# Dysfunctional fear? Explaining (mis)alignment among the emotive and cognitive dimensions of reactions to victimization threat

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# DYSFUNCTIONAL FEAR? EXPLAINING (MIS)ALIGNMENT AMONG THE EMOTIVE AND COGNITIVE DIMENSIONS OF REACTIONS TO VICTIMIZATION THREAT

Christopher J. Schreck (cjsgcj@rit.edu)
Department of Criminal Justice
Rochester Institute of Technology

Pamela Wilcox (pamelawilcox@psu.edu)
Department of Sociology and Criminology
Pennsylvania State University

Joanna D. Frazier (Joanna-frazier@uiowa.edu)
Department of Sociology and Criminology
University of Iowa

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**DYSFUNCTIONAL FEAR? EXPLAINING (MIS)ALIGNMENT AMONG THE EMOTIVE AND COGNITIVE DIMENSIONS OF REACTIONS TO VICTIMIZATION THREAT**

Abstract

Victimization threat appraisals contain both cognitive and emotive components. Ideally for precautionary choices, both components support one another; however, an imbalance has been a persistent concern in the fear of victimization literature, but there is little theory to account for why. We explore a theory that might account for (1) the sources of variation in the extent of threat reactions, and (2) imbalances between cognitive perceptions of risk and emotional worry. Our method employs an item response theory (IRT) approach to measurement in a multilevel regression framework (Osgood & Schreck, 2007) using a national sample of 1,500 adults from the United States. Results show significant evidence of variation in the balance of cognition and emotion in threat reactions, and these imbalances are predictable.

Keywords: Fear of crime, choice theory, perceived risk of crime, victimization threat

Word Count: 11,213

The costs of victimization are extensive enough that understanding how people subjectively process their reactions to possible threat—the combination of assessments of perceived risk of victimization and fear of victimization—is important, with a long history as an academic and policy concern (Ferraro, 1995; Ferraro & LaGrange, 1987; Furstenberg, 1971; Rader, 2004; Warr, 2000; Warr & Stafford, 1987; Wilcox Rountree 1998; Wilcox et al., 2003, 2007). The present study examines the magnitude of threat reactions overall and theorizes about the etiology of the potential gap between its two main dimensions, where perceptions of victimization risk is the cognitive component and anxiety about victimization is the emotive. When there is too extensive a separation between emotion and cognition, individuals' responses to crime threat are less about an objectively rational management of risk than either (1) minimally satisficing precautionary action when emotional arousal is too low, or (2) an obsession that no precautionary response could alleviate, when emotional arousal is too high.

In short, we define a person's reaction to threat as a concept with two layers. One layer is the magnitude of that individual's reaction to threat, containing both cognitive and emotive components and could range from no reaction to any crime threat to a threat reaction to all crimes. The other layer is the *differential* emphasis between the emotion and cognition components. The ideal is a balance between both; however, at one extreme, the individual is fearful of any form of victimization and yet also is conscious of a very low probability of the victimization actually happening. At the other extreme, the individual recognizes significant threat from any form of victimization (i.e., victimization of all kinds is perceived as likely), but experiences no sense of emotional arousal. Here, we explore plausible explanations why people might recognize victimization threat on a subjective level, and investigate whether these sources promote an imbalance between emotional worry and cognitive perceptions of risk. Our statistical

method employs an item response theory (IRT) approach to measurement in a multilevel regression framework (Osgood & Schreck, 2007) using a national sample of 1,500 adults living in the United States.

## COPING WITH CRIME: REACTIONS TO THE THREAT OF VICTIMIZATION

### Distinguishing Perceived Risk and Fear of Victimization

Criminological research addressing fear as a reaction to the threat of crime—as a way citizens "cope" with crime—dates back nearly a half century (e.g., DuBow et al., 1979; Garofalo & Laub, 1978; Lewis & Maxfield, 1980; Skogan & Maxfield, 1981; Taylor & Hale, 1986). Spurred in part by the level of fear revealed in a report of the President's Commission on Law Enforcement and Administration of Justice (Katzenbach, 1967), early research stressed that fear permeates the lives of U.S. citizens and does not appear responsive to reductions in actual rates of crime. Scholars studying fear around this time also began to unpack the very concept of "fear of crime" more fully. While no single definition of fear emerged (Henson & Reyns, 2015), key elements were shared across definitions, and various types of threat reactions were distinguished (Lane et al., 2014). Specifically, fear of victimization was articulated as an affective, negative emotional reaction to the threat of crime victimization, whereas subjective perceptions of the likelihood of victimization was branded a "cognitive judgement" (Dubow et al., 1979; Ferraro & LaGrange, 1987; Warr 1984; Warr & Stafford, 1983).

Decades of subsequent research supports that perceived risk is often a proximate indicator of fear and that the two reactions to threat are moderately correlated. At the same time, the consensus is that both are conceptually and empirically distinct and the correlation between them can vary widely depending on factors such as the age and gender of the person assessing risk and fear as well as the type of crime threat (offense type) being considered (e.g., Chadee et

al., 2007; Ferraro, 1995; Fisher & Sloan, 2003; Franklin et al., 2008; Gainey et al., 2011; Lee & Ulmer, 2000; Swartz et al., 2011; Tillyer et al., 2011; Wilcox et al., 2007; Rountree & Land,1996). In short, fear of victimization is not merely a function of perceived risk. Fear also involves perception of vulnerabilities and assessment of the costs of victimization to the actor that is based, for example, on subjective valuations of person and property (Warr, 2000). To the degree that emotive and cognitive dimensions of threat emerge for different reasons unique to each individual, the relative balance between them should vary between individuals. Nonetheless, there has been no comprehensive analysis aimed explicitly at understanding the conditions leading to a possible disconnect between perceived risk and fear—with a tendency to express a level of emotional fear of victimization that is misaligned with one's cognitive assessment of the perceived risk of victimization.

**Understanding a Cognitive-Emotive Imbalance**

The criminological literature on threat reactions typically assumes the presence of a rational and self-interested actor, someone responsive to information, lessons from experience, and observations of the external environment. Rationality, however, does not guarantee that the actor's choices result in optimal outcomes, or even that the actor has given their consideration to pertinent information. Rather, the prevailing view in this school of thought is that humans are rational but also "flawed, lazy thinkers who rely on mental shortcuts" (Barnum & Solomon, 2019, p.660). As the natural state, any desire to promote objectively rational decision-making, therefore, must contend with human cognitive constraints, in which the emotional and cognitive reactions to victimization threat sometimes misalign (Loewenstein et al., 2001). That there is conflict between the two dimensions of reactions to threat does not seem to be in serious dispute, and neither are the adverse consequences of an excessive preponderance of one type of reaction

over the other (Warr, 2000). The research on affect shows that emotional arousal in the face of stress or threat is the "default state" (Kaufman, 1999, p.139). The level of emotional arousal—which is inclusive of fear, worry, or anxiety—is an important stimulus for precautionary responses, but it is also a contributor to why decisions yield outcomes harmful to the actor's interests, a concern noted from the very start of scholarly interest in fear of crime (Katzenbach, 1967). The best choices in decision-making are most probable when emotional arousal is *appropriate*, that is, neither too much nor too little in relation to cognitive perceptions of risk (Yates, 1990); however, the balance between the emotive and cognitive dimensions of reaction to threat exists on a spectrum. At one end, the actor's emotional arousal (fear) is too low relative to their own (cognitive) understanding perceived risk. Here, they are indifferent and their attention easily diverted by more interesting problems or stimuli; they *satisfice* with respect to precautions, engaging only in minimal, piecemeal, and dilatory efforts, and only when convenient (Warr, 2000). Although precautions are no guarantee of safety from victimization, lack of concern about threat possibly leaves the target exposed and unprotected. As anxiety increases, the actor devotes greater and more focused attention to managing threat (Kahneman, 1973). At a certain point, however, emotionality becomes harmful to decision-making quality, disrupting the ability to take in new information or feedback as well as impairing logical thinking (or, producing a greater uncritical reliance on heuristic reasoning). When fear turns excessive in relation to perceived risk, at the opposite end of the emotive-cognitive spectrum, attention and mental effort on avoiding victimization begins to become self-harming as the actor loses sight of other worthwhile interests. They might also rely on precautions that are ineffective against crime or that pose threats to public health. Irrespective of whether a reaction to victimization threat

reflects objective reality, the research shows that it is enough to produce dysfunctionality when fear is out of proportion even to risk as *subjectively* understood.

Among rational actors, an understanding of how threat reactions form would begin with considering how individuals acquire and prioritize information about threat. Such information comes from all manner of sources, like other people, cues in the environment, and from experience (Hale, 1996). But people also have attributes that lead them to notice what they want to notice in the external environment (Gottfredson & Hirschi, 2019), and to reject information that imposes costly restrictions on other valued interests, as *they* define these interests. They also exercise choice, which sometimes leads them toward or away from information that might provoke a threat reaction of some kind. In this paper, we explore a selection of these. We do not assert that the predictors of theoretical interest discussed below is comprehensive, and neither do we make predictions concerning all of the demographic measures included, but the discussion might serve as a guide for developing hypotheses.

Sources of Aligned Threat Reactions

In Mark Warr's (2000) conception of threat reactions, perceived risk is a direct cause of fear (see, also, Warr, 1987)—or, people acknowledge threat cognitively and once threat likelihood reaches a threshold fear then eventuates and increases as the perceived victimization probability increases. This accounts for the correlation between the emotive and cognitive components of a threat reaction, as shown in virtually all prior research (e.g., Hale, 1996; LaGrange et al, 1992; Wilcox et al., 2007). In short, our default hypothesis is that *any* variables connected in an obvious way with victimization or its possibility should elevate the magnitude of the general reaction to victimization threat, without regard to whether it is cognitive or emotive.

Some of predictors of theoretical interest affecting the rate of general reactions to threat will nevertheless produce an emotive-cognitive misalignment as well, which we discuss in later sections. Other predictors, however, affect only the magnitude of a threat reaction with no emotive-cognitive misalignment. *Mental health symptomology* is one possible example, an attribute that is enduring across environments, experiences, and information. Anxiety is often a trauma response that might emerge from prior experiences with victimization (McCann et al., 1988). Although anxiety is expressed emotionally, it also manifests in hypervigilance and heightened cognitive perceptions of risk. Edwards (2020, p. 37) noted: "Hypervigilance may be conflated with hyperarousal…hyperarousal is the physical sensation of being tense, 'on-edge,' and demonstrating other physical symptoms (high heart rate, sweating, shortness of breath). Cognitive hypervigilance can increase the likelihood that a person *does* perceive danger in their environment which in turn can induce feelings of physical anxiety and hyperarousal symptoms" (emphasis in original). This implies that the magnitude of a threat reaction increases as symptomology increases, but with no significant emotive/cognitive misalignment.

*Third-Party Efficacy*. Beliefs about neighborhood and police efficacy have in common the same underlying mechanism: they both assess the perceived ability of third parties to respond to crime or violations of neighborhood values. In the case of police, the relief of public fear of crime is a stated purpose (Jackson, 2004; Weisburd & Eck, 2004). Research about whether police efficacy produces such an outcome is much more mixed, however. Some studies report elevated fear in connection to indicators of police activity and effectiveness (Abbott et al., 2020; Fernandes, 2018), and others show that specific strategies like community policing can lower fears and disorder (e.g., Wycoff & Skogan, 1986). Assuming the police are capable of reducing disorder and alleviating fear, greater confidence that the police are effective should produce a

lower degree of general threat recognition overall and no differential between emotive and cognitive reactions (since both perceptions of vulnerability and proximate cues for crime would be eliminated).

Turning to neighborhood (or collective) efficacy, the effects and mechanisms should be the same as with police efficacy. In neighborhoods with greater social capital, the residents are involved in the life of their community. As this elevates the ability of residents to function collectively, neighborhoods with high efficacy should be more capable of maintaining order, protecting one another, and mobilizing police support. Yuan and McNeeley (2015) reported that greater efficacy resulted in reductions in both emotive and cognitive reactions to threat. Since neighborhood efficacy affects both proximate victimization cues (by limiting visible crime and disorder) and vulnerability (by giving residents confidence that neighbors will help), increasing efficacy should lower the magnitude of threat reactions generally, with no differential effect.

Sources of Misalignment Favoring Emotive Fear of Victimization

Nevertheless, in spite of the synergy between the two dimensions of a general threat reaction, individuals vary in how well they reconcile their own sense of urgency about threat (emotional arousal) with their cognitive understanding of the likelihood of that threat. Fear of victimization is anticipatory, involving a sense of anxiety or worry about an uncertain but potentially painful future event (Warr, 2000). Many predictors of interest described in this section affect the general magnitude of a threat reaction; however, embedded in these is the notion that individuals vary in their perceived vulnerability and cost of becoming a victim (Warr, 1987; Jackson, 2011). Further, these predictors do not logically require the presence of impending threat, and so ought to increase emotional arousal at a faster rate than a cognitive reaction.

*Demographic Predictors*. A consistent finding in the literature on fear of crime is that *females* are more likely to be afraid of crime than males (Ferraro, 1996; May et al., 2010; Rader, 2023). If fear arises from awareness of vulnerability, women have vulnerabilities that men lack. Because men are physically larger, direct-contact predatory crime for females carries with it not just a greater potential for injury but also the risk of sexual assault (Ferraro, 1996; Warr, 1985; Madriz, 2023). With respect to perceived risk of victimization (the cognitive component of a threat reaction), the research presents mixed findings for a gender differential (Hale, 1996), suggesting that gender has an uncertain relationship with immediate cues in the environment and precluding a prediction about whether gender increases threat reactions generally. We would predict, therefore, that females who do have threat reaction are more likely to experience it emotionally than cognitively.

The literature also suggests that those who are older will have a greater sensitivity to risk and so a greater level of fear, even holding risk constant (e.g., Warr, 1987). Similar to females, as people *age* and their physical capabilities decline, there might be a perception of a greater vulnerability with an increased prospect of injury in a direct-contact crime (Warr, 1984). This, therefore, would produce a threat reaction that is more emotionally-based than cognitive. The age effect suggests also that *self-assessments of physical health* prompt actors with worse health to feel more vulnerable (Cossman & Rader, 2011; Ross, 1993), producing a general threat reaction of a higher magnitude, with the mixture of these reactions being more emotive than cognitive. Warr's (1992) concept of altruistic fear suggests potential measures that could create a misalignment between fear over perceived risk. The presence of *children in the household* prompted fear among the adult caregivers, suggesting that the developmental immaturity of children creates a vulnerability for their own safety that parents readily anticipate as well as

increasing the costs of the parents' own victimization. Children, therefore, should produce a misalignment favoring fear. Whether the presence of a *marital or domestic partner* produces altruistic fear (and a misalignment) is unclear; female partners are more likely to fear for their children than for their spouses, for example (Warr, 1992).

*Victimization*. There is a long history of research on *prior victimization experiences* and their effects on reactions to threat (Katzenbach, 1967; Hale, 1996). Victimization experiences, being purely pain and cost, typically are associated with threat reactions that are of a higher magnitude. The actor has to come to terms with that experience, and reassess their understanding of their own vulnerability as well as how they perceive the probability of victimization. Victimization, however, potentially creates additional risk sensitivity that might promote a misalignment favoring emotional arousal over cognition. Loewenstein and colleagues (2001) found emotive assessments occur based on how easily the decision-maker can imagine the consequences happening to them and also from prior experiences (like victimization). Or, as Jackson (2004, p. 258) put it, "if…the outcome is vivid and affect-laden, then that individual is likely to be insensitive to probability variations." Research indicates that victimization experiences indeed often are affect-laden and traumatic (Turanovic, 2022). To the extent this is so, there should be an imbalance favoring emotive over cognitive. Witnessing or knowing about the victimization of known others, or *vicarious victimization*, would seem to produce a similar effect for similar reasons (Lerias & Byrne, 2003). Both types of experience, therefore, should have an amplified emotional salience relative to their effect on the actor's perceived risk of victimization.[1]

[1] The discussion in the next section about the effect of low self-control on the emotive-cognitive imbalance presents a competing hypothesis for prior victimization and vicarious victimization, where cognitive threat prevails over emotive. We need to note here that not all victims have low self-control, engage in risky behaviors, or perceive disorder in their neighborhoods, and so a control for self-control, external environment, and risky lifestyles is

*Mass Media*. Researchers have long researched media influence and levels of fear (e.g., Furstenburg, 1971; Warr, 2000), since most people have little direct experience with crime and so formulate their opinions about threat from availability heuristics and anchoring biases arising from their media consumption. In this respect, those who are *follow current events* will have a heightened reaction to threat. Recent years have added an additional layer to media consumption, owing to online search algorithms directing users to perspectives consistent with (and reinforcing of) their own worldview (e.g., Levy, 2021). Political partisanship, especially *Republican Party membership*, focuses on law and order content and so exposes individuals to sources of information that stokes a fearful worldview (Furstenburg, 1971; Pickett & Chiricos, 2012; Schutten et al., 2023). Media influences appear to create higher levels of both perceived vulnerabilities and risk perceptions of victimization, which suggest that exposure increases the magnitude of threat reactions generally; however, if media content about crime covers stories that are remote from the viewer's lived experience, there should be a differential favoring emotional reactions over cognitive.

Sources of Misalignment Favoring Cognitive Perceived Risk of Victimization

In the literature, perceived risk of victimization appears connected more closely to cues that are immediate or *proximate* to actual victimization, rather than anticipatory in the way that vulnerability appears to be. To the degree this is so, measures that speak to an impending possibility of victimization, but without implying vulnerability, should result in a stronger cognitive reaction than emotive. The other possibility we explore in this section are attributes that correspond to reduced perceptions of vulnerability to victimization or exposure to its costs, even when the threat is proximate.

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necessary to help separate those effects from what direct and indirect victimization experience *in itself* might produce.

*Self-Control and Crime-Analogous Behavior*. Low self-control is the habitual tendency to ignore long-term risk when confronted with immediate and certain pleasure (Gottfredson & Hirschi, 1990; 2019), which suggests the hypothesis that actors with low self-control do indeed perceive that there is a risk of victimization but they do not prioritize it when making choices. Lacking any sense of urgency to take precautions reliably, unless they involve weapons (which are gratifying for other reasons; see Schreck et al., 2018), those with low self-control are more likely to fall victim (Schreck, 1999; Schreck, Berg, & Rogers, 2022) as well as gravitate toward lifestyle activities and situations where the potential to see and experience victimization is high (Wilcox & Cullen, 2018). This means that controls for what the theory refers to as *crime* and "crime-analogous" behaviors—like *risky activities*, attraction to areas where there are criminal opportunities (specifically *neighborhood disorder, vicarious victimization*, and *prior victimization*) should mediate low self-control's effect on both the magnitude of a threat reaction and the emotive-cognitive composition of that reaction (i.e., higher scores on risky activities should produce a misalignment favoring cognitive over emotive).[2] In short, people with low self-control are aware of threat; however, their low self-control enables them to better compartmentalize emotional urgency, at least whenever there are more interesting opportunities for advantage that attract their notice. Those opportunities, when controlled for, should mediate the effect of low self-control and should, in themselves, result in an imbalance in a threat reaction where there is a greater probability of the actor's reaction being cognitive rather than emotive.

[2] Hale (1996) presented a different rationale for why vicarious victimization might produce a similar imbalance for vicarious victimization. Here, those who witness victimization might imagine threat "without perhaps the same urgency to find a coping strategy." To the degree that urgency presupposes emotional arousal about threat, indirect victimization is an environmental cue that produces a stronger cognitive response than emotive.

*Street Efficacy.* Street efficacy (Sharkey, 2006; Yuan et al., 2017), is the actor's self-rated confidence in their ability to navigate unsafe situations. From a choice perspective, efficacy implies that victimization is both less costly *and* less probable to the actor, resulting in diminished reaction to threat irrespective of the external environment, information, and experience. On the other hand, scholarly discussion about street efficacy aligns it with "fearlessness," since a perceived ability to cope with threat mitigates feelings of vulnerability (see, also, Bandura, 1977). This means that even if victimization is deemed likely the actor feels less urgency to prioritize that threat because they feel prepared to face it. As a result, street efficacy should result in an imbalance favoring cognitive threat reactions over emotive. Yuan and colleagues (2017) found that teenagers who possessed greater feelings of efficacy had less fear of being victimized and less actual victimization as well (implying less perceived risk of victimization; see Monterio and Gebo, 2022).

*Neighborhood Disorder*. In turning to the actor's external environment, a longstanding influence on both fear and perceived risk is awareness of *neighborhood disorder*, where actors can sense potentially dangerous situations from a range of cues (low-level breaches of community standards, like the physical environment in poor condition, crime-related social behavior) even when no crime is taking place or anyone suspicious is in sight (LaGrange et al., 1992; Rountree & Land, 1996; Wyant, 2008). As before, perceived disorder in one's neighborhood is immediate and its level does not assume that for the actor there is any inherent co-occurring vulnerability or additional cost should victimization happen; we, therefore, would predict that disorder would influence the composition of threat reactions with cognitive reactions increasing at a faster rate than emotive.

Using the theoretical logic described above, Table 1 summarizes our research hypotheses regarding how the measures used in this study relate to (1) variation in the overall extent of threat reactions, and (2) imbalances between cognitive perceptions of risk and emotional worry.

[Table 1 about here]

## DATA AND MEASURES

To explore our research questions, we use data from the *Reactions to the Threat of Crime in Offline and Online Spaces* (Wilcox & McNealey, 2021), which is a cross-sectional online survey consisting of a representative sample of 1,500 adults residing in the United States and administered by YouGov over several weeks in December, 2021. [3] YouGov uses a complex, multi-stage, matching-based sampling strategy. First, YouGov creates a synthetic sampling frame—in this case, from the 2019 Current Population Survey—and select respondents (with replacements) from its panel matched to the CPS sample on key demographic characteristics such as race, gender, age, and education. Since this matching is likely imperfect, the matched cases are subsequently weighted to the synthetic sampling frame using propensity scores as a function of the matching variables, region, and urban/suburban/rural location. Those propensity weights were then post-stratified on 2016 and 2020 Presidential vote, gender, age, race, education, and urban to produce the final sample weights that are included in (multivariate) analyses presented below. The sampling was stratified by residential location, with 500 respondents selected from urban, suburban, and rural zip codes, thus allowing for adequate comparisons across residential location. While complex, YouGov samples are highly regarded for representativeness and completeness (virtually eliminating non-response bias), yielding data

[3] Upon following the protocol for human subject research, the study was determined to be exempt from formal IRB review (Gern, 2021, personal communication).

superior to other opt-in samples (Graham et al., 2021). Given the difficulty and expense of collecting representative samples with strong response rates, criminologists are increasingly turning to YouGov samples in order to test key questions related to theory, policy, and public opinion (Schutten et al., 2023; Silver et al., 2022). The survey obtained a high completion rate and, with the exception of self-reported income (missing = 188), most variables have between zero and five missing cases.

**Dependent Variables**

The variables constructed for analysis were based on items in the *Reaction to the Threat of Crime* survey as well as sample demographic/religious/political data provided by YouGov. All items used in measurement construction are fully described, along with original coding in Appendix A.[4] Fear of victimization and perceived risk of victimization are the two concepts of interest and are measured through indices that are standard in the literature, and both indices relate to specific types of crime: theft, burglary, robbery, physical assault, threats with weapons, and sexual assault. As indicated in Appendix A, the original response options for fear of victimization items could range from 1 (Not at all afraid) to 5 (Very worried/afraid). The sample average across all six fear items was 2.24 (s.d. = 1.09; $a$ = .95), indicating a quite modest amount of fear overall. The valid responses for the perceived risk items ranged from 1 (Not at all likely) to 5 (Very likely), and the mean perceived risk was 1.91 (s.d. = .78; $a$ = .91), indicating that the average member of the sample perceived a low probability of victimization. These items were recoded into dichotomous measures, where respondents who reported a 4 or 5 (indicating high scores for fear and perceived risk) were coded with a 1; the other scores were coded as a zero. Individually, the prevalence of the perception of a high likelihood of victimization ranged from

[4] The bivariate correlations among independent variables (with the exception of race categories) was .3 or less.

3.2 (sexual assault) to 12.8 (theft) percent across the six victimization items; the prevalence of respondents with a high fear of crime was somewhat higher, ranging from 12.7 (sexual assault) to 19.6 (burglary) percent across the component items.

**Independent Variables**

The predictors include an assortment of demographic measures as well as a range of items spanning personal attributes, information, perceptions of circumstances, and behaviors that plausibly inspire threat reactions generally, or a predilection for emotive or cognitive reactions specifically. After incorporating sample weights, the demographic profile of the sample consisted of: 48.0% males, 62.4% White, 12.1% Black, 16.9% Hispanic, 8.6% other race, 50.7% married or in a domestic partnership, 23.1% with children younger than 18 living at home, 28.8% living in an area with a USDA urban designation, 44.1% in a suburban location, 27.1% in a rural designation. We also created a dummy variable denoting the bottom 17.1% of income earners (those falling in the two lowest income categories, see Appendix A). This measure was the only variable with missing data, which we omitted via listwise deletion.

Turning next to personal attributes, with the exception of self-reported health, valid item scores for all personal characteristics were measured using the original survey response scale that ranged from 1 (strongly disagree) to 5 (strongly agree). *Street efficacy* is a scale consisting of the average of four items measuring perceived agency for avoiding victimization (mean = 3.98; s.d. = .59; $a$ = .66). Efficacy, therefore, does not quite fit the .70 standard for scale reliability (where high scores on one item are associated reasonably consistently with high scores on the other items).[5] *Low self-control* is a four-item inventory measuring preferences to act on the spur of the moment, to be pleasure-seeking, risk-taking, or preferring excitement to security, with a mean of

[5] We nevertheless include it because of its theoretical relevance, and also because alpha coefficients are influenced by the number of items included in the index. A single item would make the .04 difference disappear.

2.66 (s.d. = .82; *a* = .75). *Anxiety* consisted of a self-report inventory of four items tapping feeling worn out, nervousness, inability to sleep, and feeling down (mean of 2.92; s.d.= .92; *a* = .79). *Self-reported health* was a single item where the respondent could answer with 1=poor through 5=excellent (this was reverse coded from the original survey coding); the mean score was 3.31 (s.d. = 1.00). Overall, the average respondent felt they had agency in protecting themselves, and slight tendencies to disagree that the low self-control and anxiety items applied to them and were in good health.

Individuals also make assessments about threat from information sources, including their own perceptions of their surroundings. There is a measure of *following political and current events*, with values ranging from 1 = most of the time to 4 = not at all. On average, respondents followed events some to most of the time (mean = 1.85; s.d. = 1.00). *Registered affiliation with the Republican Party* is measured by recoding political party into a dichotomous variable, with 28% of the sample (s.d. = .45) giving an affirmative response.

Considering surroundings and beliefs relevant to safety, we include measures of neighborhood disorder, vicarious victimization, neighborhood efficacy, and beliefs about police effectiveness. Most of these indexes include questions asking respondents the extent of their agreement with statements relevant to each concept (1 = strongly disagree; 5 = strongly agree). The scale measuring *beliefs about police effectiveness*, for example consists of the average score across eight items, including questions about the ability of police to respond quickly and maintain order (mean = 3.48; s.d. = .85; *a* = .94). *Neighborhood disorder* consists of the average of four items asking about the presence of litter, vacant buildings, drug sales, and violence (mean = 2.34, s.d. = .95; *a* = .83). *Vicarious victimization* is a single binary item where 1 = yes, someone the respondent knew had experienced a victimization, or 0 = no (mean = .11, s.d. =

.31). *Neighborhood efficacy* was measured as the average across five items assessing perceived neighbors' willingness to confront spraypainters, to contact police about spraypainters, to break of fights, to call police in the event of a fight, and to lobby if a local school were closed (mean = 3.59; s.d. = .77; *a* = .80). Generally, respondents reported on average some signs of physical disorder in their neighborhoods, were neutral or in agreement with statements suggesting cohesiveness with neighbors, neutrality or agreement with the idea that the police were effective, and only a minority knew of someone who had experienced victimization.

Finally, we include several behaviors or circumstances that plausibly have bearing on threat reaction. *Criminal behavior* is measured using four survey items inquiring about law-breaking the previous year: hitting others, fighting, vandalism, and theft. These items were recoded such that 1 = any criminal behavior and 0 = none (mean = .11; s.d. = .31; *a* = .81). Several items measure *risky activities* or circumstances, and the number of days the respondent had engaged in them during a typical week, including going to bars, going to entertainment venues, and taking public transportation For analysis purposes, we averaged the number of days across these three activities (mean = .20, s.d. = .43). We also have a measure of *prior victimization* based on questions asking about the number of times the respondent has experienced theft, burglary, robbery, assault, threats, and sexual assault during the previous year. Score across these six items were recoded to create a dichotomous measure with 1 = any victimization and 0 = none (mean = .36; s.d. = .95. Only a minority of respondents indicated that these circumstances or behaviors were true of them.

## STATISTICAL METHODS

Prior research examining the contrast between perceived risk and fear used a variety of regression approaches, but usually share in common the treatment of each as a separate

dependent variable (LaGrange et al., 1992; Lee & Ulmer, 2000; Rountree & Land, 1996). While this approach is useful for identifying predictors of theoretical interest for a specific outcome, for our purposes there are limitations. First, while separate models might distinguish unique predictors, they do not permit the researcher to directly study the mixture of fear to perceived risk because it is not defined as an actual variable (i.e., something with a mean, standard deviation). Second, fear and perceived risk, though distinct, are nevertheless statistically non-orthogonal; the more someone perceives that victimization is likely, the more likely they are to manifest fear as well (Warr, 1987). Differences in the predictors of fear and perceived risk in separate regressions, therefore, might only reflect statistical chance, or their effects might apply to both outcomes and not the specific dependent variable. Some studies attempt to manage conflation between fear and perceived risk by using one type of threat reaction as a control for the other (LaGrange et al., 1992; Lee & Ulmer, 2000); however, perceived risk overall tends have a lower prevalence than fear of victimization, sometimes substantially so (Wilcox et al., 2007), with several implications. Fear, to the degree it has more statistical variation, will exert a stronger influence on effect coefficients than perceived risk because of better measurement precision. Also, individual types of victimization that have more statistical variation will have greater influence on the results; for fear of victimization, for example, this usually means rarely occurring serious crimes that nevertheless generate extensive fear responses. Finally, many individuals do not indicate much or any reaction to threat; these individuals provide valuable data, but chance is more likely a reason for any patterns among those who endorse few items compared to those who react to all manner of crime.

Desirable statistical methods for untangling fear from perceived risk, therefore, should be able to:

1. Define an individual's concentration of fear to perceived risk as an individual-level variable.
2. Address confounding between the predictors responsible for influencing the magnitude of a reaction to threat from effects (if any) on the actor's differential tendency to experience that threat with an emotive reaction or a cognitive reaction, and use all available information while considering differences in measurement precision.
3. Separate differential tendencies from item base-rates for fear and perceived risk, where each individual's concentration of fear to perceived risk is contrasted with that found in the overall population.

Osgood and Schreck (2007) developed a multi-level IRT-based regression technique that possesses the desired features useful for studying the contrast between fear and perceived risk. In the remainder of this section, we will detail the model set-up. Each of the twelve threat reaction items comprise the Level 1 portion of the model and are nested within individual respondents. Level 1 specifies the measurement model where the unit of analysis is the item, and where if the individual endorsed any particular item then $Y_{ij} = 1$; otherwise, $Y_{ij} = 0$.[6] Also specified are two

[6] We should note that a consequence of dichotomizing items is a loss of information; however, a closer look suggests that the sacrifices are probably not as significant as one might suppose. What advantages and disadvantages matter depends on the researcher's purpose, and the nature of the data. Dichotomization of non-dichotomous data has to have a reasonable basis, and ours is both theoretical and empirical. Since a high level of threat reaction is what the experts view as problematic, dichotomization should discriminate between people with high concern about threat from those with low or none. Empirically, for every item, most of the sample endorses scores in the low to mid-range; only a small proportion of the sample endorses the higher scores, so there is a natural demarcation line right where we would expect one to be. Respondents still have 12 opportunities to communicate a high level of concern about threat. We feel we are on very solid ground in thinking those who endorse many high scores have a more extensive concern about threat than those who endorse few items or none. Retaining the original scoring for the items, on paper, allows the research presumably to conduct more fine-grained analyses; however, our IRT method assumes dichotomous data and so it is an open question whether doing this is worthwhile if the researcher now has to contend with all of the concerns described at the start of this section. Moreover, an increase in fear or perceived risk from, say, a 4 to a 5 (i.e., going from worried to very worried/likely to very likely) arguably reflects fairly small increments of difference in what is a dwindling number of respondents.

latent variables. The first is the log odds that the individual answers yes to any of the threat reaction items ($\beta_{0j}$). The second index ($\beta_{1j}$) is difference in log-likelihood between an individual giving an affirmative response to the fear items compared to the perceived risk items, and called "emotive/cognitive differential" in the tables. Level 2 is where the substantive predictors are incorporated, and the unit of analysis is the respondent. The equations, using the notation of hierarchical linear modeling, are as follows:

At Level 1:

$$[1] \quad Log\left[odds\left(Y_{ij}=1\right)\right] = \beta_{0j} + \beta_{1j} Differential + \sum_{i=2}^{i-1} \beta_{ij} D_{ij}$$

At Level 2:

$$[2] \quad \beta_{0j} = \gamma_{00} + \gamma_{01} X_{1j} + \gamma_{02} X_{2j} + \cdots + u_{0j}$$

$$[3] \quad \beta_{1j} = \gamma_{11} X_{1j} + \gamma_{12} X_{2j} + \cdots + u_{1j}$$

$$[4] \quad \beta_{ij} = \gamma_{i0}$$

**Overall Magnitude of Reactions to Victimization Threat**

Equation 1 depicts the contributors to the log odds of respondents giving an affirmative response to a threat reaction item. The latent variable for overall magnitude of a threat reaction is expressed as the model's constant ($\beta_{0j}$), which applies to all items and varies randomly across individuals ($u_{0j}$), and thus signifies how much individuals differ from one another in their rate of endorsing *any* of the threat reaction items, without discriminating between whether the item measures emotive fear or cognitive perceived risk. Equation 2 shows how predictors are incorporated in the level 2 portion of $\beta_{0j}$. Effect coefficients (e.g., $\beta_{01}$) report the influence of each per-unit increase as a log-odds (which we also convert to odds ratios in the tables). Significant coefficients apply to all items, and so a higher log-odds means that every unit increase in the predictor's score results in individuals endorsing a *larger number* of the 12 threat

reaction items. The variance of the residual ($u_{0j}$, or $\tau_{00}$) reports the extent that individuals vary in the magnitude of their overall threat reaction.

Item Base Rates

Another contributor to whether an individual will answer yes to any one threat reaction item is each item's observed prevalence in the sample, or base-rate. The ability of IRT measurement to manage item difficulties is important because typically someone's level of awareness for a given form of threat is correlated with the threat's seriousness; serious crimes tend to be disproportionately "easier" for individuals to imagine as probable threats and so would have a disproportionately stronger influence than other forms of crime that also comprise a threat reaction. Items that are "easier" will have a higher log-odds score for $\beta_{ij}$. A series of dummy variables ($D_{ij}$) indicates which item is associated with each response, omitting one item in order to define the level 2 intercept for the magnitude of a threat reaction ($\beta_{0j}$). Omitting the residual error terms adjusts for differences in the rates for each of the threat reaction items, making the individual-level version of $\beta_{ij}$ equal to the population version $\gamma_{io}$ (see Equation 4).

**The Extent of the Emotive/Cognitive Differential**

The probability of answering yes to a threat reaction item also depends on whether the item references emotive fear or cognitive perceived risk. In Equation 3, $\beta_{1j}$ specifies the differential between fear and perceived risk by coding a positive value (for all fear items) or a negative value (for all perceived risk items). Respondents who endorse more fear items than perceived risk items will have a higher log-odds of giving an affirmative response to items coded with a positive value and, therefore, they will have a positive value for the differential ($\beta_{1j}$) score. If the respondent endorses more perceived risk items than fear items, the result is a negative score for $\beta_{1j}$. Omitting the intercept in Equation 3 centers a score of 0 on the population mean, as

derived from the item base rates, thus defining differential effects as a measure of the discrepancy between fear and perceived risk as observed in the population. The residual term ($u_{1j}$) makes differential effects a latent variable that varies across respondents, and the variance ($\tau_{11}$) relates the degree respondents differ from each other in the relative balance between emotive and cognitive dimensions of a threat reaction.

Coefficients for the emotive/cognitive differential only describe their effect on the alignment of the actor's threat response, not the magnitude. Specifying $\beta_{1j}$ as a group mean-centered dummy variable (mean = 0) eliminates confounding between the differential and the overall magnitude of individuals' reactions to threat, since there is no variation across individuals.[7] As in Equation 4, this index is further adjusted for base-rate differences across the items. The level 2 portion of the model incorporates the explanatory variables for $\beta_{1j}$, where significance indicates that the variable's contribution toward a greater discrepancy between fear and perceived risk is unlikely to be because of chance, net of other explanatory variables, after adjustment for item base-rates, and independently of any contribution of that variable to the extent of overall threat reaction ($\beta_j$). If the coefficient ($\beta_{11}$) is positive, it signifies that each unit change in the explanatory variable corresponds to a greater probability (in log odds) that the respondent will endorse a fear item than a perceived risk item. If $\beta_{11}$ is negative, changes in that predictor result in a discrepancy in which perceived risk predominates over fear.[8]

**Model Assumptions**

[7] Since there is an equal number of fear and perceived risk items, the value we used was .5 for each item. The resulting one-unit difference means the emotive/cognitive differential reports the log-odds discrepancy between the log odds of endorsing a fear item and the log odds of giving an affirmative response to a perceived risk item.

[8] For example, in Table 3 (Model 1, Emotive/Cognitive Differential column), the coefficient for gender of -.85 is the log-odds difference that a male will give an affirmative response to a fear item versus a perceived risk item; males, in this case, had a significantly higher rate of endorsing negatively-coded perceived risk items than the positively-coded fear items. Expressed more intuitively as an odds ratio, when males express a reaction to threat, there is a 57% greater chance that the reaction will be cognitive rather than emotive.

The Osgood and Schreck multilevel IRT regression method is a Rasch, or one-parameter, model. This class of model assumes "local independence" among our 12 threat reaction items, or reasonably strong and positive associations across the items, which one can assess with a factor analysis (Osgood, McMorris, & Potenza, 2002). In our data, the first factor accounted for 57% of the variance for the items (Eigenvalue = 6.9), which is 3.3 times the amount of variance accounted for by the second factor (Eigenvalue = 2.1). The item loadings in the first factor between all 12 items were positive and high, ranging from .52 to .86, and is consistent with the expectations for our dominant latent variable measuring the overall magnitude of a reaction. The second factor revealed that the fear items tended to associate more closely with other fear items than with any of the perceived risk items, and vice versa, which is consistent with our expectation that a reaction to threat does differentiate into emotive and cognitive dimensions.

The method also assumes a multivariate normal distribution for the residuals of the latent variables; however, this assumption poses little difficulty since our model's nonlinear link function (see Equation 1) does not require multivariate normality and is capable of avoiding fitted values that are outside the range of legitimate possible scores; i.e., for probabilities, values between 0 and 1 (Osgood, Finken, & McMorris, 2002). Further, our results rely on significance tests that employ robust standard errors, which do not depend on the assumption of multivariate normality (Raudenbush, Bryk, & Congdon, 2019). Unsurprisingly, then, HLM's automatic checks for violations of this assumption were negative.

## RESULTS

Our first task is to rule out chance as the reason for variation in both between-individual differences in the extent of their awareness of victimization threat and the underlying composition of that awareness—i.e., the emotive/cognitive differential. If chance is the probable

reason for variation, efforts at prediction are unnecessary. We use a significance test of respective variances for both outcomes, which involves a z test in which the variance ($\tau$) is divided by its standard error. Since we were interested in the full variances, these variance components were abstracted from models omitting the explanatory variables. With respect to the size of a threat reaction ($\tau = 6.75$; std. error = .35) chance is extremely unlikely to account for variation between individuals ($p < .001$), and the same is true for the emotive/cognitive differential ($\tau = 10.75$; std. error = .72). HLM also estimates reliabilities for both latent variables, where high scores on one item are associated with higher scores across all items, which alludes to the necessity for managing measurement error. Neither the extensiveness of threat reactions (reliability = .68) nor the emotive/cognitive differential (.50) variables meet the .70 threshold for acceptable internal consistency. This indicates that, when studying either latent variable, an IRT approach is valuable for addressing measurement precision.

[Table 2 about here]

Statistical significance does not convey much in the way of detail, so Table 2 provides a more concrete picture of the extent of variation in the emotive/cognitive differential. The residuals for the differential can be saved as a variable in HLM (where 0 is centered on the population average, positive values indicate a greater preponderance of fear of victimization and negative values indicate a greater preponderance of perceived risk, relative to their distribution for the average person in the population. Using the standard deviations for the latent variables from HLM, it is possible to classify the individuals into three groups based on their position on the emotive/cognitive differential. Table 2 reports only those respondents who answered yes to between 4 to 9 of the 12 threat reaction items, which is to say those who are approaching the maximum possible statistical variation. The “overall threat recognition” column shows that

respondents in each of the three groups had a virtually identical average probability of endorsing *any* item; however, there is an astonishing amount of difference in the composition of the items chosen for each group, as shown in first two columns, reflecting the diversity in how much emotional arousal there is in relation to the belief that victimization is likely. Among those in the "predominantly cognitive reaction" group the probability of being worried about any form of victimization is very low (.14) relative to the probability of acknowledging some form of victimization as likely or very likely (.82). Those respondents in the "balanced emotive/cognitive reactions" group have a somewhat greater probability of endorsing one of the fear items than one of the perceived risk items (.55 versus .41). This moderate imbalance approximates the population baseline and, arguably, speaks to the extent of reasonable caution or uncertainty about one's own risk perceptions (Wilcox et al., 2007). On the "predominantly emotive reaction" end of the spectrum, the contrast is extreme and respondents indicated worry about almost every form of victimization (.88 probability of a "yes" to any fear item) even though there was only a slight probability that respondents perceived any form of victimization as likely (.03 probability of doing so). In other words, there is a very high degree of variation in how people react to threat, and therefore in the degree of urgency they feel relative to the perceived danger.

[Table 2 about here]

**Predicting the Magnitude of Reactions to Victimization Threat**[9]

Turning next to the multivariate analyses, we first focus on predicting magnitude of threat reactions. The columns entitled "Magnitude of Threat Reaction" in Table 3 reports the effects predictors have on the probability of a respondent giving an affirmative response to *any* threat reaction item, making no distinction between fear or perceived risk (i.e., effects produce an

[9] Diagnostics of the predictors indicated no concerns with multicollinearity.

alignment between emotion and cognition). In Model 1, among the demographic predictors, those identifying as White (or "White" hereafter) were 45% less likely than other races (reference category) to express awareness of victimization threat; respondents at the bottom of the income distribution were 102% *more* likely to manifest a reaction than those who earned more. With the exception of attitudes about the effectiveness of the police (where there was no effect), each personal attribute measure significantly affected the magnitude of a threat response. Each unit increase in the respondents' feeling of agency against victimization risk (street efficacy) was connected with a 44% reduction in the odds of affirming any of the threat recognition measures. Low self-control, the presence of mental health symptoms, and better self-reported health, by contrast, were associated with greater odds of recognizing threat both emotionally and cognitively. For instance, each unit increase in mental health symptoms was associated with a 163% increase in the chance of acknowledging a victimization threat. That better health increased the extensiveness of a reaction to threat is a finding that was contrary to our expectations.

Since low self-control might lead to the actor making choices and selecting experiences and environments that are associated with actual victimization risk, controls for these might account for some or all of its effects. Models 2 and 3 examine this possibility, and the overall influence of information, experiences, external environments, and risky behaviors. Almost all of these had statistically significant effects on the magnitude of reactions to threat, and low self-control dropped from significance. Most of the demographic effects that were significant in Model 1, however, were no longer so in these models, suggesting that the demographic effects as well operated through their connections to information, environment, and experience. The one

exception was found among those living in a rural census tract, who had 38% lower odds of threat reaction than comparable suburbanites (reference category).

We hypothesized that perceptions of neighborhood efficacy and police efficacy, which plausibly speak to protection against victimization, would ameliorate feelings of threat. With respect to neighborhood efficacy, this was true; however, in none of our models did beliefs about police effectiveness influence threat reactions, net of the effects of the other variables. Also note that, in Model 3 (which includes prior victimization), neighborhood efficacy drops from significance, suggesting that this effect operates through whether or not the actor becomes a victim. Our other measures where hypothesized to worsen feelings of threat. Neighborhood disorder is most noteworthy among these, with each unit increase the odds of a threat reaction by 135%. Seeing others victimized, however, stood out even from these; self-reported vicarious victimization elevated threat reactions by 486%. The significant effects for risky lifestyles and criminal activities (69% higher odds in Model 2), as expected, suggest that behavioral choices connected to exposure or reprisal leads to the actor to a certain extent to adjust their awareness of threat. Turning to less proximate possible sources of information about threat, we found that each unit reduction in self-reported effort at following politics and current events, which requires exposure to media, reduced the odds of a threat reaction by 16%. Conversely, more interest in politics and current events was associated with higher odds of threat. Being a registered Republican corresponded to 67% higher odds of being worried about victimization or perceiving risk as likely. In assessing whether the effects of information, risky experience, and risky behaviors on a threat reaction in fact are shaped by becoming a victim, our Model 3 results showed that most of the effects do not depend on prior victimization, which increased the odds of a threat reaction by 72%. Criminal behavior and neighborhood efficacy were the exceptions,

dropping from significance. This indicates that the benefits of neighborhood efficacy for reducing threat reactions vanish when the respondent becomes a victim. Offenders who do not become victims, it would appear, have threat reactions no different than comparable others.

**Predicting the Extent of Emotive/Cognitive Differentials in Threat Reactions**

Next, we turn to the columns in Table 2 that report the odds of an emotive/cognitive differential in threat awareness. Overall, the findings show that the amount of emotional arousal relative to cognitive awareness of the likelihood of victimization varies to an extraordinary degree between individuals and so warrants efforts to explain this variation. The "emotive/cognitive differential" column in Models 1 explores demographic reasons the composition of a threat reaction might change, with Models 2 and 3 assessing whether personal attributes in themselves create any observed differentials or whether risky activities and circumstances are responsible for patterns in threat reactions. Recall that the effects of the predictors in these models are independent from their effects on the extent of a threat reaction, and so model results only relate to their effects on the individual's *distribution* of cognitive and emotive awareness after controlling for measurement precision as well as adjusting for differences across the item base-rates. For example, in none of the models do males have a significantly different likelihood of recognizing threat than equivalent females; however, the significant negative coefficients in the emotive/cognitive differential column means that males have as much as 57% greater odds that their awareness will be cognitive rather than emotive. A similar pattern is evident with respect to urban residents, rural residents (compared to suburban), and older respondents—cognitive awareness of threat is disconnected from emotional such that these groups appear more inclined to accept the presence of threat without a corresponding sense of anxiety over it. The three major racial groups in the United States (White, Black, and

especially Hispanic), conversely, were more likely to experience fear about victimization than they were to perceive risk, relative to members of the reference category ("other races"), and this effect was evident across all models. Linking these results with what we found concerning the extent of a threat reaction, white respondents, for example, had threat reactions of a lesser magnitude than those of other races; however, when they did have a reaction of some kind, the odds of it being emotive were as much as 134% greater than it being cognitive; for Blacks (164%) and Hispanics (251%), the differential was even larger. Turning to the substantively important personal attributes, those with low self-control, when they imagine threat, tended to have a 30% greater chance of that response being cognitive rather than emotive. As expected, increasing mental health symptomology did not change the mixture between emotive and cognitive reactions to threat. The same was true of perceptions of physical health, which is contrary to our hypothesis.

Model 2 incorporates informational, perceived environmental, and behavioral measures as possible mediators of the differential effect of self-control, and the inclusion of these measures, in fact, eliminated the significant coefficient of low self-control in model 1. Two demographic variables dropped from significance. The Model 2 controls eliminated the effect of living in a rural census tract, suggesting that the greater preponderance of cognitive reactions among rural residents was in fact attributable to disorder and criminal behavior. Whites dropped from significance after including prior victimization experience, but the difference in coefficients was very slight; for Blacks and Hispanics, however, the differential remained highly significant irrespective of the measures we controlled for. Among the personal attributes, only feelings of street efficacy had a significant differential effect in Model 2; those with high street efficacy feel safer and, if they do perceive a threat, are simply aware of it but less prone to fearing it.

Considering the variable tapping into information and risky experiences, three variables were observed to affect significantly the emotive-cognitive differential. All were associated with respondents who, when they were aware of threat, were 28% (disorder), 60% (vicarious victimization) and 59% (for criminal behavior) more likely to manifest that awareness cognitively than emotionally. However, the vicarious victimization effect dropped from significance in Model 3 after the inclusion of personal victimization. In none of the models did information sources significantly affect the emotive-cognitive differential. When those who follow current events and who are registered Republicans become aware of threat, emotional arousal is in line with how they subjectively rate their chances of becoming a victim. Similarly, those experiencing prior victimization (added in Model 3) appear to experience threat in a manner that is balanced with respect to cognitive risk and emotional fear of future victimization.

## DISCUSSION AND CONCLUSION

At the start of research on fear of crime in the 1960's, the experts have worried that the public might view crime with either too much urgency or too little (Katzenbach, 1967). More than half a century later, criminology has not begun the work of creating a body of generally agreed-upon facts as to why individuals lean one way or the other. This is not to say that the literature on fear and perceived risk of victimization is not deep; however, the research goes no further than observing that one is emotive and the other is cognitive, and that they are related but also distinctive, and that predictors of victimization are also generally related to both dimensions. The questions thus remain: How extensive is this misalignment between emotion- and cognitive-based threat assessments in the population? What contributes toward this misalignment among individuals?

Given the scarcity of helpful literature, we began with the assumptions inherent in rational choice—a self-interested and pain-avoidant actor. This assumption holds that actors typically react to threat when it is in their interest to do so, induced by their personal circumstances and experience, relevant information, or the external environment. Most of these sources of influence should elevate both dimensions of subjective threat. A differential likewise should have a rational basis. Variables that imply vulnerability or diminished ability to handle the consequences of victimization, *if* it were to happen, should elevate an arousal reaction at a faster rate than a cognitive reaction. Gender is the longstanding example, where females' sexual vulnerability makes direct-contact predatory crime more dangerous. Conversely, others might acquire information about threats and react cognitively, adjusting the odds based on what they have learned or observed, but experience little emotional reaction to the degree they have incentives to ignore threat. This suggests that low self-control, the tendency to ignore risk, and its outcomes (crime and crime-analogous behavior, like risky activities, choices to be in dangerous settings) will all correspond with predominantly cognitive reactions.

In our sample of adults in the United States, we found an impressive amount of variation among people in both the extent of their threat reactions and in the contrast between the emotive-cognitive components of a reaction. In the full models, the most likely person for whom emotional arousal about threat would predominate over cognitive perceptions of the risk, net of all measures included in our study, were: females, Blacks and Hispanics. We did not develop hypotheses with respect to minority groups, but the range of controls for exposure, experience, and information suggests that the answer to why fear predominates among these two lies elsewhere. The cognitive dimension of threat reaction, however, predominated among those who were: older, who lived in urban areas, who had a stronger sense of street efficacy, who perceived

their neighborhood as being disordered, and who engaged in criminal behavior. These results suggest that predictors that imply the actor having a closer proximity to victimization threat often corresponds with a disproportionately cognitive response. This was not always true, however. In spite of elevating the magnitude of a threat reaction, neither vicarious nor prior victimization experiences created a differential, and the same was true of self-reports of physical health status and even both measures of exposure to information sources.

Taking a more granular look, we found that low self-control is associated with there being a higher threat reaction, but also one that was misaligned and skewing toward a cognitive reaction. These effects were explained by the measures we included that are theorized to be byproducts of low self-control, especially being in neighborhoods where there is disorder and self-reported criminal behavior. The lack of any significant main effect for low self-control in the full models suggests that people with low self-control are aware of threat (if not emotionally aroused by it) through their actual behaviors and the circumstances they often find themselves in—not awareness of the fact that they have low self-control.

Many other interesting results emerged as well. Our proxies for exposure to sources of information partially supported our hypotheses. Those who followed current events tended to experience a higher magnitude of threat reaction, which is what we expected. Similarly, Republican Party membership had the hypothesized effect; however, there was no differential between perceived risk and fear. If accurate, this suggests that party messaging has made fear feel proximate; our other controls allow us to rule out many variables with a more direct connection to victimization threat. Of the other personal attributes, self-rated efficacy in avoiding victimization was the most consistent in its effects on both the extent of a threat reaction and the emotive-cognitive differential. People who seem to be more confident about their ability to

handle threat did not tend to feel threatened; when they did, they had a lower degree of emotional arousal about it irrespective of dangerous situations and risky choices. Possibly this means that, if policy-makers see fear reduction as a public good, instilling confidence that actors are not helpless against victimization—such as by providing better access to precautions—might be beneficial (Schreck, 2021). The fact that street efficacy's effect persisted in spite of controls for risky activities, victimizations, and risky situations suggests that efficacy is beneficial. Recall, however, that this index did not quite achieve .70 internal consistency; future research should pay close attention to whether these results are genuine.

In our data, respondents in poorer health did not appear to associate that status with vulnerability, or else it would have produced a differential in favor of fear. In fact, the results showed that those who rated their health higher also had a higher rate of reactions to victimization threat. Possibly, the effect simply reflects caution arising from greater activity outside the home that are not risky and that also were not measured. A self-assessment of health likewise might benefit from better measurement, focusing on specific conditions (e.g., Rader et al., 2020). We expected older respondents to more prone to a fearful response than a cognitive response; however, increasing age was associated with the opposite. While the literature is consistent in showing that older respondents report higher fear, findings regarding the age-perceived risk relationship in fact are more mixed (Hale 1996). This leaves us unsure of whether to interpret the significant effect as meaningful, unless future research replicates this result. We also theorized that prior events and current circumstances (e.g., prior victimization, vicarious victimization), which plausibly evoke a lasting or chronic emotional imprint on the individual, might tip the cognitive-emotive balance towards an emotional reaction. What we in fact found was that neither produced any imbalance. Although unexpected, a deeper investigation of the

literature does offer a plausible explanation. Research has found that the trauma-related effects of victimization (depression, drug use, educational attainment) are more pronounced among those who experience low levels of victimization than those who have experienced repeated victimization (Turanovic, 2019). In our data, we lacked a measure of the long-term history of victimization or exposure to threat among the respondents; however, the result we found is consistent with what one might expect if many respondents had histories of exposure to threat and trauma and had become desensitized to emotional arousal. This interpretation brings us full circle back to the Katzenbach (1967, p. 51) report, which noted with perplexity how "fear of crime is less closely associated with having been a victim than might be supposed," a fact that has elicited comment from researchers in the decades since. Exploring this possibility fully would require longitudinal data, or at least information about lifetime exposure to threat and victimization. For the present, to the degree that mental health symptomology captures prior trauma, those results might be suggestive of the cumulative effects of victimization.

Our research also has methodological implications for the study of alignment and misalignment between emotion- and cognition-based threat reactions. Statistical tools used in previous research could only offer an indirect test (e.g., comparisons of significance among coefficients between different regression models). Osgood and Schreck's (2007) IRT regression method offers a direct test by operationalizing the differential between emotion and cognition as an individual-level variable, adjusting the regression coefficients for differences in the base-rates for the fear and perceived risk items, and centering that differential on the population average. Prior research gave considerable confidence that fear and perceived risk were well-suited to the assumptions of IRT, as our diagnostics confirmed. The fact that fear and perceived risk are related (non-orthogonal) and yet distinct creates data-related challenges, however, which the IRT

method addresses by centering the differential variable, thus isolating what affects the emotive-cognitive composition of threat reactions from what effects the magnitude of threat reactions generally. The IRT method is a strong fit with our theory, where a dominant latent variable (reactions to threat) is composed of two related but distinct dimensions (cognitive and emotive). We do not assert that this method is ideal in every respect. For instance, it was necessary for us to dichotomize fear and perceived risk (originally a 5-point scale, thus losing statistical information) in order to employ the method; however, since the experts are most concerned about those who have the highest threat perceptions, our decision on where to dichotomize focused on the relatively small number of respondents who scored in the highest categories. Similarly, the other advantages of the method appeared to outweigh the drawbacks. Future statistical tests that take the analytic issues we raised into account would significantly advance this literature.

In turning to limitations and possible future directions, the lack of a literature means that there are many questions of interest that we cannot answer. We do not test whether an emotive-cognitive misalignment in fact produces a greater reliance on dangerous choices, diminished quality of life, or inactivity in the face of threat. We also were interested in *threat reactions* and so the question of whether these feelings are accurate with respect to victimization risk, a necessity for "objectively rational" decision-making (Warr, 2000), we cannot say. Additionally, our range of crimes is limited to those within the realm of possibility for a sample of domiciled adults in the United States, and researchers interested in context-specific victimizations or victimizations elsewhere than the United States would need to develop outcomes and predictors that are appropriate. For instance, if domestic violence is of interest, a measure of neighborhood disorder (like trash on the street) has no clear logical connection to that outcome; however, the

underlying reasoning behind disorder could guide the selection of predictors. For instance, someone's perception of the degree of neglect of the physical condition of their neighborhood relates logically with the perception of the degree a partner has neglected the relationship in terms of being unresponsive to bids for attention or affection, for example. Similarly, membership in the Republican Party is only relevant to the United States; however, people right around the world have access to right-wing media promulgating similar messages of threat. While a balanced threat response is ideal, a response to a manufactured crisis—whether or not that response is emotively and cognitively misaligned—is not ideal. Future research should, therefore, explore the contrast between subjective threat responses and actual danger from victimization.

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**Table 1. Hypotheses for Substantive Predictors**

| Predictors | Magnitude of Threat Reaction | Emotive/Cognitive Differential |
|---|---|---|
| Age | + | Emotive |
| Gender (1 = Male) | | Cognitive |
| Children | + | Emotive |
| Street Efficacy | - | Cognitive |
| Low Self-Control | + | Cognitive |
| Mental Health Sympt. | + | Emotive |
| Self-Reported Health | + | Emotive |
| Follows Current Events | + | Cognitive |
| Registered Republican | + | Cognitive |
| Police Efficacy | | Emotive |
| Neighborh. Disorder | + | Cognitive |
| Vicarious Victimization | + | Either |
| Neighborhood Efficacy | - | Emotive |
| Criminal Behavior | + | Cognitive |
| Risky Activities | + | Cognitive |
| Prior Victimization | + | Either |

Note: + indicates higher scores are associated with higher magnitude of threat reactions. "Emotive" or "Cognitive" in the differential column denotes the prevailing pattern associated with the predictor.

"Either" signifies conflicting hypotheses.

**Table 2. Observed probabilities of fear of victimization, perceived risk of victimization, and total threat awareness position on the emotive/cognitive differential**

| | Observed probability of endorsing threat awarness items | | | |
|---|---|---|---|---|
| Relative position on emotive/ cognitive differential | Perceived Risk of Victimization | Fear of Victimization | Overall Threat Recognition | N |
| Predominantly Cognitive Reaction (≥ 1 S.D.) | .82 | .14 | .48 | 15 |
| Balanced Emotive/Cognitive Reactions (> -1 S.D. and < +1 S.D.) | .41 | .55 | .48 | 66 |
| Predominantly Emotive Reaction (≤ -1 S.D.) | .03 | .88 | .46 | 82 |

Note: probabilities are only for respondents giving an affirmative response to between 4 and 9 of the items.

**Table 3. Relationships of explanatory variables to the magnitude of threat reactions and the emotive/cognitive differential, logistic heirarchical linear model**

| | Model 1 | | | | | | | | Model 2 | | | | | | | | Model 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Magnitude of Threat Reaction | | | | Emotive/Cognitive Differential | | | | Magnitude of Threat Reaction | | | | Emotive/Cognitive Differential | | | | Magnitude of Threat Reaction | | | | Emotive/Cognitive Differential | | | |
| | | Odds | | | | Odds | | | | Odds | | | | Odds | | | | Odds | | | | Odds | | |
| Explanatory Variable | γ | Ratio | Sig. | S.E. | γ | Ratio | Sig. | S.E. | γ | Ratio | Sig. | S.E. | γ | Ratio | Sig. | S.E. | γ | Ratio | Sig. | S.E. | γ | Ratio | Sig. | S.E. |
| Demographic | | | | | | | | | | | | | | | | | | | | | | | | |
| Age | .00 | 1.00 | | .01 | -.02 | .98 | ** | .01 | .01 | 1.01 | | .01 | -.03 | .97 | *** | .01 | .01 | 1.01 | | .01 | -.03 | .97 | *** | .01 |
| Gender (1 = Male) | -.10 | .91 | | .18 | -.85 | .43 | *** | .28 | -.21 | .81 | | .18 | -.86 | .42 | ** | .29 | -.25 | .78 | | .18 | -.84 | .43 | ** | .29 |
| White | -.60 | .55 | * | .32 | .85 | 2.34 | * | .46 | -.50 | .61 | * | .29 | .77 | 2.16 | * | .47 | -.44 | .64 | | .30 | .75 | 2.12 | | .48 |
| Black | .10 | 1.11 | | .41 | .97 | 2.64 | * | .54 | -.07 | .94 | | .40 | 1.11 | 3.04 | * | .56 | .04 | 1.04 | | .41 | 1.04 | 2.84 | * | .57 |
| Hispanic | .07 | 1.08 | | .40 | 1.25 | 3.51 | ** | .55 | -.03 | .97 | | .37 | 1.35 | 3.87 | ** | .56 | .00 | 1.00 | | .37 | 1.35 | 3.86 | ** | .57 |
| Low Income | .70 | 2.02 | ** | .24 | -.12 | .89 | | .36 | .29 | 1.33 | | .25 | .22 | 1.25 | | .39 | .19 | 1.21 | | .25 | .28 | 1.32 | | .39 |
| Married/Partnered | -.12 | .89 | | .20 | -.03 | .97 | | .29 | -.18 | .83 | | .19 | -.08 | .93 | | .30 | -.17 | .85 | | .19 | -.07 | .93 | | .30 |
| Children < 18 | .41 | 1.51 | * | .23 | .11 | 1.12 | | .33 | .27 | 1.32 | | .22 | .26 | 1.30 | | .33 | .23 | 1.26 | | .22 | .29 | 1.33 | | .34 |
| Urban Resident | .59 | 1.81 | ** | .22 | -.88 | .42 | ** | .32 | .08 | 1.08 | | .22 | -.66 | .52 | * | .33 | .11 | 1.11 | | .22 | -.68 | .51 | * | .33 |
| Rural Resident | -.13 | .88 | | .23 | -.57 | .57 | * | .35 | -.48 | .62 | * | .22 | -.41 | .67 | | .37 | -.47 | .63 | * | .22 | -.43 | .65 | | .37 |
| Personal Characteristics | | | | | | | | | | | | | | | | | | | | | | | | |
| Street Efficacy | -.59 | .56 | *** | .17 | -.41 | .66 | * | .24 | -.62 | .54 | *** | .16 | -.48 | .62 | * | .25 | -.48 | .62 | *** | .16 | -.58 | .56 | ** | .25 |
| Low Self-Control | .30 | 1.36 | ** | .13 | -.36 | .70 | * | .18 | .18 | 1.20 | | .12 | -.25 | .78 | | .19 | .15 | 1.16 | | .12 | -.23 | .80 | | .19 |
| Mental Health Sympt. | .97 | 2.63 | *** | .12 | -.17 | .84 | | .16 | .69 | 2.00 | *** | .12 | -.06 | .94 | | .17 | .70 | 2.02 | *** | .12 | -.08 | .92 | | .17 |
| Self-Reported Health | .32 | 1.37 | *** | .10 | -.15 | .86 | | .15 | .26 | 1.29 | ** | .10 | -.20 | .82 | | .15 | .24 | 1.27 | ** | .10 | -.19 | .82 | | .15 |
| Information, Risky Experience, and Perceived Risky Environment | | | | | | | | | | | | | | | | | | | | | | | | |
| Follows Current Events | | ------ | | | | ------ | | | -.18 | .84 | * | .10 | -.21 | .81 | | .16 | -.17 | .84 | * | .10 | -.21 | .81 | | .16 |
| Registered Republican | | ------ | | | | ------ | | | .51 | 1.67 | ** | .21 | -.29 | .75 | | .33 | .53 | 1.71 | ** | .20 | -.31 | .74 | | .33 |
| Police Efficacy | | ------ | | | | ------ | | | .04 | 1.04 | | .14 | .15 | 1.16 | | .18 | .04 | 1.04 | | .14 | .15 | 1.16 | | .18 |
| Neighborh. Disorder | | ------ | | | | ------ | | | .85 | 2.35 | *** | .10 | -.33 | .72 | * | .17 | .78 | 2.17 | *** | .11 | -.29 | .75 | * | .17 |
| Vicarious Victimization | | ------ | | | | ------ | | | 1.77 | 5.86 | *** | .25 | -.92 | .40 | ** | .35 | 1.15 | 3.14 | *** | .28 | -.63 | .53 | | .40 |
| Neighborhood Efficacy | | ------ | | | | ------ | | | -.25 | .78 | * | .16 | .22 | 1.25 | | .19 | -.23 | .80 | | .15 | .20 | 1.22 | | .20 |
| Criminal Behavior | | ------ | | | | ------ | | | .53 | 1.69 | * | .29 | -.90 | .41 | ** | .40 | .25 | 1.28 | | .30 | -.79 | .45 | * | .42 |
| Risky Activities | | ------ | | | | ------ | | | .73 | 2.08 | *** | .22 | .08 | 1.08 | | .31 | .45 | 1.56 | * | .22 | .24 | 1.27 | | .34 |
| Prior Victimization | | ------ | | | | ------ | | | | ------ | | | | ------ | | | .54 | 1.72 | *** | .12 | -.23 | .79 | | .17 |

Note: N=1,311; * (p < .05), ** (p < .01), *** (p < .001)

**Appendix A. Survey Items Used to Construct the Dependent and Independent Variables, with Original Coding**

**Dependent Variables**

| | |
|---|---|
| Perceived Risk of Victimization | *Please indicate how likely you think the following will happen in the next 12 months*<br>Someone will take something that belongs to me<br>Someone will break into my residence when I am not at home (i.e., burglary)<br>Someone will force me to give up things while I'm walking in public (i.e., mugging, stick-up, robbery)<br>Someone will punch, kick, slap, or choke me<br>Someone will threaten or harm me with a gun, knife, or some other weapon<br>Someone will touch or harm me in an unwanted sexual manner<br>[Original responses coded as: 1=Not at all likely to 5=Very likely] |
| Fear of Victimization | *Regardless of how likely you think it is these things will happen, please indicate how afraid/worried you are about the following:*<br>Someone taking something that belonged to me<br>Someone breaking into my residence when I am not home (i.e., burglary)<br>Someone will force me to give up things while I'm walking in public (i.e., mugging, stick-up, robbery)<br>Someone punching, kicking, slapping, or choking me<br>Someone threatening or harming me with a gun, knife, or some other weapon<br>Someone touching or harming me in an unwanted sexual manner<br>[Original responses coded as: 1=Not at all afraid 5=Very afraid] |

**Independent Variables**

| | |
|---|---|
| Age | *Birth year, converted to age* |
| Gender | *Gender* [Original responses coded as: 1=man, 2=woman, 3 = nonbinary, 4 = transgender] |
| Race | *Race* [Original responses coded as: 1=White, 2=Black, 3=Hispanic, 4=Asian, 5=Native American, 6=Two of more races, 7=other, 8=Middle Eastern] |
| Income | *Family Income* [Original responses coded as: 1=LT $10,000, 2=$10,000-$19,999, 3=$20,000-$29,999, 4=$30,000-$39,000, 5=$40,000-$49,999, 6=$50,000-$59,999, 7=$60,000-$69,999, 8=$70,000-$79,999, 9=$80,000-$99,999, 10=$100,000-$119,999, 11=$120,000-$149,999, 12=$150,000-$199,999, 13=$200,000-$249,999, 14=$250,000-$349,999, 15=$350,000-$499,999, 16=$500,000 or more] |
| Marital Status | *Marital status* [Original responses coded as 1=married, 2=separated, 3=divorced, 4=widowed, |

| | |
|---|---|
| | 5=never married, 6=domestic/civil partnership] |
| Children < 18 | *Children under 18 in the household* [Original responses coded as 0=no, 1=yes) |
| Urban-Rural Residence | *USDA urban/suburban/rural designation* [Originally coded by YouGov as 1=urban, 2=suburban, 3=rural] |
| Personal Efficacy | *Please indicate the extent to which you agree or disagree with the following statements:*<br>I can avoid fights if I try<br>I can do things to avoid being scared<br>I know how to take care of myself if threatened<br>I am responsible for what happens to me<br>[Original responses coded as: 1=Strongly disagree to 5=Strongly agree] |
| Low Self-Control | *Please indicate the extent to which you agree or disagree with the following statements:*<br>I often act on the spur of the moment without stopping to think<br>I devote much thought and effort to preparing for the future<br>I often do whatever brings me pleasure here and now<br>Sometimes I take a risk just for the fun of it<br>Excitement and adventure are more important to me than security<br>[Original responses coded as: 1=Strongly disagree to 5=Strongly agree] |
| Mental Health | *Please indicate the extent to which you agree or disagree with the following statements:*<br>During the past month, I have been very nervous<br>During the past month, I have been so down in the dumps that nothing could cheer me up<br>During the past month, I have felt worn out<br>During the past month, I have had problems with my sleep<br>[Original responses coded as: 1=Strongly disagree to 5=Strongly agree] |
| Self-Reported Health | *In general, how would you describe your health?*[Original responses coded as 1=excellent, 2=very good, 3=good, 4=fair, 5=poor] |

| | |
|---|---|
| Follows Current Events | *How interested in you, if at all, in politics and current events* [1=most of the time, 2=some of the time, 3=only now and then, 4=hardly at all] |
| Registered Republican | *Party Identification* [Originally coded by YouGov as 1=Democrat, 2=Republican, 3=Independent, 4=Other, 5=Not sure] |
| Police Efficacy | *Please indicate the extent to which you agree or disagree with the following statements:*<br>The police in my community respond quickly to calls for assistance<br>The police in my community support victims and witnesses<br>The police in my community maintain order on streets and sidewalks<br>The police in my community catch people who break the law<br>The police in my community are approachable and easy to talk to<br>The police in my community do a good job supplying information on crime prevention<br>The police in my community treat people fairly<br>The police in my community enforce the law in an unbiased way<br>[Original responses coded as: 1=Strongly disagree to 5=Strongly agree] |
| Neighborhood Disorder | *Please indicate the extent to which you agree or disagree with the following statements:*<br>Litter, broken glass, or trash is a problem in my neighborhood<br>Vacant or abandoned buildings are a problem in my neighborhood<br>People selling/using drugs is a problem in my neighborhood<br>I hear/read news accounts about violence in my neighborhood<br>[Original responses coded as: 1=Strongly disagree to 5=Strongly agree] |
| Vicarious Victimization | *Please indicate the number of times the following things happened <u>in the past 12 months</u>:*<br>Someone used violence against someone I know (i.e., family or friend)<br>[Original responses coded as 1=none, 2=once, 3=2+ times] |

| | |
|---|---|
| Neighborhood Efficacy | *Please indicate the extent to which you agree or disagree with the following statements:*<br>Adults in my neighborhood would confront children spray-painting graffiti on a local building<br>Adults in my neighborhood would call the police on children spray-painting graffiti on a local building<br>Adults in my neighborhood would break up a fight in front of their house where someone was being beaten or threatened<br>Adults in my neighborhood would call the police if they witnessed a fight in front of their house where someone was being beaten or threatened<br>Adults in my neighborhood would lobby government officials if they threatened to close a local school<br>[Original responses coded as: 1=Strongly disagree to 5=Strongly agree] |
| Criminal Behavior | *Please indicate how often you have done the following <u>in the past 12 months:</u>*<br>Hit someone<br>Used a firearm or other weapon in a fight or to threaten someone<br>Damaged someone's property (e.g., graffiti, breaking windows, setting fire, etc.)<br>Took money or property that did not belong to you<br>[Original responses coded as 1=never…5=every day or almost every day] |
| Risky Activities | *Please indicate how often (on how many days), in an average week, you do the following:*<br>Hanging out at friends' homes<br>Attending entertainment venues (e.g., movies, sports games/matches, concerts)<br>Taking public transportation<br>[Original responses coded as 1=0, 2=1, 3=2-3, 4=4-5, 5=6-7] |
| Victimization | *Please indicate the number of times the following things happened <u>in the past 12 months</u>:*<br>Someone took something that belonged to me<br>Someone broke into my residence when I was not home (i.e., burglary)<br>Someone forced me to give up things while walking in public (i.e., mugging, stick-up, robbery) ] Someone punched, kicked, slapped, or choked me<br>Someone threatened or harmed me with a gun, knife, or some other weapon<br>Someone touched or harmed me in an unwanted sexual manner<br>[Original responses coded as 1=None, 2=Once, 3=2+ times] |