:10.1177/0886260509354591

Kury, H., & Ferdinand, T. (1998). The Victim's Experience and Fear of Crime. *International Review of Victimology*, *5*(2), 93–140. doi:10.1177/026975809800500201

LaGrange, R. L., Ferraro, K. F., & Supancic, M. (1992). Perceived Risk and Fear of Crime: Role of Social and Physical Incivilities. *Journal of Research in Crime and Delinquency*, *29*(3), 311–334. doi:10.1177/0022427892029003004

Liska, A. E., Sancirico, A., & Reed, M. D. (1988). Fear of crime and constrained behavior. Specifying and estimating a reciprocal effects model. *Social Forces*, *66*(3), 827–837.

Lurigio, A. J. (1987). Are all Victims Alike? The Adverse, Generalized, and Differential Impact of Crime. *Crime & Delinquency*, *33*(4), 452–467. doi:10.1177/0011128787033004003

Macmillan, R. (2001). Violence and the Life Course : The Consequences of Victimization for Personal and Social Development, 1–22.

Macmillan, R., & Hagan, J. (2004). Violence in the Transition to Adulthood: Adolescent Victimization, Education, and Socioeconomic Attainment in Later Life. *Journal of Research on Adolescence*, *14*(2), 127–158. doi:10.1111/j.1532-7795.2004.01402001.x

Mannetti, L., Pierro, A., Kruglanski, A., Taris, T., & Bezinovic, P. (2002). A cross-cultural study of the Need for Cognitive Closure Scale: comparing its structure in Croatia, Italy, USA and The Netherlands. *The British Journal of Social Psychology / the British Psychological Society*, *41*(Pt 1), 139–56.

McCann, I. L., Sakheim, D. K., & Abrahamson, D. J. (1988). Trauma and Victimization: A Model of Psychological Adaptation. *The Counseling Psychologist*, *16*(4), 531–594. doi:10.1177/0011000088164002

Mezey, G., Evans, C., & Hobdell, K. (2002). Families of homicide victims: psychiatric responses and help-seeking. *Psychology and Psychotherapy*, *75*(Pt 1), 65–75. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/12006200

Norris, F. H., & Kaniasty, K. (1994). Psychological distress following criminal victimization in the general population: cross-sectional, longitudinal, and prospective analyses. *Journal of Consulting and Clinical Psychology*, *62*(1), 111–23. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/8034813

Resick, P. A., Calhoun, K. S., Atkeson, B. M., & Ellis, E. M. (1981). Social adjustment in victims of sexual assault. *Journal of Consulting and Clinical Psychology*, *49*(5), 705–12. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/7287980

Riggs S., & Cook, C. L. (2014). The Shadow of Physical Harm? Examining the unigue and gendered relationship between fear of murder versus fear of sexual assault on fear of violent crime. *Journal of Interpersonal Violence, 6,* doi: 10.1177/0886260514553117

Ross, C. E., & Mirowsky, J. (2009). Subjective Alienation , and Distress. *Journal of Health and Social Behavior*, *50*, 49–64.

Rountree, P. W. (1998). A Reexamination of the Crime-Fear Linkage. *Journal of Research in Crime and Delinquency*, *35*(3), 341–372. doi:10.1177/0022427898035003005

Rubin, D. M. (1976). Inference and missing data. *Biometrika*, *63*(3), 581–591.

Sampson, R. J., & Raudenbush, S. W. (2004). Seeing Disorder: Neighborhood Stigma and the Social Construction of "Broken Windows." *Social Psychology Quarterly*, *67*(4), 319–342.

Shippee, N. D. (2013). Victimization, fear of crime, and perceived risk: Testing a vulnerability model of personal control. *Sociological Perpsectives, 55*(1), 117–140. doi:10.1525/sop.2012.55.1.117.This

Skogan, W. G. (1987). The Impact of Victimization on Fear. *Crime & Delinquency*, *33*(1), 135–154. doi:10.1177/0011128787033001008

Skogan, W. G., & Maxfield, M. G. (1981). *Coping with crime. Individual and neighborhood reactions*. Sage Publications. doi:0-8039-1632-9

Stafford, M., & Galle, O. (1984). Victimization rates, exposure to risk and fear of crime. *Criminology*, *22*(2), 173–185.

Tyler, T. R. (1980). Impact of directly and indirectly experienced events: The origin of crime-related judgments and behaviors. *Journal of Personality and Social Psychology*, *39*(1), 13–28. doi:10.1037//0022-3514.39.1.13

Tyler, T. R. (1984). Assessing the Risk of Crime Victimization: The Integration of Personal Victimization Experience and Socially Transmitted Information. *Journal of Social Issues*, *40*(1), 27–38. doi:10.1111/j.1540-4560.1984.tb01080.x

Van Dijk, J., van Kesteren, J., & Smit, P. (2007). *Criminal Victimization in International perspective*. (WODC, Ed.). Den Haag.

Villarreal, a., & Silva, B. F. A. (2006). Social Cohesion, Criminal Victimization and Perceived Risk of Crime in Brazilian Neighborhoods. *Social Forces*, *84*(3), 1725–1753. doi:10.1353/sof.2006.0073

Warr, M. (1985). Fear of Rape among Urban Women. *Social Problems*, *32*(3), 238–250.

Warr, M. (1987). Fear of victimization and sensitivity to risk. *Journal of Quantitative Criminology*, *3*(1), 29–46. doi:10.1007/BF01065199

Warr, M., & Stafford, M. (1983). Fear of Victimization : A Look at the Proximate Causes. *Social Forces*, *61*(4), 1033–1043.

Winkel, F. W. (1998). Fear of crime and criminal victimization: Testing a Theory of Psychological Incapacitation of the "Stressor" Based on Downward Comparison Processes. *British Journal of Criminology*, *38*(3), 473–484. doi:10.1093/oxfordjournals.bjc.a014258

Wyant, B. R. (2008) 'Multilevel Impacts of Perceived Incivilities and Perceptions of Crime Risk on Fear of Crime'. *Journal of Research in Crime and Delinquency,* 45: 39-64.

Yap, M. B. H., & Devilly, G. J. (2004). The role of perceived social support in crime victimization. *Clinical Psychology Review*, *24*(1), 1–14. doi:10.1016/j.cpr.2003.09.007

Figure 1: Overview of the theoretical model
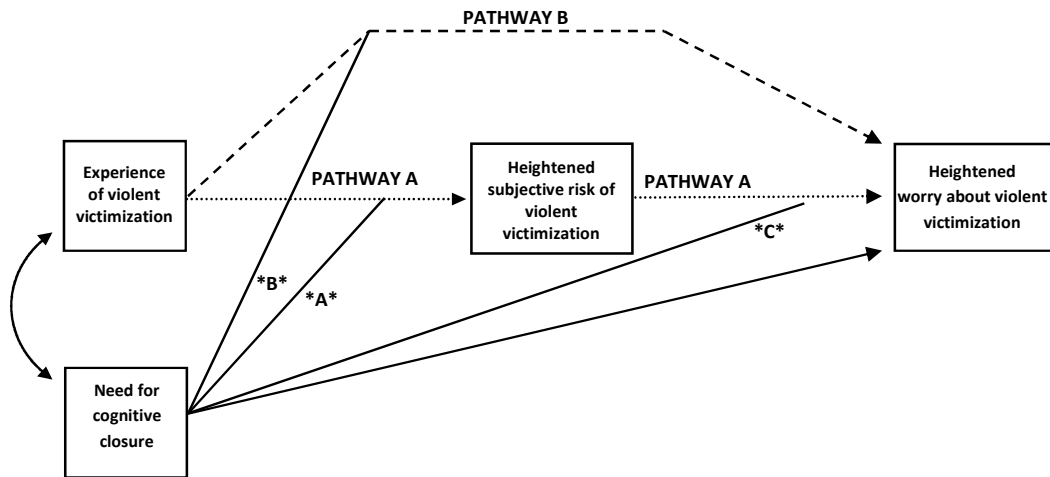
A, *B*and *C* denote hypothesised interaction effects. Specifically, need for cognitive closure may strengthen observed associations between (a) victimization experience and risk perception, (b) victimization experience and worry and (c) perceived likelihood of victimization and worry.

Figure 2: Additive associations between victimisation experience, risk perception and worry about stranger violence
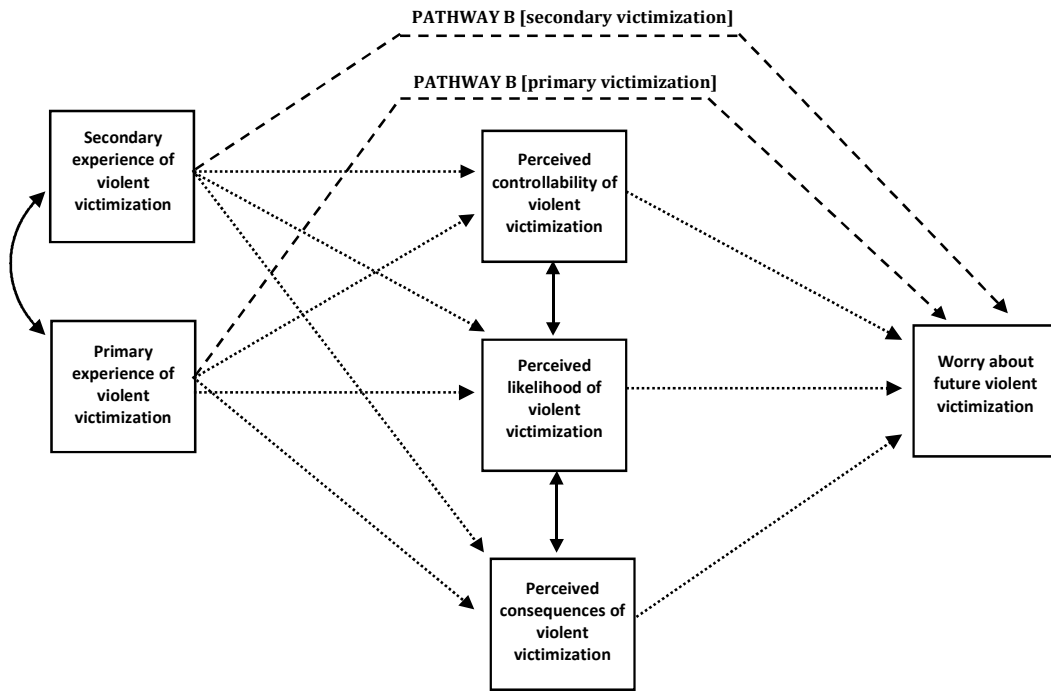

Note that all pathways not denoted 'pathway B' are potential routes (organised under pathway B)
by which risk perception mediates statistical effects of victimization experience on worry.
Note also that perceived control and perceived consequences are also expected to covary

Figure 3: Risk sensitivity

Note that the lines that intercept the directed arrows indicate posited interactive effects. Also note that the direct pathways from primary and secondary victimization to worry have been omitted for visual ease

Figure 4: Interactive statistical effects of primary victimization and need for cognitive closure on risk perception and worry about victimization
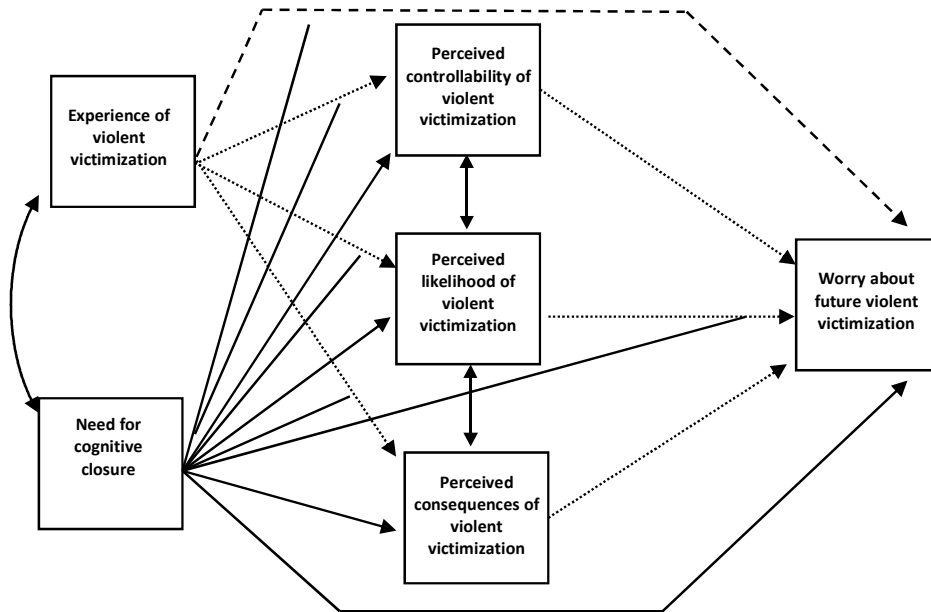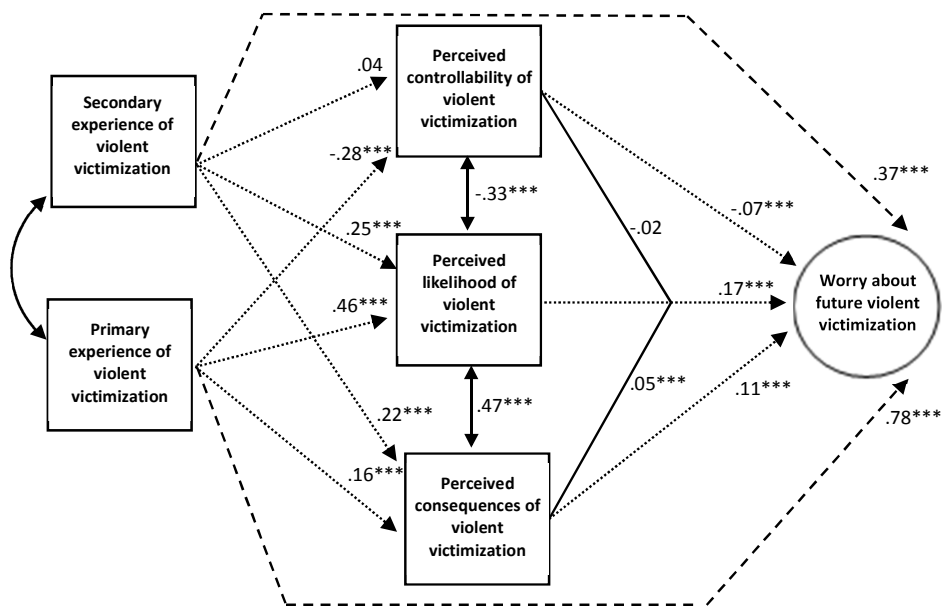

Note that the lines that intercept the directed arrows indicate posited interactive effects. Also note that the interactive effects involving (a) likelihood and control and (b) likelihood and consequences are omitted for visual ease.

Figure 5: Fitted model of risk perception and worry about stranger violence
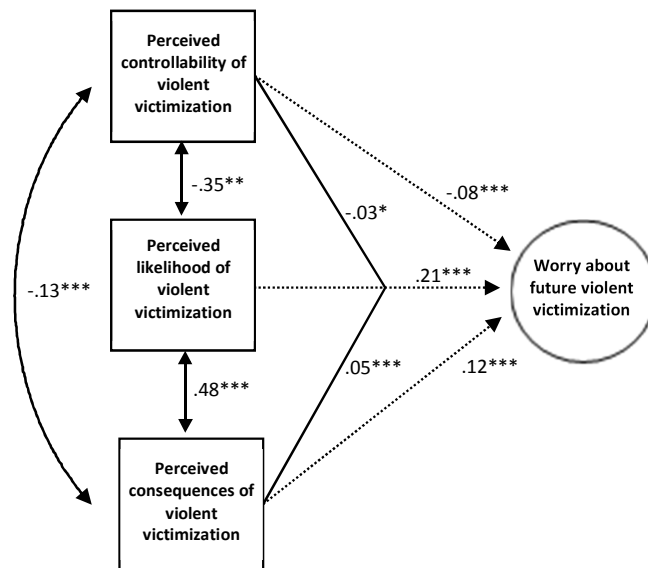
Structural equation modelling using MPlus 7.11. Boxes indicates single manifest indicator.
Circle indicates latent variables (measurement model for 'worry' not presented for visual ease).
Note that the lines that intercept the directed arrows indicate posited interactive effects.
Unstandardized coefficients. Gender and age controls included. * $p<.05$, ** $p<.01$, *** $p<.001$.
Chi square 103 (df 12), p<.0005. CFI .982, TLI .956, RMSEA .055 (90% CI .045, .065).

Figure 6: Adding primary and secondary victimization to the fitted model

Structural equation modelling using MPlus 7.11. Boxes indicates single manifest indicator.
Circle indicates latent variables (measurement model for 'worry' not presented for visual ease).
Note that the lines that intercept the directed arrows indicate posited interactive effects.
Note that perceived controllability and perceived consequence are correlated (r=-.20***).
Unstandardized coefficients. Gender and age controls included. * p<.05, ** p<.01, *** p<.001.
Chi square 130 (df 18), p<.0005. CFI .980, TLI .955, RMSEA .050 (90% CI .042, .058).

Table 1: Demographic composition of the three sub-samples

	Gender		Age		Education (years)		Location				
	Male %	Female %	Mean	SD	Mean	SD	Big city %	Suburbs or outskirts of a big city %	Town or small city %	Country village %	Farm or home in the country %
Italy	51%	49%	48	18	11	5	15%	10%	28%	45%	1%
Bulgaria	57%	43%	52	18	12	4	37%	6%	26%	31%	0%
Lithuania	57%	43%	51	18	14	4	43%	0%	22%	33%	1%

Table 2. Summary of fitted interaction effects involving need for cognitive closure moderating victimization experience

	coeff	S.E.	coeff./S.E.	*p*-value
Predicting worry about future victimization				
Primary victimization experience	.83	.12	7.10	<.0005***
Secondary victimization experience	.38	.05	8.28	<.0005***
Need for cognitive closure	.04	.05	.87	.39
Need for cognitive closure interaction with primary victimization experience	.20	.33	.61	.55
Need for cognitive closure interaction with secondary victimization experience	.34	.13	2.54	.01*
Predicting perceived likelihood of violent victimization				
Primary victimization experience	.60	.11	5.72	<.0005***
Secondary victimization experience	.28	.05	6.15	<.0005***
Need for cognitive closure	.00	.07	.02	.99
Need for cognitive closure interaction with primary victimization experience	-.03	.28	-.10	.92
Need for cognitive closure interaction with secondary victimization experience	.23	.13	1.72	.09
Predicting perceived consequence of violent victimization				
Primary victimization experience	.03	.12	.21	.84
Secondary victimization experience	.22	.06	3.9	<.0005***
Need for cognitive closure	.49	.09	5.23	<.0005***
Need for cognitive closure interaction with primary victimization experience	-.14	.34	-.42	.68
Need for cognitive closure interaction with secondary victimization experience	-.17	.16	-1.07	.29
Predicting perceived control over violent victimization				
Primary victimization experience	-.06	.11	-.54	.59
Secondary victimization experience	.07	.05	1.26	.21
Need for cognitive closure	.02	.08	.25	.80
Need for cognitive closure interaction with primary victimization experience	-.11	.31	-.36	.72
Need for cognitive closure interaction with secondary victimization experience	-.25	.16	-1.56	.12

Note: coeff = unstandardized coefficient. S.E. = standard error. Interaction effects estimated in 4 blocks, i.e. separately for each of worry, perceived likelihood, perceived consequence and perceived control. *=*p*<.05, **=*p*<.01, ***=*p*<.001.