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Fight or flight: Integral emotions and violent intentions*

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Abstract

The effect of proximate emotions on risk perceptions is of central importance to criminal decision-making theory, but has been understudied. We investigate the role of two integral (situational specific) emotional responses, anger and fear, in a decision-making context regarding the choice to commit assault. We draw on dual-process models of information processing and appraisal theory to propose a theoretical model in which integral emotions influence decisions and behavior. Using data from an experiment embedded in a survey to a nationwide sample of adults (N = 804), we test the interrelated roles of anger, fear, and traditional rational choice considerations on the intention to commit assault. We find a strong direct association between emotions and intentions to commit assault. Additionally, anger and fear moderate the effect of cognitive deliberations on behavioral intentions and provide a lens through which to evaluate a criminogenic opportunity.

KEYWORDS

appraisal theory, dual-process models, incidental affect, integral affect, offender decision-making

Emotions are a transcendent theme in criminological theory. Under criminological frameworks (e.g., strain theory, reintegrative shaming, and defiance theory), emotions constitute dispositional traits setting the stage for crime while "in-the-moment" processes are ancillary to primary theoretical assumptions (e.g., Agnew, 1992; Cloward & Ohlin, 1960; Sherman, 1993). Arguing for a greater situational

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focus, Nagin (2007) challenged criminologists to broaden the study of emotions to encompass state affect—the momentary experience of motivations, feelings, and emotions (see also Tibbetts, 2014). Toward this end, Nagin proposed state emotions be integrated into models of choice, noting the decision for crime "involves more than cognitive deliberation. It also involves emotion" (2007, p. 264).

At the core of decision-making research is rational choice theory (RCT), in which it is posited that crime results from calculated assessments of costs and benefits (Beccaria, 1963/1764; Bentham, 1988/1789). In such research, scholars have treated actors as strict, economic thinkers who seek to maximize the utility of crime arguing individuals pursue criminal opportunities when the expected benefits outweigh the potential costs (Becker, 1968; McCarthy, 2002). More recently, researchers across a range of domains have relaxed this "strict rational actor assumption" underlying RCT, noting that humans are flawed, lazy thinkers who rely on mental shortcuts (e.g., heuristics) to make difficult decisions easier (e.g., Simon, 1978; Thaler, 2015; Tversky & Kahneman, 1973). This line of thinking has given way to research aimed at examining the situational and momentary factors that influence cognitive evaluations of specific criminal opportunities (Clarke & Cornish, 1985; Cornish & Clarke, 1986; McGloin & Thomas, 2016; Pogarsky, Roche, & Pickett, 2017).

As Nagin (2007) and others have suggested (e.g., Bouffard, Exum, & Paternoster, 2000; Clarke, 2014; van Gelder, Elffers, Reynald, & Nagin, 2014; Warr, 2016), state emotions may play an important role in the way criminal opportunities are evaluated. To be sure, researchers outside of criminology have long suggested the experience of emotions can bound probabilistic estimates and motivate behavior with minimal cognitive effort (Blanchette & Richards, 2010; Loewenstein, 1996, 2000). To date, however, support for the influence of state affect on crime decisions has been mixed. The most popular approach to study emotions and criminal decision-making has been to induce a range of "affective states" (e.g., sexual arousal and negative moods; Ariely & Loewenstein, 2006; Exum, 2002; Kamerdze, Louhgran, Paternoster, & Sohoni, 2014; Lowenstein, Nagin, & Paternoster, 1997) using various priming tasks (see Exum & Zachowicz, 2014).[1] Participants are then queried about perceptions of criminal risks and rewards. The research hypothesis is that emotional states should influence intentions to offend directly and indirectly through changes in risk perceptions. Although findings consistently show a main effect from emotional arousal to offending intentions, expectations that risk perceptions mediate the effect of emotions on offending intentions have not been supported (van Gelder, Reynald, & Elffers, 2014). Carmichael and Piquero (2004) suggested this theoretical inconsistency may be the unintended consequence of the implicit priming tasks, which are incapable of "directly [querying] individuals with regard to their perceived emotional arousal that arises from a particular situation" (p. 378). This is because emotions measured in this manner are *incidental* and unrelated to the intrinsic nature of the crime itself (e.g., Athens, 2005; Katz, 1988; Tedeschi & Felson, 1994).

In the current study, we offer a distinct conceptualization of immediate affect directly linking the experience of emotions to individual characteristics as well as to the context in which decisions are made. We propose that *integral* emotions—momentary affective responses occurring within, and as a result of, a criminal opportunity—influence the decision to offend in specific criminogenic situations. To this end, we present an integrated theoretical model in which we account for two integral emotions (anger and fear), as well as for their influences on the cognitive processes foundational to RCT. The empirical context of our decision-making study is a "bar fight" scenario because violent situations are characterized by an "emotional field of tension and fear" (Collins, 2008, p. 19; see also Carmichael &

[1]Criminologists have long included anticipated emotions, such as expected guilt or shame, into RCT and deterrence models (e.g., Grasmick & Bursik, 1990; Nagin & Paternoster, 1993; Nagin & Pogarsky, 2001). Anticipated emotions result from feelings like regret or remorse after a decision has been made (Piquero, 2017; Warr, 2016). Thus, anticipated emotions are not experienced at the time of the decision and are more akin to economic choice variables than to emotional states (Loewnstein, 2000).

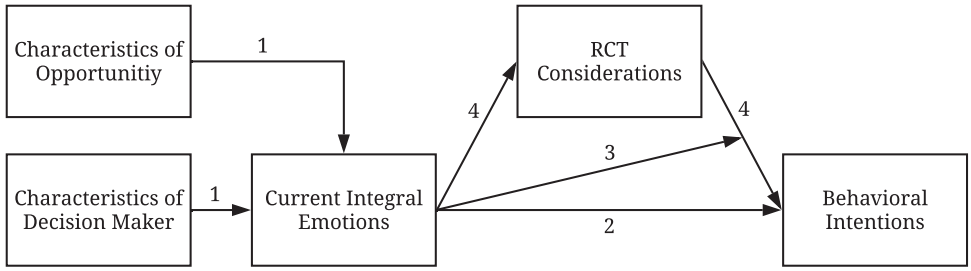

FIGURE 1 Proposed theoretical model

Notes: Although not explicitly depicted in our model, we concede that the characteristics of the decision-maker also influence RCT considerations and behavioral intentions; however, these processes are outside of the current scope. Nonetheless, it is reasonable to expect such influences effect decisions directly, and work through current integral emotions.

Abbreviation: RCT = rational choice theory

Piquero, 2004; Exum, 2002). Next, we outline our theoretical model in which integral emotions, generated *in situ,* influence behavioral intentions directly and by moderating cognitive deliberations, but also indirectly by guiding evaluations of anticipated risks, costs, and benefits from offending. Figure 1 illustrates the theoretical model we unpack in the ensuing sections.

1 | INCIDENTAL VERSUS INTEGRAL EMOTIONS

Offenders often experience emotions during crime opportunities. Such emotions are *incidental* when the experienced feelings are unrelated to the decision-making environment (Blanchette & Richards, 2010). Incidental emotions stem from ambiguous and sometimes unidentifiable sources (e.g., watching the news or the weather), and they share dispositional characteristics highlighted in strain theories (Broidy, 2001). Although scholars have demonstrated that incidental emotions lead to a range of rational and irrational decisions and behaviors, typically, a clear motivational influence is not produced because incidental emotions distort an individual's perceptions in an assimilative manner to comport with their moods (Isen & Shalker, 1982; Pham, 2007). For instance, Dommermuth and Millard (1967) demonstrated that consumers who tasted a beverage after watching a pleasant movie rated the beverage's attributes more favorably than did participants who tasted it after watching an unpleasant movie.

Consider two separate situations in which a stranger spills a drink on a person in a bar. Person A is at the bar celebrating a work promotion, whereas person B is there to "blow off steam" after a bad day. It is plausible that person A would be less likely to respond aggressively to the stranger than person B (e.g., Exum, 2002; Kamerdze et al., 2014). Noncriminological findings on risk-related decision-making, however, indicate that risk is perceived to be higher under negatively valenced emotional states than under positive states (Elster, 1998; Johnson & Tversky, 1983; Slovic & Peters, 2006). Thus, person A, who is happy, might be *more* likely to react aggressively to his or her drink being spilled because person A's perceptions of risk would be based on *optimistic* evaluations (i.e., he or she would view risks, like getting arrested or injured, to be low). This inconsistency resonates with arguments made by Hockey, Maule, Clough, and Bdzola (2000), who noted that even intense incidental emotions do not exert a uniform effect on judgments and decision-making. Instead, the choice for action seems to depend on the interaction between the motivations spurred by emotions and the nature of the risk to be taken

(Pham, 2007). Thus, the ambiguous impact of incidental emotions may help explain why scholars of choice (e.g., Exum, 2002; Loewenstein, Nagin, & Paternoster, 1997), and even strain (e.g, Broidy, 2001; Capowich, Mazerolle, & Piquero, 2001) have consistently identified the main effects between emotions and offending but have only inconsistently linked emotions and higher order cognitions.

Alternatively, *integral* emotional responses are those immediate emotions elicited by perceived or imagined features of a target object in a particular situation (Pham, 2007). Once integral emotions become attached to a target object, they are difficult to detach. Moreover, integral emotions can result in motivating a decision despite cognitive information that would suggest alternative courses of action (e.g., the presence of police; Hsee & Kunreuther, 2000; Lerner, Li, Valdesolom, & Kassam, 2015; Pham, 2007). Integral emotions often lead to strong behavioral responses because unlike incidental influences, they are a direct product (e.g., stemming from the criminal opportunity and from the decision-maker) of the observable decision-making environment (Lerner et al., 2015). The source of current integral emotions is highlighted in path 1 of our theoretical model in figure 1. Consider a situation in which one person attempts to provoke another person into a physical altercation. In such a situation, the actions and physical appearance of the antagonist can elicit integral emotions by shaping the actor's expectations about immediate outcomes (i.e., fight vs. no fight; Collins, 2008; Pham, 2007). Depending on the proximity and nature of the expected outcome, the decision-maker experiences a range of anticipatory influences on current emotions, effectively motivating decisions and behaviors toward a specific end (e.g., throwing the first punch vs. fleeing the scene; see Loewenstein & Lerner, 2003).[2]

One potentially salient and arousing stimuli within the context of a fight is the magnitude of provocation (e.g., verbal vs. physical). As the stimulating provocation increases in proximity and vividness, emotional responses intensify and behavioral motivations become more salient (Nisbett & Ross, 1980; Slovic, Finucane, Peters, & MacGregor, 2002; van Gelder, 2017; see also Copes, Hochstetler, & Forsyth, 2013; Sandberg, Tutenges, & Copes, 2015). The characteristics of the antagonist, like gender, may also play a role in integral emotional experiences and, thus, behavioral responses. Using vignette methodology, scholars have demonstrated that aggressive and frightening antagonistic males tend to arouse greater feelings of integral anger and fear among males and females (Brody, Lovas, & Hay, 1995). Therefore, an actor's emotional and behavioral response to physical provocation is at least partly a product of the provocateur's gender (among other physical characteristics), a point that may be especially relevant during opposite-sex conflicts (Felson, 1996). For instance, if a male experiences lower levels of emotional arousal in response to a female versus a male antagonist, his decision to respond aggressively to the female will be less motivated by emotional experiences than it would be toward a male antagonist (see Brody & Hall, 2008).

The characteristics of the decision-maker also set an emotional baseline by influencing an actor's susceptibility to situational stimuli (Lerner et al., 2015). For instance, actors with more experience in certain situations tend to behave affectively and intuitively rather than thoughtfully and reflectively (Ellsworth, 2013). Furthermore, persons characterized by a willingness to consider risky alternatives (i.e., risk tolerant; Wikström, 2006), or who have low levels of self-control (Gottfredson & Hirschi, 1990), tend to focus on immediate outcomes, effectively increasing the salience of momentary incentives (Loewenstein, 1996; Piquero, Paternoster, Pogarsky, & Loughran, 2011; van Gelder & de Vries, 2012, 2014). In a similar vein, emotional responses to physical provocation may vary by the decision-maker's gender as males are generally more accepting of violence as a result of a greater

[2]We designed our theoretical approach to recognize that additional emotional dynamics are likely. For instance, Pickett, Roche, and Pogarsky (2018) identified situations in which fear resulting from cognitive assessments of risk play an important role in deterrence (see also Loewenstein, Weber, Hsee,& Welch, 2001).

adherence to aggressive norms (Connell & Messerschmidt, 2005; Goody, 1997; Leaper & Friedman, 2007; Messerschmidt, 1993; West & Zimmerman, 1987), whereas females report experiencing greater levels of negative affect when exposed to noxious stimuli more generally (Broidy & Agnew, 1997; Jang, 2007; Kaufman, 1999; Ngo & Paternoster, 2013). In sum, situationally induced *integral* emotions are closer to decision outcomes than are incidental emotions not directly connected to the offending opportunity itself.

2 | VIOLENT INTENTIONS AS A RESULT OF INTEGRAL EMOTIONS AND COGNITIVE DELIBERATIONS

To this point, our discussion has been focused on situational and personal characteristics shaping expectations and eliciting integral emotions. In turn, behavior can be influenced by these integral emotions in one of at least three ways. At the most rudimentary level, strong motivations can be produced by intense integral emotions, prompting behavior with minimal thought (see path 2 of figure 1; Pham, 2007). During a physical altercation, for example, provocation arousing intense anger likely motivates the actor to respond aggressively rather than passively (Carmichael & Piquero, 2004; Copes et al., 2013; Hochstetler, Copes, & Forsyth, 2014) and vice versa for intense fear (Cusson, 1993; Wikström, Tseloni, & Karlis, 2011). This process is consistent with hostile attribution bias (Dodge, Bates, & Pettit, 1990). As the experienced "hostile" emotion increases, an actor tends to increase the "hostile intent" attributed to the provocateur, which makes them more apt to respond aggressively, net of potential consequences (Steinberg & Dodge, 1983).

Integral emotions can also influence behavior indirectly by leading individuals to overvalue, undervalue, and even ignore potential risks, costs, and benefits associated with specific behaviors. This process is highlighted by path 3 in figure 1, which illustrates a conditional effect of emotions on associations between cognitions and behavioral intentions. Insights from dual-process theories are relevant here (e.g., Mamayek, Loughran, & Paternoster, 2017; van Gelder & de Vries, 2012, 2014). The core assumption of this approach is that human behavior, judgment, and reason are governed by two qualitatively distinct, but complementary, modes of mental processing (van Gelder, 2013). Importantly, although a range of dual-systems models exists (see Chaiken & Trope, 1999; Frankish, 2010; Kahneman, 2011), we draw on models in which behavior is attributed to the interrelationship between cold *deliberative* processes in which opportunities are assessed through a self-serving, goal-based perspective and hot *affective* processes driven by motivational mechanisms encompassing emotions (Loewenstein & O'Donoghue, 2004; see also DiMaggio, 2002; Hsee & Rottenstreich, 2004; Metcalfe & Mischel, 1999; Shiffrin & Schneider, 1977). Whereas the deliberative system is controlled, calculative, and cognitively effortful (generally in line with economic choice models), the affective system is automatic, myopic, and needs minimal cognitive effort (van Gelder, 2013). The interplay between these two systems helps explain why persons engage in self-defeating behavior even when potential consequences are understood (e.g., substance misuse; Wiers, Ames, Hofmann, Krank, & Stacy, 2010).

In dual-process models, it is posited that decision-makers often have "two minds" on intertemporal choices—"decisions that involve tradeoffs between future and current costs or rewards" (Loewenstein & O'Donoghue, 2004, p. 23). At times, people are myopic; they eat highly caloric foods, consume addictive drugs, and forego contraception, while fully aware these behaviors are not in their self-interest. Here, the affective system is responsive to immediate, short-term payoffs, whereas in the deliberative system, factors related to both the short and the long term are evaluated (Loewenstein & O'Donoghue, 2004; Metcalfe & Mischel, 1999). The likelihood of a myopic choice increases as the intensity of the affective input increases, which shifts attention toward immediate rewards, effectively

limiting the consideration of deliberative inputs regarding future outcomes (Andenaes, 1966; Metcalfe & Mishel, 1999; Zimring & Hawkins, 1973). To illustrate, most people are consciously aware of the long-term consequences associated with assaulting a stranger (e.g., arrest, injury, and anticipated shame), even when provoked. The level of consideration given to this information during mental processing, however, depends on the intensity of *emotional* inputs tied to the behavioral setting. For example, if a person experiences intense anger as a result of provocation, the affective system may impulsively "take over" to motivate immediate action toward a functional end (e.g., physical retaliation), which leads the actor to discount future consequences (e.g., arrest) in favor of immediate anticipated benefits (e.g., satisfaction; Carmichael & Piquero, 2004; van Gelder et al., 2014; Zimring & Hawkins, 1973). And although these processes illustrate how the two systems can confuse one another to cause narrow-minded decisions, it is also possible decisions are strengthened when the affective and deliberative systems coincide (van Gelder, 2013).[3]

Integral emotions can also provide "informational input" by triggering a confirmatory search for information that supports the initial feelings, called "appraisal tendencies" (Bouffard, 2014; van Gelder, 2017). In appraisal theory, these tendencies are "goal directed processes through which emotions exert effects on judgments and decisions until the emotion-eliciting problem is resolved" (Lerner et al., 2015, p. 805). Such appraisals become a "perceptual lens" for interpreting subsequent situations in specific ways (Lerner et al., 2015). Depending on the discrete qualities of the experienced emotion, actors base perceptions of risk on feelings of certainty and control. Evaluations of risk are generally perceived to be lower when persons believe they are certain about, and in control of, situational outcomes; the opposite is true when they are not (Fox & Tversky, 1995; Frijda & Zeelenberg, 2001). The processes underscored in appraisal theory are represented by path 4 in figure 1 in which behavior is influenced by integral emotions through cognitive deliberations.

According to appraisal theorists, the experience of anger prompts feelings of certainty and control regarding a given situation. Thus, when an actor is angry, his or her angered perceptual lens leads the actor to evaluate risks and costs as low and immediate benefits as high. The experience of fear, on the other hand, evokes a sense of uncertainty and lack of control. Through a fearful lens, an actor tends to perceive risk as high and immediate benefits as low (Lerner & Keltner, 2000, 2001). Here, the effects of integral anger and fear on situational decision-making dovetail with the notion of ambiguity aversion (Ellsberg, 1961; Loughran, Paternoster, Piquero, & Pogarsky, 2011). If the experience of anger lends feelings of certainty and control, experiencing anger also necessarily entails less perceived ambiguity about risks. According to scholars of ambiguity aversion (e.g., Fox & Tversky, 1995), actors who experience less ambiguity about risk are less likely to be deterred by risk. In contrast, if fear leads to a sense of uncertainty and loss of control, this feeling of ambiguity inflates perceptions of risk, indirectly deterring actors from risk-taking behavior. Therefore, when the actions (and physical appearance) of a provocateur arouse anger, the risks associated with problem-solving behaviors (e.g., assault) are perceived as low and less ambiguous, strengthening the choice to fight. Conversely, the experience of fear results in feelings of uncertainty, thereby increasing perceptions of risk, motivating passive behaviors (e.g., leaving the situation). In this way, the divergent motivational properties of anger and fear incite "fight or flight" behaviors (Izard, 2013; Panksepp, 2004) by influencing whether an actor perceives a criminal opportunity as having more or less risks and/or benefits.

[3]For example, van Gelder and de Vries (2014) demonstrated that the perceived experience of integral fear based on a criminogenic scenario inhibits the intention to offend, net of risk perceptions. Moreover, the authors demonstrated that under certain circumstances, an actor might base his or her offending decision primarily on affective integral inputs. Pickett and colleagues (2018) further demonstrated that "fear of arrest" significantly deters intentions to commit multiple types of offenses. A similar pattern of findings has emerged across qualitative studies (e.g., Jacobs & Cherbonneau, 2017; Topalli & Wright, 2014).

TABLE 1 Hypotheses

Set #1	a. Situational characteristics (i.e., level of provocation, gender of provocateur) will be associated with reported levels of integral anger and fear.
	b. Background characteristics (e.g., experience, self-control, risk preferences, gender) will be associated with reported levels of integral anger or fear.
Set #2	a. Integral anger will be positively associated with intentions to behave aggressively (i.e., yell insults, shove, and assault).
	b. Integral anger will be negatively associated with intentions to behave passively (i.e., ignore, leave the situation, and get help).
	c. Integral fear will be positively associated with intentions to behave passively.
	d. Integral fear will be negatively associated with intentions to behave aggressively.
Set #3	a. Integral anger will moderate the effect of deliberative evaluations of risks, costs, and benefits on intentions to commit assault, such that increased anger will reduce the effect of risks and costs (i.e., arrest, injury, anticipated shame) and increase the effect of benefits (i.e., satisfaction).
	b. Integral fear will moderate the effect of deliberative evaluations of risks, costs, and benefits on intentions to commit assault, such that increased fear will increase the effect of risks and costs and decrease the effect of benefits.
Set #4	a. The effect of integral anger on intentions to commit assault will be mediated by situational perceptions of risks, costs, and benefits, such that increased anger will be associated with decreased perceptions of risks and costs (i.e., arrest, injury, anticipated shame) and increased perceptions of benefits (i.e., anticipated satisfaction).
	b. The effect of integral fear on intentions to commit assault will be mediated by situational perceptions of risks, costs, and benefits, such that increased fear will be associated with increased perceptions of risk and costs and decreased perceptions of benefits.

Note: Hypotheses correspond with paths 1–4 in our proposed theoretical model (see figure 1).

In sum, we have outlined how behavior is influenced by integral emotions in three ways. Our corresponding empirical expectations are highlighted in table 1. In general, we expect that integral emotions are momentarily aroused based on the characteristics of the criminal opportunity, as well as based on the decision-maker's characteristics within that opportunity (set 1). Such effects are direct insofar as the motivation to offend is enhanced by emotional activation (set 2). But the relationship may also be conditional as the effect of RCT variables on behavioral intent is moderated by integral emotions (set 3), and indirect as integral emotions operate through perceptions of risk, costs, and benefits (set 4).

3 | METHOD

3.1 | Data

To test our hypotheses, we administered an online survey during the fall of 2017 to a nationwide sample of adult (18 years of age and older) U.S. residents. Although criminological RCT researchers have commonly employed experimental studies on samples of college students (Bouffard, 2002; Carmichael & Piquero, 2004; Kamerdze et al., 2014; van Gelder & de Vries, 2014), increasingly decision-making researchers have turned to online samples (Pickett, Roche, & Pogarsky, 2018; Pogarsky et al., 2017). The participants were recruited from Amazon's Mechanical Turk™ (MTurk™). MTurk samples are widely used in academic research (e.g., Dowling & Wichowsky, 2015; Ratner, Dotsch, Wigboldus, van Knippenberg, & Amodio, 2014). Scholars have shown that MTurk samples can be used to produce accurate inferences about the direction and approximate magnitude of relationships between variables

compared with the probability samples of the American public (Mullinix, Leeper, Druckman, & Freese, 2015; Weinberg, Freese, & McElhatten, 2014). To improve the quality of data, we followed all standard practices for using MTurk samples (Peer, Vosgerau, & Acquisti, 2013).[4] Specifically, we limited participation to workers who resided in the United States, had approval ratings of at least 95 percent (meaning that 95 percent of human intelligence tasks (HITS) attempted by workers were approved by requesters), and had completed 100 or fewer prior HITs. Additionally, we assigned a "qualification code" to all workers who had ever participated in the authors' HITs. To ensure workers had limited experience with our line of research, we limited participation to workers who had not previously been assigned our qualification code. In other words, workers who participated in this study had never participated in any HITs previously published by the authors.[5]

We embedded in the survey an experimental vignette regarding a hypothetical bar-fighting scenario to elicit situational emotional experiences, perceptions of risks, costs, benefits, and intentions to engage in passive and aggressive behaviors. The rate of missing data for this survey was low. A total of 840 workers began the survey, and 833 (99 percent) finished it. After excluding cases with item nonresponse on key variables, the analytic sample was reduced to 804 (see table 2). Our sample is highly consistent with that used in prior research with MTurk samples in terms of race, age, and education (e.g., Levay, Freese, & Druckman, 2016; Pickett et al., 2018; Shank, 2016). Our sample majority is younger, more educated, and contains a larger proportion of Whites compared with overall the U.S population.

3.2 | Procedure

The goal of the current study was to test the role *situationally induced* integral emotions play in decisions to engage in a range of (passive and aggressive) behaviors in response to provocation. Scholars interested in the association between affect and cognition in criminal decision-making have generally primed study participants to experience *incidental* emotions prior to vignettes and outcome measures (e.g., Exum, 2002; Kamerdze et al., 2014; Loewenstein et al., 1997). An important strength of the aforementioned methodology is that participants evaluate vignettes in a "hot" emotional state. Although the findings from these studies highlight the role of affect during theory testing (see Nagin, 2007), integral emotions are not addressed. That is, these incidental affective states stem from indirect priming tasks *before* exposure to decision-making scenarios, which may help explain the lack of empirical support linking affective and cognitive processes in prior criminological studies. Therefore, rather than priming emotions before the decision task, we measure participants' emotional responses to a criminal scenario *after* reading a vignette (Carmichael & Piquero, 2004; van Gelder & de Vries, 2012). We believe the use of this approach helps capture momentary emotional responses directly tied to the characteristics of the opportunity.[6]

We employed a 2 × 2 factorial design similar to that of Nagin and Paternoster (1993, 1994) to examine the interplay of affective and cognitive responses to provocation. The vignette involves an antagonistic (male or female) character who attempts to provoke (verbally or physically) a physical fight

[4]For a broad description of MTurk, HITs, and workers, see Sheehan and Pittman (2016).

[5]This does not preclude the possibility that workers have participated in other experimental studies that were similar to the current project (Chandler, Mueller, & Paolacci, 2014). Hauser, Paolacci, and Chandler (2018) suggested that nonnaiveté among MTurk workers may be an issue when the HIT involves popular tests (e.g., the Cognitive Reflection Test) that, with experience, workers may learn how to execute. Meyer, Zhou, and Fredrick (2018), however, suggested that exposure to CRT tasks does not necessarily improve test scores. The current experiment does not contain tasks designed to "test" workers; rather, we are interested in emotional responses to stimuli. Thus, nonnaiveté may be less of a concern in this study.

[6]Researchers have suggested that respondents can forecast the valence of their future emotions and specific emotional reactions in future situations (Wilson & Gilbert, 2003; see also Ellsworth, 2013).

TABLE 2 Summary statistics and experimental findings

	Descriptives		Situational Experimental Conditions				
	Full Sample ($N = 804$)		Group 1: Male, Push ($N = 201$)	Group 2: Female, Push ($N = 202$)	Group 3: Female, Insult ($N = 201$)	Group 4: Male, Insult ($N = 200$)	
Variables	Mean or % (SD)	Range	Mean or %	Mean or %	Mean or %	Mean or %	*p* values
Situational Outcomes							
Yell	5.93 (3.35)	1–11	6.66	5.44	5.59	6.03	.001
Push	4.01 (3.00)	1–11	5.09	3.67	3.23	4.05	.000
Punch (Assault)	3.48 (2.91)	1–11	4.32	2.94	2.27	3.81	.000
Ignore	6.54 (3.24)	1–11	5.74	6.92	3.11	6.37	.000
Leave	7.17 (3.13)	1–11	7.25	7.13	7.17	7.14	.979
Help	6.01 (3.45)	1–11	6.57	5.38	5.46	6.65	.000
Situational Predictors							
Integral Anger	5.82 (1.65)	1–7	5.96	5.68	5.74	5.92	.231
Integral Fear	4.75 (2.02)	1–7	5.28	4.56	4.13	5.02	.000
Likelihood of Arrest	4.99 (1.82)	1–7	4.57	5.10	5.50	4.75	.000
Likelihood of Injury	4.50 (1.93)	1–7	4.84	4.07	4.01	5.09	.000
Anticipated Shame	4.02 (2.01)	1–7	3.40	4.52	4.56	3.59	.000
Anticipated Satisfaction	3.78 (2.24)	1–7	4.32	3.39	3.23	4.17	.000
Background Characteristics							
Fighting Preference	3.15 (1.66)	1–7	—	—	—	—	.344
Low Self-Control	2.45 (.75)	1–5	—	—	—	—	.773
Fighting Experience	52.09%	0–1	—	—	—	—	.167
Vicarious Fighting Experience	59.66%	0–1	—	—	—	—	.668
Prior Arrest	20.02%	0–1	—	—	—	—	.784
Vicarious Arrest	55.23%	0–1	—	—	—	—	.707
Male	45.49%	0–1	—	—	—	—	.850
Non-Hispanic White	82.33%	0–1	83.25%	84.39%	75.49%	87.00%	.016
Age	35.02 (10.94)	18–65	—	—	—	—	.394
Education	4.18 (1.27)	1–6	—	—	—	—	.808

Notes: *p* values from ANOVAs testing between-group means across situational conditions. Pairwise comparisons with Bonferroni-corrected alpha level of .01 to account for multiple testing reveal the following groups differed for fear and rational considerations measures: 1 vs. 2, 1 vs. 3, 3 vs. 4; and group 1 vs. 4 differed for fear. Standard deviation omitted for dichotomous variables.
Abbreviations: SD = standard deviation (omitted for dichotomous variables).

in a bar-room setting. We used a bar-fight scenario for two reasons. First, the results of several RCT and deterrence studies comprising a similar scenario have demonstrated that cognitive deliberations impact the decision to commit assault (Armstrong & Boutwell, 2012; Carmichael & Piquero, 2004; Exum, 2002; Nagin & Paternoster, 1993, 1994). Second, scholars of interpersonal violence have highlighted the motivating role of emotions in response to provocation (Collins, 2008; Copes et al., 2013). The vignette with experimental manipulations underlined appears as follows:

Imagine you are at a local bar with a group of friends. You are minding your own business when all of a sudden, a [man/woman] you do not know bumps into you spilling your drink. To your surprise, the [man/woman] gets in your face and starts yelling at you for being in [his/her] way. The [man/woman] then gets extremely close to you, calls you a "bitch," [pushes you,] and challenges you to a fight.

Two aspects of the study design are intended to produce differences in integral affective responses. First, by randomly assigning participants to experimental conditions, we assume equality across treatment groups, which is primarily confirmed in table 2 (Mutz, 2011). This is important because it implies neutral affective states prior to reading the vignettes, and therefore, differences in reported levels of integral emotions can mainly be attributed to the experimental manipulation (Auspurg & Hinz, 2015). Differences in affective measures could indicate participants subsequently rated risks, costs, benefits, and behavioral intentions in an aroused state. Second, we manipulated two situational factors commonly found to have an influence on emotional states during interpersonal conflicts. The evidence consistently demonstrates that integral emotions are highly subject to the intensity, proximity, and vividness of a provoking stimulus (Frijda, 1988; Lazarus, 1991; Slovic & Peters, 2006). Thus, the level of provocation was manipulated so that respondents were randomly presented with verbal only or verbal and physical. Next, we randomly varied the gender of the provocateur. Scholars have demonstrated that the affective evaluations of the situation are greatly influenced by the gender of an antagonistic character (Brody & Hall, 2008; Brody et al., 1995). Furthermore, the presence of gender manipulations increases internal validity for females in same-sex encounters (Irwin & Adler, 2012) and allows for important social comparisons between same-sex and opposite-sex conflicts (Felson, 1996; Sandberg et al., 2015).

3.3 | Integral emotions

Immediately after the vignette, we captured integral emotional responses using a measurement strategy adapted from van Gelder and de Vries (2012). Respondents rated how much they agreed or disagreed that the situation would make them feel angry, irritated, frightened, and nervous (presented in random order) where 1 = strongly disagree and 7 = strongly agree. The results of factor analysis confirmed two distinct emotional constructs—anger λ (*angry* = .941; *irritated* = .951; *frightened* = .108; *nervous* = .230) and fear λ (*frightened* = .965; *nervous* = .940; *angry* = .184; *irritated* = .145). We averaged the two anger (α = .92) and fear (α = .93) items to create two integral emotion scales on which higher scores indicated greater emotions.

3.4 | Rational choice considerations

Hypotheses derived from dual-process models and appraisal theory underscore the role of rational choice mechanisms in the association between integral affect and behavioral intentions. Toward this end, we queried respondents about perceptions of risks, costs, and rewards. After reporting on emotions, participants were instructed to imagine they "punched" the hypothetical provocateur under the specified circumstances in the scenario. Respondents then reported how likely (= 1) or unlikely (= 7) it is that this action would result in the following outcomes: being *arrested*, *injured*, *losing respect* from their friends and family, and experiencing *guilt* or *shame*. Loss of respect and anticipated guilt were highly correlated (r = .68) and produced similar results in multivariate analyses. We averaged the two items to create an *anticipated shame* scale (α = .80). We measured anticipated rewards by asking respondents how *satisfying* or unsatisfying it would be to punch the provocateur

under the specified conditions. Scores for the four perceptual measures (i.e., arrest, injury, anticipated shame, and satisfaction) were reverse-coded—higher scores indicate greater perceptions of risks and rewards.

3.5 | Behavioral intentions

We queried about intentions to engage in six "fight or flight" behaviors based only on the circumstances described in the vignette. Specifically, respondents rated "the percent chance (or chances out of 100)" they would do the following: "*yell* insults back at the [man/woman]"; "push the [man/woman]"; "*punch* the [man/woman]"; "*ignore* the [man/woman]"; "*leave* the bar to get away from the [man/woman]"; and "ask someone for *help* in dealing with the [man/woman]". Behavioral options were presented in random order and measured with an ordinal scale that ranged from 1 (0 percent chance) to 11 (100 percent chance). It is possible that measurement error is introduced in the "flight" behaviors as ignoring someone or seeking help is somewhat ambiguous in nature and could even be taken as passive–aggressive behaviors.[7] Nonetheless, we are fairly confident we tap into two distinct behavioral constructs. The results of exploratory factor analyses show that yell, push, and punch ($\lambda = .77$, .90, and .85), and leave and seek help ($\lambda = .78$ and .87), load cleanly on separate aggressive and passive factors, respectively. Although the factor loadings for ignore were less clear ($\lambda = –.41$ on the aggressive behavioral factor including yell, push, punch; $\lambda = .56$ on the passive behavioral factor), the results of bivariate correlations show that the three aggressive and three passive behaviors are significantly and positively intracorrelated and negatively intercorrelated (see table A1 in the appendix at the end of this article).

3.6 | Background characteristics

Finally, we captured several background characteristics that have been proposed to play a role in the experience of integral emotions, decision processes, and aggressive tendencies. A particularly important characteristic is the respondent's preference for fighting. We draw on prior RCT and deterrence research to operationalize *fighting preference* as a person's general willingness to consider a criminal opportunity (Pogarsky, 2002; Wikström et al., 2011). Prior to the hypothetical vignette, respondents were asked whether they would ever consider punching a stranger who 1) insulted them and 2) pushed them (Pickett et al., 2018). After each query, respondents were presented with a 7-point scale anchored with "no" and "yes". The two items were averaged to create a scale in which higher scores represented a greater willingness to consider punching a stranger ($\alpha = .76$). We also accounted for a broader construct of criminal propensity by employing Gottfredson and Hirschi's (1990) concept of *low self-control*. Toward this end, we averaged six items from the Grasmick, Tittle, Bursik, and Arneklev (1993) scale tapping into each dimension of self-control: 1) Act on the spur of the moment without stopping to think; 2) do whatever brings pleasure here and now; 3) frequently try to avoid difficult projects; 4) look out for self; 5) lose temper easily; and 6) when angry, people better look out ($\alpha = .71$).[8] Prior experience (personal and vicarious) with offending and offending consequences are central variables in deterrence and RCT models (Anwar & Loughran, 2011; Stafford & Warr, 1993). Therefore, we include several experience variables. *Prior fighting* captured whether respondents had ever been in a physical

[7]We thank an anonymous reviewer for raising this possibility.

[8]We thank an anonymous reviewer for suggesting the possibility that the two anger-based items from the self-control scale may present statistical issues in analyses in which our integral anger measure is also used as a predictor. We estimated multivariate models with a 4-item measure of self-control, leaving out the anger/temper items, which rendered substantively similar results to the 6-item self-control measure. Furthermore, small bivariate correlations between the full self-control scale and integral anger ($r = .076$) and fear ($r = —.043$) indicate there is minimal overlap between constructs in our data.

TABLE 3 Bivariate correlations between integral emotions and background characteristics

Variable	1	2	3	4	5	6	7	8	9	10	11	12
1. Anger	1.00											
2. Fear	.34*	1.00										
3. Fighting Preference	.11*	–.27*	1.00									
4. Low Self-Control	.08*	–.04	.35*	1.00								
5. Fighting Experience	–.03	–.34*	.31*	.16*	1.00							
6. Vicarious Fight	.02	–.15*	.19*	.06	.27*	1.00						
7. Prior Arrest	.02	–.14*	.19*	.12*	.27*	.16*	1.00					
8. Vicarious Arrest	.07*	–.07	.16*	.05	.26*	.27*	.30*	1.00				
9. Male	–.14*	–.27*	.19*	.06	.28*	.15*	.09*	–.09*	1.00			
10. Non-Hispanic White	.02	.18*	–.11*	–.06	–.11*	–.01	.00	–.04	–.07*	1.00		
11. Age	.05	.12*	–.13*	–.18*	.02	–.07*	.03	.05	–.08*	.11*	1.00	
12. Education	–.04	.13*	–.18*	–.16*	–.20*	–.13*	–.21*	–.23*	.03	.04	.17*	1.00

Notes: $N = 804$.
*$p < .05$.

fight (yes = 1). *Vicarious fighting* captured whether any of the respondents' close friends had ever been in a physical fight (yes = 1). We also included dichotomous measures for *personal* and *vicarious arrest* (yes = 1). Lastly, we measured respondent gender (male = 1), race (non-Hispanic White = 1; non-White = 0), age in years (18–65), and educational attainment (1 = less than high-school degree, 6 = graduate degree). Summary statistics are included in table 2.

4 | RESULTS

We begin with the first set of hypotheses in which we test whether integral emotions are responsive to both situational and background characteristics. Table 2 presents analyses of variance (ANOVAs) testing between-group means in integral anger and fear across four experimental conditions. The results demonstrate partial support for hypothesis 1a. Integral fear is influenced by situational conditions (F (3, 800) = 13.55, $p < .001$). Pairwise comparisons with Bonferroni-corrected alpha levels ($\alpha = .01$) show reported fear significantly varies across all comparison groups with the greatest difference between groups exposed to male-push provocation (Group 1) compared with female-insult provocation (Group 3; HSD = 8.33, $p < .001$). Although significant between-group differences did not emerge for anger (F (3, 800) = 1.44, $p = .231$), respondents rated anger higher than fear across all conditions. It seems any provocation increases integral anger in our sample, and the anger experienced is slightly greater when the provocateur is male. We also hypothesized that the experience of integral anger or fear can be influenced by personal characteristics (hypothesis 1b). Table 3 presents bivariate correlations between emotions and personal characteristics. As expected, respondents with increased fighting preferences, lower self-control, and vicarious arrest experience reported increased levels of integral anger. Respondents with fighting preferences and experience with fighting and getting arrested reported lower levels of integral fear. Females reported greater levels of both integral anger and fear than males, and older non-Hispanic White participants with higher levels of education reported greater levels of integral fear.

We now turn to the associations between situational emotions and behavioral intentions (hypotheses 2a–2d). The first step is to test whether situational intentions to respond to provocation are a function

TABLE 4 OLS regressions predicting aggressive and passive behavioral intentions ($N = 804$)

	Situational Behavioral Outcomes					
Variable	Model 1: Yell	Model 2: Push	Model 3: Punch (Assault)	Model 4: Ignore	Model 5: Leave	Model 6: Seek Help
Integral Anger	.190***	.071*	.111***	−.110**	−.098**	−.066
Integral Fear	−.095**	−.079*	−.166***	.089*	.362***	.243***
Situational Characteristics						
Insulted Only (reference)	—	—	—	—	—	—
Insulted and Pushed	.049	.131***	.071*	−.072*	−.027	−.031
Female Antagonist (reference)	—	—	—	—	—	—
Male Antagonist	.115***	.173***	.201***	−.137***	−.035	.151***
Fighting Preference	.247***	.371***	.394***	−.249***	−.197***	−.068
Low Self-Control	.158***	.141***	.147***	−.099**	−.071*	−.047
Fighting Experience	.003	.053	.059	−.021	−.005	−.024
Vicarious Fighting Experience	.086**	−.048	−.058	−.042	−.008	−.018
Prior Arrest	−.008	−.014	.006	−.026	−.077*	−.087**
Vicarious Arrest	.039	.032	.060	−.019	.016	.069
Male	−.201***	−.158***	−.101**	.115**	−.041	−.184***
Non-Hispanic White	−.017	−.032	−.014	−.053	−.0162	−.030
Age	−.031	−.050	−.055	−.066	.049	−.014
Education	−.003	.032	−.001	−.014	.003	.077*
Adjusted R^2	.23	.28	.36	.15	.24	.19

Note: Standardized coefficients are shown.
*$p < .05$; **$p < .01$; ***$p < .001$ (two-tailed).

of integral emotions—anger and fear. Table 4 presents standardized coefficients from a series of ordinary least-squares (OLS) regression models in which six behavioral intentions (yell, push, punch, ignore, leave, and get help) are predicted. Net of controls, there is a significant positive association between integral anger and intentions to behave aggressively (yell, push, and punch) and a significant negative association between integral anger and two passive intentions (ignore and leave). Conversely, there is a significant negative association between integral fear and aggressive behavior and a positive association between fear and all three passive behaviors. These results show support for our second set of hypotheses, in which the experience of integral anger leads to excitatory motivations, whereas the experience of fear leads to inhibitory influences.[9]

In the next set of analyses, we tested whether the effect of rational deliberations on intentions to commit assault were moderated by integral anger and fear, which is consistent with dual-process expectations (hypotheses 3a and 3b). Table 5 presents standardized coefficients from four OLS

[9]Note that there is a significant negative association between being male and all three aggressive behaviors. We believe that this logical inconsistency is mainly a product of our gender manipulations. This point is bolstered by the positive and significant correlations between being a male and increased fighting preferences ($r = .19$) and personal fighting experience ($r = .28$). Furthermore, separate equations for male and female conditions were in line with that used in prior works: male antagonist—being male is significant and positive ($N = 398$, $\beta = .096$, $p < .05$); female antagonist—male is significant and negative ($N = 406$, $\beta = -.294$, $p < .001$). Please see our supplementary analyses in the online supporting information for further discussion. Additional supporting information can be found in the listing for this article in the Wiley Online Library at http://onlinelibrary.wiley.com/doi/10.1111/crim.2019.57.issue-4/issuetoc

TABLE 5 Moderation models predicting intentions to commit assault ($N = 804$)

Variable	DV = Intention to Commit Assault			
	Model 1	Model 2	Model 3	Model 4
Integral Anger	.116***	.119***	.069*	.065*
Integral Fear	−.140***	−.184***	−.065	−.135***
Situational RC Perceptions				
Likelihood of Arrest	−.092**	—	—	—
Likelihood of Injury	—	.004	—	—
Anticipated Shame	—	—	−.218***	—
Anticipated Satisfaction	—	—	—	.321***
Interaction Terms				
Arrest by Anger[a]	−.078*	—		—
Arrest by Fear	.134***	—	—	—
Injury by Anger	—	−.001	—	—
Injury by Fear	—	−.058	—	—
Shame by Anger	—	—	−.146***	—
Shame by Fear	—	—	.188***	—
Satisfaction by Anger	—	—	—	.091**
Satisfaction by Fear	—	—	—	−.112***
Situational Characteristics				
Insulted Only (reference)	—	—	—	—
Insulted and Pushed	.061*	.074*	.053	.056*
Female Antagonist (reference)	—	—	—	—
Male Antagonist	.171***	.202***	.110***	.125***
Fighting Preference	.378***	.389***	.337***	.292***
Low Self-Control	.147***	.145***	.141***	.097**
Fighting Experience	.057	.057	.060	.049
Vicarious Fighting Experience	−.051	−.053	−.049	−.050
Prior Arrest	.005	.000	−.009	−.015
Vicarious Arrest	.070*	.058	.064*	.055
Male	−.068*	−.094*	−.015	−.034
Non-Hispanic White	−.023	−.010	−.015	−.017
Age	−.048	−.056	−.044	−.028
Education	−.009	−.011	−.008	−.025
Adjusted R^2	.38	.36	.44	.45

Notes: Standardized coefficients are shown. Variables included in each interaction term were mean centered prior to model estimation in order to limit collinearity.

Abbreviations: DV = dependent variable; RC = rational choice.

[a]With the exception of the interaction between perceived arrest and anger ($t = –2.45$; $p = .014$), all interaction terms are robust to adjustments for multiple significance tests using Bonferroni-corrected alpha level of .01.

*$p < .05$; **$p < .01$; ***$p < .001$ (two-tailed).

regression models in which situational intentions to commit assault are predicted. The models presented in table 5 were designed to build on the assault model (model 3) from table 4 by incorporating a main effect for risk–reward perceptions, as well as two multiplicative terms interacting fear and anger with perceptual measures, while adjusting for multiple comparisons. As hypothesized, significant interaction terms emerged for arrest by both anger and fear (model 1), anticipated shame by anger and fear (model 3), and anticipated satisfaction by anger and fear (model 4). The effect of the likelihood of injury was not conditioned by either integral emotion (model 2).

Figure 2 shows the predicted marginal effects of the interactions of anger and fear with perceived arrest, shame, and satisfaction on assault intentions (excluding perceived injury). All marginal effects are in the expected direction. Specifically, as anger increases, the mean effects of perceived arrest and shame are associated with greater intentions to commit assault, indicating that the experience of anger leads to a reduced protective effect of these risk perceptions on assault intent.[10] Relatedly, as anger intensifies, the mean effect of anticipated satisfaction is associated with increased intentions to commit assault, which indicates that the feeling of anger can exacerbate the salience of rewards for assault. Conversely, as fear intensifies, the mean effect of perceived arrest, shame, and satisfaction is associated with decreased intentions to commit assault. It is worth noting that the effect sizes for coefficients derived from moderation models are moderate. Our findings, however, remain theoretically consistent and substantively meaningful. In this sense, increases in the intensity of fear seem to aggravate the risks of assault while mitigating the rewards, whereas increases in the intensity of anger mitigate the effects of risk and aggravate perceptions of reward.

Finally, we examine whether cognitive appraisals of risk, costs, and rewards mediate the relationship between integral emotions and intentions to commit assault as proposed by appraisal theorists (hypothesis 4a and 4b). We conducted this analysis in two steps. First, we estimated a series of OLS regression equations in which cognitive appraisals of risk, cost, and reward (i.e., arrest, injury, shame, and satisfaction) were independently regressed on situational anger and fear (net of controls) to explore whether mean levels of emotions were associated with mean levels of risk perceptions. Figure 3 contains graphical depictions of the pertinent standardized coefficients from each of these linear regression models. Generally, the associations between integral emotions and rational considerations are in theoretically and logically informed directions. Specifically, there is a positive and significant association between integral fear and perceptions of arrest (model 1), injury (model 2), and anticipated shame (model 3), as well as a significant negative association with anticipated satisfaction (model 4). Although the associations between anger and rational considerations are less consistent, important findings emerged. There is a positive and significant association between anger and anticipated satisfaction (model 4) and a significant negative association between anger and anticipated shame for committing assault (model 3). There is no association between anger and perceived injury (model 2), and in contrast to expectations, there is a significant positive association between anger and perceived arrest (model 1).

Second, table 6 presents the coefficients for direct and indirect associations from formal mediation models in which intentions to commit assault are predicted. We used the *binary_mediation* command in Stata (Ender, 2010; VanderWeele & Vansteelandt, 2014) to test formally whether integral anger and fear exert indirect effects (*ab*) on situational intentions to commit assault through rational considerations with bias-corrected bootstrap ($k = 10{,}000$) confidence intervals (95 percent). Before noting the indirect effects, direct associations continue to be exerted through both integral emotions with the intention to commit assault after the inclusion of deliberative considerations, and these associations

[10]We caution the interpretation of the anger-by-arrest interaction as the obtained p value ($t = -2.45$; $p = .014$) is greater than the Bonferroni-corrected alpha level of .01. All other interactions are robust to Bonferroni corrections accounting for the number of significance tests.

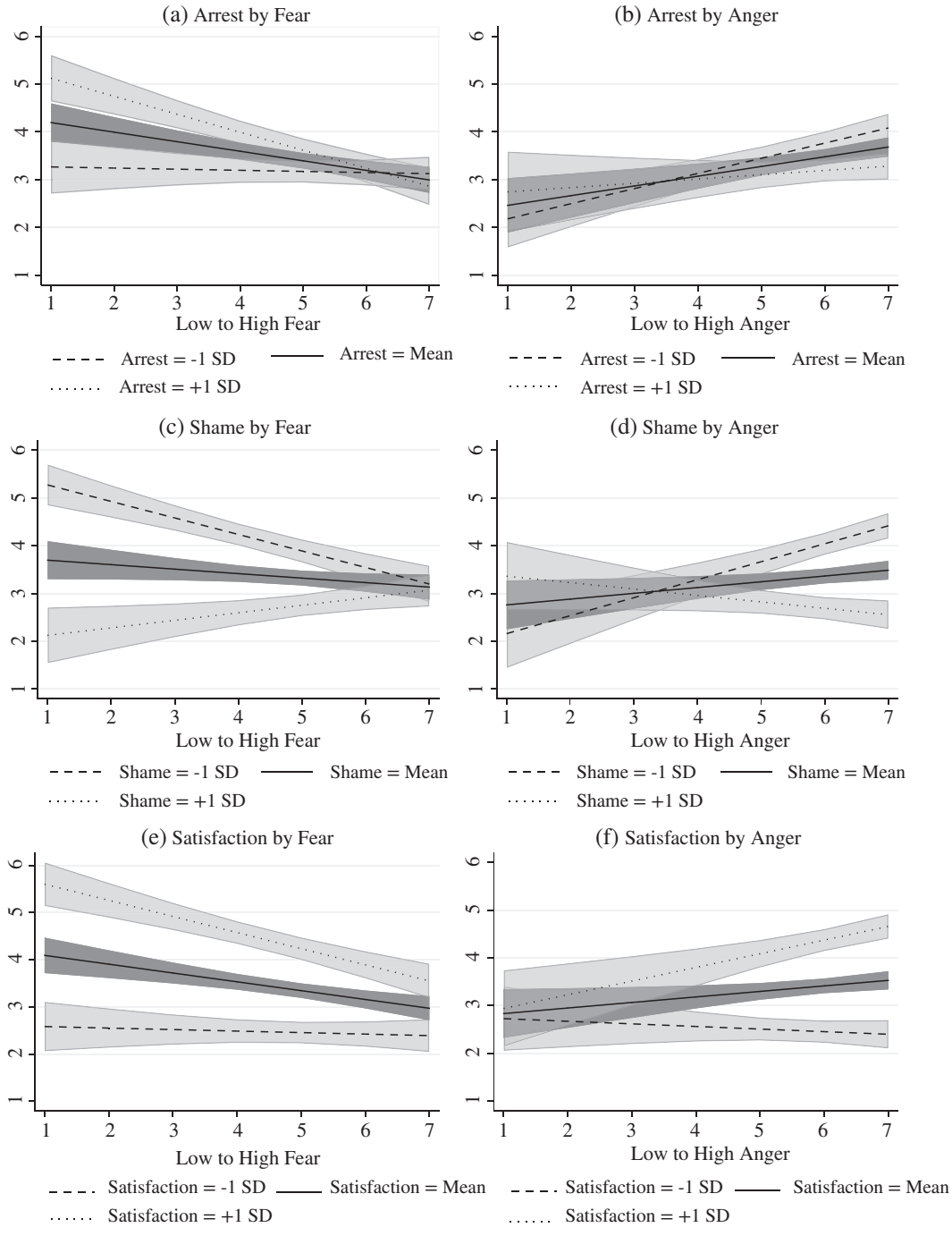

FIGURE 2 Predictive marginal effects of rational considerations on intentions to assault by integral anger and fear

Notes: Marginal effects based on coefficients from interaction terms presented in table 5. Shaded areas represent 95% confidence intervals. Note the vertical axis was rescaled to improve the visibility of the graphs. Intention to commit assault is originally measured on an ordinal scale ranging from 1 to 11. $N = 804$

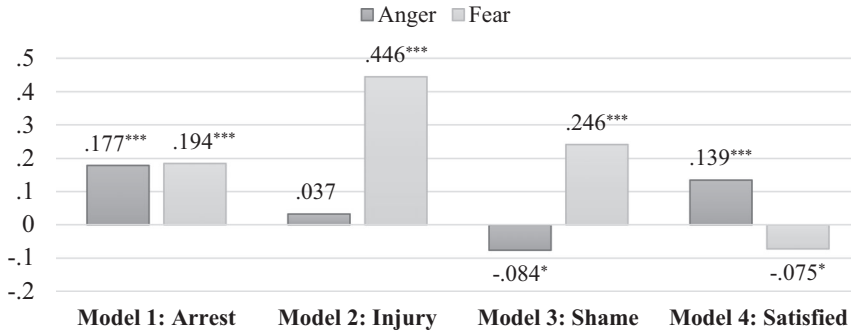

FIGURE 3 OLS regressions predicting situational perceptions of risk and reward

Notes: Standardized coefficients are graphed. All models include situational and background characteristics and a constant; full models available upon request. Adjusted R^2 values by model: Arrest (.15); Injury (.36); Shame (.25); Fun (.26). $N = 804$.

$^{*}p < .05$; $^{**}p < .01$; $^{***}p < .001$ (two-tailed)

TABLE 6 Direct and indirect effects of anger and fear on intentions to commit assault through rational considerations ($N = 804$)

	DV = Intentions to Commit Assault			
	Direct Effects		Indirect Effects of Situational Emotions on Assault Intent Through RC Considerations	
Model	***β***	**SE**	***ab***	**95% BCCI**
Model 1 = Anger	.136***	.056	−.028*	−.046 to −.010
Model 2 = Fear	−.149***	.051	−.020*	−.038 to −.002
MV = Likelihood of Arrest	−.095**	.049	—	—
Model 3 = Anger	.091**	.053	.001	−.016 to .019
Model 4 = Fear	−.109**	.049	−.051***	−.135 to −.026
MV = Anticipated Shame	−.232***	.046	—	—
Model 5 = Anger	.064*	.052	.040***	.019 to .064
Model 6 = Fear	−.141***	.047	−.006	−.033 to .020
MV = Anticipated Satisfaction	.330***	.040	—	—

Notes: Standardized coefficients are shown. All models included situational and background characteristics and a constant. The path through perceived injury not included. Indirect effects (*ab*) estimated with the user-written Stata 14 command *binary_mediation*, which computes indirect effects for models with multiple mediator variables using standardized coefficients. Statistical significance of indirect effects are based on bias-corrected standard errors and confidence intervals estimated with 10,000 bootstrap samples created using the same random seed.

Abbreviations: BCCI = bias corrected confidence intervals; DV = dependent variable; MV = mediating variable; RC = rational choice; SE = standard error.

$^{*}p < .05$; $^{**}p < .01$; $^{***}p < 0.001$ (two-tailed).

remain in the logical direction. In turning to indirect effects, we find the results indicate that the association between integral emotions and assault intentions is partially mediated by the observed cognitive evaluations. Specifically, there is a significant and negative indirect association between anger and assault intent through perceptions of arrest (model 1), as well as a significant positive indirect effect through anticipated satisfaction (model 5). Furthermore, there are significant and negative indirect

associations between fear and assault intent through perceived arrest (model 2) and anticipated shame (model 4). There is no significant indirect association between fear and intent through satisfaction.

4.1 | Supplemental analyses

At least two methodological issues may influence the generalizability of our findings. First, given that in our scenario, we manipulated the gender of the provocateur, we assessed the robustness of our findings to address possible gendered responses for aggressive behavior (Goody, 1997; Messerschmidt, 1993; see the online supporting information). First, we reestimated the experimental effects for integral anger and fear by gender (Brody & Hall, 2008). In general, the results are similar to those presented in table 1 with one exception: Significant differences in integral anger across experimental conditions emerged among male but not among female participants. Consistent with the findings from prior research (e.g., Brody et al., 1995), anger is also significantly greater in conditions where the provocateur is male. The results for fear were substantively similar for males and females. We also estimated behavioral intention regression models separately for male and female respondents, and by gender conditions. The only instance in which integral emotions were not predictive of assault intentions was when males evaluated scenarios with female antagonists. This finding is somewhat unsurprising given the social implications imposed on males who assault females, especially in public settings (Felson, 1996).[11] In sum, there is evidence that integral emotions are an important factor in momentary decisions to engage in assault-related behaviors, acknowledging gender differences across study participants in the impact of exposure to a male or female antagonist (see tables S1 and S2 in the online supporting information).

Second, we tested the robustness of the proposed temporal ordering of our theoretical model. Although we cannot confirm the causal order of our emotions and cognition variables as a result of the nature of our data, the findings from sequential linear regression models increase the confidence in our findings. Specifically, the inclusion of RCT variables attenuated the associations among anger, fear, and intentions to commit assault more so than any attenuation that occurred when emotions were included as potential intervening variables between RCT variables and assault intention (see table S3 in the online supporting information).

5 | DISCUSSION AND CONCLUSION

> The world in our heads is not a precise replica of reality; our expectations about the frequency of events are distorted by the prevalence and emotional intensity of the messages to which we are exposed. (*Kahneman, 2011*, p. 138)

Emotionally laden, self-defeating behaviors (e.g., road rage, sexual assault, relapse, and suicide) pervade daily life. Examples of "out of control" behavior have fueled affective decision-making research across a range of domains. The general consensus is that intense visceral feelings drive a "wedge between perceived self-interest and behavior" (Loewenstein, 1996, p. 272). To date, however, the affective processes proposed to influence the mechanisms underlying RCT are not entirely clear. We have attributed this to the type of emotion typically examined—*incidental* emotions, which are unrelated to the criminal opportunity. To unpack the relationship between affect and cognition in crime decisions further, we offered a distinct conceptualization of state affect—*integral* emotions, stemming from

[11] In such rare social cases, it would seem individual differences are stronger predictors of behavioral intentions than situational factors.

situational and personal characteristics related to the decision environment. In line with this conceptualization, we outlined a theoretical model in which the onset of integral emotions is not only accounted for, but also the multiple ways integral emotional experiences can shape behavioral intentions are described.

Our primary finding concerns integral emotional experiences, cognitive deliberations, and behavioral intentions. Specifically, our findings indicate the characteristics of the situation and the individuals within the situation are central to determining the events that will transpire (e.g., fight or no fight), effectively evoking a range of angered or fearful feelings.[12] This emotional experience then leads to a behavioral response with minimal thought, thereby influencing the decision-making process. Notably, increased emotional experiences orient attention to immediate outcomes conditioning the influence of risk perceptions on behavior. Furthermore, the experience of integral emotions changes how actors feel (e.g., confident vs. insecure) in a specific situation, leading them to increase or decrease the level of perceived risk accordingly. The divergent motivational properties of anger and fear lead to the opposite effects on judgments, decisions, and behavioral intentions.

Of central importance is the onset of integral emotions. Although in various studies, scholars have explored situations in which emotional experiences result from probabilistic estimates of specific outcomes (e.g., arrest; Pickett et al., 2018), our interest is in the direct impact of integral emotions on behavior, as well as in indirect impacts via deterrence perceptions. As Frijda (1988, p. 355) explained, emotions can lend to judgments of absoluteness: They "know no probabilities. They do not weigh likelihoods. What they know, they know for certain." In line with Frijda's account, integral emotions seem to be most responsive to the exposure of emotion-provoking stimuli. That is, participants were initially aroused as they considered possible events to transpire immediately (e.g., a fight) based on available information (e.g., the demeanor and gender of the antagonist); therefore, subsequent deliberations about specific outcomes (e.g., likelihood of arrest for committing assault) occurred in part under the influence of integral emotions. For instance, when participants experienced fear, they shifted their focus toward the negative consequences of fighting. This resulted in an increased weight being attributed to the possible consequences, as well as in an increase in the probability assigned to these consequences. In such evaluations, fight-avoidance (flight) behaviors were generally motivated over other aggressive action alternatives (and vice versa for anger). Put simply, cognitive evaluations about specific outcomes tied to specific behavioral options are likely not devoid of emotional input.

This nuanced understanding of the effects of integral emotions on criminal decisions adds to the growing literature on the malleability of risk perceptions. Recent study findings have highlighted how risk perceptions can be updated in a Bayesian-like manner after experiences with crime and crime consequences (or lack thereof; Anwar & Loughran, 2011), influenced by individual characteristics (Pickett et al., 2018; van Gelder & de Vries, 2012, 2014), shaped by situational heuristic reasoning and biases (Pogarsky et al., 2017; Thomas, Hamilton, & Loughran, 2018), and minimized or "reset" through advantageous behavioral strategies within the criminal opportunity (e.g., fleeing from police; Cherbonneau & Jacobs, 2018). In the current study, we build on this emergent line of inquiry by demonstrating how integral emotions potentially influence an individual's perceptions. Not only do emotions seem to lead to conditioned RCT processes, but also it seems they can lead to (at least) momentary

[12] We addressed the robustness of this finding by conducting a supplemental experiment similar to that of Kamerdze, Loughran, Paternoster, and Sohoni (2014) in which participants were successfully primed to experience angered and fearful incidental states using a recall exercise prior to queries about general risk and behavioral intent (findings and materials available by request). Importantly, intentions to consider punching a stranger did not vary across experimental groups. In other words, and in contrast to the influence of integral emotions, minimal effects are exerted by incidental states on behavioral intentions, despite respondents answering questions in "hot" states.

changes in perceptions of risks, costs, and benefits within criminal decision-making scenarios—these insights are highlighted by the integration of dual-process and appraisal theories into more traditional RCT models.

Researchers should continue to unpack the individual and situational characteristics that influence emotional experiences and risk perceptions, which should yield greater theoretical and policy returns. To build on the current study, one potentially advantageous approach would be to integrate developmental dual-system models (e.g., Shulman et al., 2016; Steinberg et al., 2008) with situational explanations in an attempt to elucidate how age-graded processes (i.e., impulse control and sensation seeking) shape decisions across the life course. Developmental gaps between the prefrontal cortex and the socioemotional limbic system of the brain are likely associated with the frequency and incidence in which actors experience integral emotions across situations (Steinberg, 2008; Steinberg et al., 2008). Thus, developmental models including age-graded and state-dependent mechanisms described in decision-making theories (e.g., appraisal theory and rational choice theory) would allow for researchers to parse out the interactive influence of individual and situational factors that simultaneously bound information processing and evoke momentary, affective inputs (e.g., see Wiers et al., 2010 p. 6; see also Pickett et al., 2018; Pogarsky et al., 2017; van Gelder & de Vries, 2012, 2014). In this light, integral emotions can serve as an empirical nexus linking situational- and individual-level risk factors (Felson, 1994; Warr, 2002).

Researchers should also consider the use of more advanced methodological approaches when attempting to replicate and elaborate on the current study. Although the vignette methodology was well suited for our purposes of introducing the import of integral emotions, this strategy does not afford the ability to capture emotional responses directly while respondents read the fight scenario. Consequently, we could not directly observe whether respondents experienced actual anger or fear, and therefore, we caution interpretations of current findings as they require the assumption that anticipatory emotions are accurately perceivable (Pickett et al., 2018). Moving forward, the use of virtual reality may be a strong alternative to written scenarios. Rather than asking participants to imagine themselves in a specific situation, virtual reality immerses them in it (van Gelder, de Vries, Demetriou, van Sintemaartensdijk, & Donker, 2019). Indeed, van Gelder and various coauthors (van Gelder et al., 2017; van Gelder et al., 2019) have demonstrated that "experiencing a scenario in virtual reality can trigger stronger feelings of presence in the situation compared to its written equivalent, and also elicit more intense emotional experiences, resulting in a better approximation of real-world decision-making" (2019, p. 469). Furthermore, researchers could use more sophisticated techniques to capture the experience of emotions that are not sensitive to perceptual biases (e.g., heart rate monitors; Armstrong & Boutwell, 2012). These methodologies would be especially beneficial when studying how integral emotions shape decisions across a range of other nonviolent criminal behaviors.

The use of more sophisticated scenario simulators could also allow researchers to unpack the potentially reciprocal relationship between affective and cognitive processes within a criminal decision (e.g., Slovic et al., 2004). We were unable to address this potential relationship with the current data as in our scenario, we assumed that the decision-maker faces a one-time choice between given options, without the possibility of seeking additional information or options. In other words, the model ends at the moment the intended behavior is decided on and does not include actual (as opposed to expected) outcomes and feelings that occur as a result of the decision (a common limitation in perceptual deterrence research). Use of virtual reality and related methodologies might provide a clearer view into the interrelatedness of integral emotions stemming from situational and individual characteristics, as well as those evoked by cognitive deliberations about specific positive and negative consequences (e.g., excitement and fear, respectively). This may be especially pertinent to violent situations as it is reasonable to expect that the decision to yell insults in response to provocation likely impacts the behavior of

the second party, creating feedback mechanisms that elicit additional integral emotions and behavior alternatives.

Finally, we would be remiss to ignore the potential influence of other discrete integral emotions beyond anger and fear, which undoubtedly factor into violent and nonviolent criminal decision-making. For instance, Warr (2016) proposed that regret plays an important role in human choices. Specifically, Warr argued that the experience of regret after a transgression can prompt desistance, and that regret avoidance may be a powerful mechanism for conformity (see also Meldrum, Piquero, Ozkan, & Powell, 2018; Piquero, 2017). A host of other emotions tied to the competitive and spontaneous nature of crime may also motivate or deter offending in different ways, including but not limited to excitement, grief, and embarrassment (Anderson, 2000; Jacobs & Wright, 2006; Katz, 1988). Beyond the influence of singular discrete emotions, future works are also needed to explore the interrelatedness of integral emotions. That is, in confrontational scenarios, the experience of fear, especially when faced with the possibility of a sure loss (e.g., injury or embarrassment), may evoke additional feelings of anger, ultimately motivating aggressive behavior (Jakupcak, Tull, & Roemer, 2005). In a similar vein, it is possible incidental emotions produce "carry-over" effects that influence the experience of a current integral emotion (Lerner et al., 2015). As such, future works are needed to explore a broader set of integral and incidental emotions within the context of violent and nonviolent criminal decision-making.

In sum, we set out to offer a new conceptualization of state emotions and to provide a testable theoretical model aimed at examining the influence of these integral emotions on the criminal decision-making process. Current findings highlight the notion that an individual's decision to act is not devoid of emotional inputs, especially during potentially violent encounters. By recognizing the various situational and personal characteristics that shape integral experiences, researchers will be better able to predict how and why emotional inputs can bias, enhance, and even override deliberative information processing assumed to underpin deterrence and rational choice theory. Evidence increasingly indicates "the emotional tail wags the rational dog" (Kahneman, 2011, p. 140), and criminal decisions are not immune to such influences. It is imperative criminologists continue to advance the theoretical understanding of not only cognitive processes, but also affective processes as they relate to violent and nonviolent offending. Several decision-making perspectives now exist, including dual-process models and appraisal theories, that can be used to test more descriptively accurate accounts of criminal decision-making. Theory and policy aimed at explaining and limiting crime can only benefit from research aimed at understanding the various ways in which emotions shape human judgments, decisions, and behaviors.

REFERENCES

Agnew, R. (1992). Foundation for a general strain theory of crime and delinquency. *Criminology*, *30*(1), 47–87. https://doi.org/10.1111/j.1745-9125.1992.tb01093.x

Andenaes, J. (1966). The general preventive effects of punishment. *University of Pennsylvania Law Review*, *114*, 949–983.

Anderson, E. (2000). *Code of the street: Decency, violence, and the moral life of the inner city* (Paperback). New York: W. W. Norton.

Anwar, S., & Loughran, T. A. (2011). Testing a Bayesian learning theory of deterrence among serious juvenile offenders. *Criminology*, *49*, 667–698. https://doi.org/10.1111/j.1745-9125.2011.00233.x

Ariely, D., & Loewenstein, G. (2006). The heat of the moment: The effect of sexual arousal on sexual decision making. *Journal of Behavioral Decision Making*, *19*(2), 87–98. https://doi.org/10.1002/bdm.501

Armstrong, T. A., & Boutwell, B. B. (2012). Low resting heart rate and rational choice: Integrating biological correlates of crime in criminological theories. *Journal of Criminal Justice*, *40*(1), 31–39. https://doi.org/10.1016/j.jcrimjus.2011.11.001

Athens, L. (2005). Violent encounters: Violent engagements, skirmishes, and tiffs. *Journal of Contemporary Ethnography*, *34*(6), 631–678. https://doi.org/10.1177/0891241605280570

Auspurg, K., & Hinz, T. (2015). *Factorial survey experiments*. Thousand Oaks: Sage.

Beccaria, C. (1963). *On crimes and punishments*. Indianapolis: Bobbs-Merrill. (Original work published 1764).

Becker, G. S. (1968). Crime and punishment: An economic analysis. *Journal of Political Economy*, *78*, 169–217.

Bentham, J. (1988). *The principles of morals and legislation*. Amherst: Prometheus Books. (Original work published 1789).

Blanchette, I., & Richards, A. (2010). The influence of affect on higher level cognition: A review of research on interpretation, judgment, decision making and reasoning. *Cognition and Emotion*, *24*(4), 561–595. https://doi.org/10.1080/02699930903132496

Bouffard, J. A. (2002). The influence of emotion on rational decision making in sexual aggression. *Journal of Criminal Justice*, *30*(2), 121–134.

Bouffard, J. A. (2014). The role of sexual arousal and perceived consequences in men's and women's decisions to engage in sexually coercive behaviors. In J. van Gelder, H. Elffers, D. Reynald, & D. Nagin (Eds.), *Affect and cognition in criminal decision making* (pp. 77–96). New York: Routledge.

Bouffard, J. A., Exum, L. M., & Paternoster, R. (2000). Whither the beast? The role of emotions in a rational choice theory of crime. In S. S. Simpson (Ed.), *Of crime and criminality: Applying criminological theory in everyday life* (pp. 159–178). Thousand Oaks: Pine Forge Press.

Brody, L. R., & Hall, J. A. (2008). Gender and emotion in context. In M. Lewis, J. M. Haviland-Jones, & L. Feldman Barrett (Eds.), *Handbook of emotions* (pp. 395–408), 3rd ed. New York: Guilford Press.

Brody, L. R., Lovas, G. S., & Hay, D. H. (1995). Gender differences in anger and fear as a function of situational context. *Sex Roles*, *32*(1–2), 47–78. https://doi.org/10.1007/BF01544757

Broidy, L. M. (2001). A test of general strain theory. *Criminology*, *39*(1), 9–36. https://doi.org/10.1111/j.1745-9125.2001.tb00915.x

Broidy, L. M., & Agnew, R. (1997). Gender and crime: A general strain theory perspective. *Journal of Research in Crime and Delinquency*, *34*(3), 275–306. https://doi.org/10.1177/0022427897034003001

Capowich, G. E., Mazerolle, P., & Piquero, A. R. (2001). General strain theory, situational anger, and social networks: An assessment of conditioning influences. *Journal of Criminal Justice*, *29*(5), 445–461. https://doi.org/10.1016/S0047-2352(01)00101-5

Carmichael, S., & Piquero, A. R. (2004). Sanctions, perceived anger, and criminal offending. *Journal of Quantitative Criminology*, *20*(4), 371–393. https://doi.org/10.1007/s10940-004-5869-y

Chaiken, S., & Trope, Y. (1999). *Dual-process theories in social psychology*. New York: Guilford Press.

Chandler, J., Mueller, P., & Paolacci, G. (2014). Nonnaïveté among Amazon Mechanical Turk workers: Consequences and solutions for behavioral researchers. *Behavior Research Methods*, *46*(1), 112–130. https://doi.org/10.3758/s13428-013-0365-7

Cherbonneau, M., & Jacobs, B. A. (2018). Imminent capture and noncompliance: Probing deterrence in extreme environments. *Justice Quarterly*, Epub ahead of print. https://doi.org/10.1080/07418825.2018.1476577

Clarke, R. V. (2014). Affect and the reasoning criminal: Past and future. In J. van Gelder, H. Elffers, D. Reynald, & D. Nagin (Eds.), *Affect and cognition in criminal decision making* (pp. 20–41). New York: Routledge.

Clarke, R. V., & Cornish, D. B. (1985). Modeling offenders' decisions: A framework for research and policy. *Crime and Justice*, *6*, 147–185.

Cloward, R., & Ohlin, L. (1960). *Delinquency and opportunity: A theory of delinquent gangs*. New York: Free Press.

Collins, R. (2008). *Violence: A micro-sociological theory* (Paperback). Princeton: Princeton University Press.

Connell, R. W., & Messerschmidt, J. W. (2005). Hegemonic masculinity: Rethinking the concept. *Gender & Society*, *19*(6), 829–859. https://doi.org/10.1177/0891243205278639

Copes, H., Hochstetler, A., & Forsyth, C. J. (2013). Peaceful warriors: Codes for violence among adult male bar fighters. *Criminology*, *51*(3), 761–794. https://doi.org/10.1111/1745-9125.12019

Cornish, D. B., & Clarke, R. V. (1986). *The reasoning criminal: Rational choice perspectives on offending* (Paperback). New York: Springer-Verlag.

Cusson, M. (1993). Situational deterrence: Fear during the criminal event. In R. V. Clarke (Ed.), *Crime prevention studies* (Vol. 1, pp. 55–68). Monsey: Criminal Justice Press.

DiMaggio, P. (2002). Needs cognitive psychology. In K. A. Cerulo (Ed.), *Culture in mind: Toward a sociology of culture and cognition* (pp. 274–282). New York: Routledge.

Dodge, K. A., Bates, J. E., & Pettit, G. S. (1990). Mechanisms in the cycle of violence. *Science*, *250*(4988), 1678–1683. https://doi.org/10.1126/science.2270481

Dommermuth, W. P., & Millard, W. J. (1967). Consumption coincidence in product evaluation. *Journal of Marketing Research*, *4*(4), 388–390. https://doi.org/10.2307/3149880

Dowling, C. M., & Wichowsky, A. (2015). Attacks without consequence? Candidates, parties, groups, and the changing face of negative advertising. *American Journal of Political Science*, *59*(1), 19–36. https://doi.org/10.1111/ajps.12094

Ellsberg, D. (1961). Risk, ambiguity, and the Savage axioms. *The Quarterly Journal of Economics*, *75*(4), 643–669. https://doi.org/10.2307/1884324

Ellsworth, P. C. (2013). Appraisal theory: Old and new questions. *Emotion Review*, *5*(2), 125–131. https://doi.org/10.1177/1754073912463617

Elster, J. (1998). Emotions and economic theory. *Journal of Economic Literature*, *36*(1), 47–74.

Ender, P. (2010). *Binary mediation: A new command to compute mediations with multiple mediators and binary and continuous variables in STATA*. Los Angeles: Academic Technology Services, Statistical Consulting Group, UCLA. http://www.ats.ucla.edu/stat/stata/ado/analysis

Exum, M. L. (2002). The application and robustness of the rational choice perspective in the study of intoxicated and angry intentions to aggress. *Criminology*, *40*(4), 933–966. https://doi.org/10.1111/j.1745-9125.2002.tb00978.x

Exum, M. L., & Zachowicz, A. (2014). Sexual arousal and the ability to access sexually aggressive consequences from memory. In J. van Gelder, H. Elffers, D. Reynald, & D. Nagin (Eds.), *Affect and cognition in criminal decision making* (pp. 97–118). New York: Routledge.

Felson, M. (1994). *Crime and everyday life: Insights and implications for society*. Thousand Oaks: Pine Forge Press.

Felson, R. B. (1996). Big people hit little people: Sex differences in physical power and interpersonal violence. *Criminology*, *34*(3), 433–452. https://doi.org/10.1111/j.1745-9125.1996.tb01214.x

Fox, C. R., & Tversky, A. (1995). Ambiguity aversion and comparative ignorance. *The Quarterly Journal of Economics*, *110*(3), 585–603. https://doi.org/10.2307/2946693

Frankish, K. (2010). Dual-process and dual-system theories of reasoning. *Philosophy Compass*, *5*(10), 914–926. https://doi.org/10.1111/j.1747-9991.2010.00330.x

Frijda, N. H. (1988). The laws of emotions. *American Psychologist*, *43*(5), 349–358. https://doi.org/10.1037/0003-066X.43.5.349

Frijda, N. H., & Zeelenberg, M. (2001). Appraisal: What is the dependent? In K. R. Scherer, A. Schorr, & T. Johnstone (Eds.), *Appraisal processes in emotion: Theory, methods, research* (pp. 141–156). New York: Oxford University Press.

Goody, J. (1997). Boys don't cry: Masculinities, fear of crime and fearlessness. *The British Journal of Criminology*, *37*(3), 401–418.

Gottfredson, M. R., & Hirschi, T. (1990). *A general theory of crime*. Stanford: Stanford University Press.

Grasmick, H. G., & Bursik, R. (1990). Conscience, significant others, and rational choice: Extending the deterrence model. *Law & Society Review*, *24*(3), 837–862. https://doi.org/10.2307/3053861

Grasmick, H. G., Tittle, C. R., Bursik, Jr., R. J., & Arneklev, B. J. (1993). Testing the core empirical implications of Gottfredson and Hirschi's general theory of crime. *Journal of Research in Crime and Delinquency*, *30*(1), 5–29. https://doi.org/10.1177%2F0022427893030001002

Hauser, D. J., Paolacci, G., & Chandler, J. (2018). Common concerns with MTurk as a participant pool: Evidence and solutions. In F. Kardes, P. Herr, & N. Schwarz (Eds.), *Handbook in research methods in consumer psychology*. https://psyarxiv.com/uq45c

Hochstetler, A., Copes, H., & Forsyth, C. J. (2014). The fight: Symbolic expression and validation of masculinity in working class tavern culture. *American Journal of Criminal Justice*, *39*(3), 493–510. https://doi.org/10.1007/s12103-013-9222-6

Hockey, G. R. J., Maule, A. J., Clough, P. J., & Bdzola, L. (2000). Effects of negative mood states on risk in everyday decision-making. *Cognition and Emotion*, *14*(6), 823–855. https://doi.org/10.1080/026999300501566654

Hsee, C. K., & Kunreuther, H. C. (2000). The affection effect in insurance decisions. *Journal of Risk and Uncertainty*, *20*(2), 141–159. https://doi.org/10.1023/A:1007876907268

Hsee, C. K., & Rottenstreich, Y. (2004). Music, pandas, and muggers: On the affective psychology of value. *Journal of Experimental Psychology: General*, *133*(1), 23–30. https://doi.org/10.1037/0096-3445.133.1.23

Irwin, K., & Adler, C. (2012). Fighting for her honor: Girls' violence in distressed communities. *Feminist Criminology*, *7*(4), 350–380. https://doi.org/10.1177/1557085112436837

Isen, A. M., & Shalker, T. E. (1982). The effect of feeling state evaluation of positive, neutral, and negative stimuli: When you "accentuate the positive", do you "eliminate the negative". *Social Psychology Quarterly*, *45*(1), 58–63. https://doi.org/10.2307/3033676

Izard, C. E. (2013). *Human emotions*. New York: Springer Science & Business Media.

Jacobs, B. A., & Cherbonneau, M. (2017). Nerve management and crime accomplishment. *Journal of Research in Crime and Delinquency*, *54*(5), 617–638. https://doi.org/10.1177/0022427817693037

Jacobs, B. A., & Wright, R. (2006). *Street justice: Retaliation in the criminal underworld*. New York: Cambridge University Press.

Jakupcak, M., Tull, M. T., & Roemer, L. (2005). Masculinity, shame, and fear of emotions as predictors of men's expressions of anger and hostility. *Psychology of Men & Masculinity*, *6*(4), 275–284.

Jang, S. J. (2007). Gender differences in strain, negative emotions, and coping behaviors: A general strain theory approach. *Justice Quarterly*, *24*(3), 523–553. https://doi.org/10.1080/07418820701485486

Johnson, E. J., & Tversky, A. (1983). Affect, generalization, and perception of risk. *Journal of Personality and Social Psychology*, *45*(1), 20–31. https://doi.org/10.1037/0022-3514.45.1.20

Kahneman, D. (2011). *Thinking fast and slow*. New York: Farrar, Straus & Giroux.

Kamerdze, A. S., Loughran, T., Paternoster, R., & Sohoni, T. (2014). The role of affect in intended rule breaking: Extending the rational choice perspective. *Journal of Research in Crime and Delinquency*, *51*(5), 620–654. https://doi.org/10.1177/0022427813519651

Katz, J. (1988). *Seductions of crime: Moral and sensual attractions of doing evil*. New York: Basic Books.

Kaufman, B. E. (1999). Emotional arousal as a source of bounded rationality. *Journal of Economic Behavior & Organization*, *38*(2), 135–144. https://doi.org/10.1016/S0167-2681(99)00002-5

Lazarus, R. S. (1991). Progress on a cognitive-motivational-relational theory of emotion. *American Psychologist*, *46*(8), 819.

Leaper, C., & Friedman, C. K. (2007). The socialization of gender. In J. E. Grusec & P. D. Hastings (Eds.), *Handbook of socialization: Theory and research* (pp. 561–587). New York: Guilford Press.

Lerner, J. S., & Keltner, D. (2000). Beyond valence: Toward a model of emotion-specific influences on judgment and choice. *Cognition & Emotion*, *14*(4), 473–493. https://doi.org/10.1080/026999300402763

Lerner, J. S., & Keltner, D. (2001). Fear, anger, and risk. *Journal of Personality and Social Psychology*, *81*(1), 146–159.

Lerner, J. S., Li, Y., Valdesolom, P., & Kassam, K. S. (2015). Emotion and decision-making. *Annual Review of Psychology*, *66*, 799–823. https://www-annualreviews-org.proxy.library.kent.edu/doi/pdf/10.1146/annurev-psych-010814-015258

Levay, K. E., Freese, J., & Druckman, J. N. (2016). The demographic and political composition of Mechanical Turk samples. *SAGE Open*, *6*, 1–17. https://doi.org/10.1177/2158244016636433

Loewenstein, G. (1996). Out of control: Visceral influences on behavior. *Organizational Behavior and Human Decision Processes*, *65*, 272–292.

Loewenstein, G. (2000). Emotions in economic theory and economic behavior. *The American Economic Review*, *90*(2), 426–432.

Loewenstein, G., & Lerner, J. S. (2003). The role of affect in decision making. In R. J. Davidson, K. R., Scherer, & H. H. Goldsmith (Eds.), *Handbook of affective science* (pp. 619–642). New York: Oxford University Press.

Loewenstein, G., Nagin, D., & Paternoster, R. (1997). The effect of sexual arousal on expectations of sexual forcefulness. *Journal of Research in Crime and Delinquency*, *34*(4), 443–473. https://doi.org/10.1177/0022427897034004003

Loewenstein, G., & O'Donoghue, T. (2004). Animal spirits: Affective and deliberative influences on economic behavior (Working Paper #04-14). https://papers.ssrn.com/sol3/papers.cfm?abstract_id=539843

Loewenstein, G. F., Weber, E. U., Hsee, C. K., & Welch, N. (2001). Risk as feelings. *Psychological Bulletin*, *127*(2), 267.

Loughran, T. A., Paternoster, R., Piquero, A. R., & Pogarsky, G. (2011). On ambiguity in perceptions of risk: Implications for criminal decision making and deterrence. *Criminology*, *49*(4), 1029–1061. https://doi.org/10.1111/j.1745-9125.2011.00251.x

Mamayek, C., Paternoster, R., & Loughran, T. A. (2017). Self-control as self-regulation: A return to control theory. *Deviant Behavior*, *38*(8), 895–916. https://www.tandfonline.com/doi/abs/10.1080/01639625.2016.1206730

McCarthy, B. (2002). New economics of sociological criminology. *Annual Review of Sociology*, *28*, 417–442. https://www.annualreviews.org/doi/abs/10.1146/annurev.soc.28.110601.140752

McGloin, J. M., & Thomas, K. J. (2016). Incentives for collective deviance: Group size and changes in perceived risk, cost, and reward. *Criminology*, *54*(3), 459–486.

Meldrum, R. C., Piquero, A. R., Ozkan, T., & Powell, Z. A. (2018). An examination of the criminological consequences and correlates of remorselessness during adolescence. *Youth Violence and Juvenile Justice*, *16*(3), 279–298. https://doi.org/10.1177/1541204017700713

Messerschmidt, J. W. (1993). *Masculinities and crime: Critique and reconceptualization of theory*. Lanham: Rowman & Littlefield.

Metcalfe, J., & Mischel, W. (1999). A hot/cool-system analysis of delay of gratification: Dynamics of willpower. *Psychological Review*, *106*(1), 3–19. https://doi.org/10.1037//0033-295X.106.1.3

Meyer, A., Zhou, E., & Fredrick, S. (2018). The non-effects of repeated exposure to the Cognitive Reflection Test. *Judgment and Decision Making*, *13*(3), 246.

Mullinix, K. J., Leeper, T. J., Druckman, J. N., & Freese, J. (2015). The generalizability of survey experiments. *Journal of Experimental Political Science*, *2*(2), 109–138. https://doi.org/10.1017/XPS.2015.19

Mutz, D. C. (2011). *Population-based survey experiments*. Princeton: Princeton University Press.

Nagin, D. S. (2007). Moving choice to center stage in criminological research and theory: The American Society of Criminology 2006 Sutherland Address. *Criminology*, *45*(2), 259–272. https://doi.org/10.1111/j.1745-9125.2007.00078.x

Nagin, D. S., & Paternoster, R. (1993). Enduring individual differences and rational choice theories of crime. *Law & Society Review*, *27*(3), 467–496. https://doi.org/10.2307/3054102

Nagin, D. S., & Paternoster, R. (1994). Personal capital and social control: The deterrence implications of a theory of individual differences in criminal offending. *Criminology*, *32*(4), 581–606. https://doi.org/10.1111/j.1745-9125.1994.tb01166.x

Nagin, D. S., & Pogarsky, G. (2001). Integrating celerity, impulsivity, and extralegal sanction threats into a model of general deterrence: Theory and evidence. *Criminology*, *39*, 865–892. https://doi.org/10.1111/j.1745-9125.2001.tb00943.x

Ngo, F. T., & Paternoster, R. (2013). Stalking strain, concurrent negative emotions, and legitimate coping strategies: A preliminary test of gendered strain theory. *American Journal of Criminal Justice*, *38*(3), 369–391. https://doi.org/10.1007/s12103-012-9179-x

Nisbett, R. E., & Ross, L. (1980). *Human inference: Strategies and shortcomings in social judgment*. New York: Prentice-Hall.

Panksepp, J. (2004). *Affective neuroscience: The foundations of human and animal emotions*. New York: Oxford University Press.

Peer, E., Vosgerau, J., & Acquisti, A. (2013). Reputation as a sufficient condition for data quality on Amazon Mechanical Turk. *Behavior Research Methods*, *46*(6), 1023–1031. https://doi.org/10.3758/s13428-013-0434-y

Pham, M. T. (2007). Emotion and rationality: A critical review and interpretation of empirical evidence. *Review of General Psychology*, *11*(2), 155–178. https://doi.org/10.1037/1089-2680.11.2.155

Pickett, J. T., Roche, S. P., & Pogarsky, G. (2018). Toward a bifurcated theory of emotional deterrence. *Criminology*, *56*(1), 27–58. https://doi.org/10.1111/1745-9125.12153

Piquero, A. R. (2017). "No remorse, no repent": Linking lack of remorse to criminal offending in a sample of serious adolescent offenders. *Justice Quarterly*, *34*(2), 350–376. https://www.tandfonline.com/doi/full/10.1080/07418825.2016.1185530

Piquero, A. R., Paternoster, R., Pogarsky, G., & Loughran, T. (2011). Elaborating the individual difference component in deterrence theory. *Annual Review of Law and Social Science*, *7*, 335–360. https://doi.org/10.1146/annurev-lawsocsci-102510-105404

Pogarsky, G. (2002). Identifying "deterrable" offenders: Implications for research on deterrence. *Justice Quarterly*, *19*(3), 431–452. https://doi.org/10.1080/07418820200095301

Pogarsky, G., Roche, S. P., & Pickett, J. T. (2017). Heuristics and biases, rational choice, and sanction perceptions. *Criminology*, *55*(1), 85–111. https://doi.org/10.1111/1745-9125.12129

Ratner, K. G., Dotsch, R., Wigboldus, D. H., van Knippenberg, A., & Amodio, D. M. (2014). Visualizing minimal ingroup and outgroup faces: Implications for impressions, attitudes, and behavior. *Journal of Personality and Social Psychology*, *106*(6), 897–911. https://doi.org/10.1037/a0036498

Sandberg, S., Tutenges, S., & Copes, H. (2015). Stories of violence: A narrative criminological study of ambiguity. *British Journal of Criminology*, *55*(6), 1168–1186. https://doi.org/10.1093/bjc/azv032

Shank, D. B. (2016). Using crowdsourcing websites for sociological research: The case of Amazon Mechanical Turk. *The American Sociologist*, *47*(1), 47–55. https://doi.org/10.1007/s12108-015-9266-9

Sheehan, K. B., & Pittman, M. (2016). *Amazon's Mechanical Turk for academics: The HIT handbook for social science research*. Irvine: Melvin & Leigh.

Sherman, L. W. (1993). Defiance, deterrence, and irrelevance: A theory of the criminal sanction. *Journal of Research in Crime and Delinquency*, *30*(4), 445–473. https://doi.org/10.1177/0022427893030004006

Shiffrin, R. M., & Schneider, W. (1977). Controlled and automatic human information processing: II. Perceptual learning, automatic attending and a general theory. *Psychological Review*, *84*(2), 127–190. https://doi.org/10.1037/0033-295X.84.2.127

Shulman, E. P., Smith, A. R., Silva, K., Icenogle, G., Duell, N., Chein, J., & Steinberg, L. (2016). The dual systems model: Review, reappraisal, and reaffirmation. *Developmental Cognitive Neuroscience*, *17*, 103–117. https://doi.org/10.1016/j.dcn.2015.12.010

Simon, H. A. (1978). Rationality as process and as product of thought. *The American Economic Review*, *68*(2), 1–16.

Slovic, P., Finucane, M., Peters, E., & MacGregor, D. G. (2002). Rational actors or rational fools: Implications of the affect heuristic for behavioral economics. *The Journal of Socio-Economics*, *31*(4), 329–342. https://doi.org/10.1016/S1053-5357(02)00174-9

Slovic, P., Finucane, M. L., Peters, E., & MacGregor, D. G. (2004). Risk as analysis and risk as feelings: Some thoughts about affect, reason, risk, and rationality. *Risk Analysis: An International Journal*, *24*(2), 311–322.

Slovic, P., & Peters, E. (2006). Risk perception and affect. *Current Directions in Psychological Science*, *15*(6), 322–325. https://doi.org/10.1111/j.1467-8721.2006.00461.x

Stafford, M., & Warr, M. (1993). A reconceptualization of general and specific deterrence. *Journal of Research in Crime and Delinquency*, *30*, 123–135. https://doi.org/10.1177/0022427893030002001

Steinberg, L. (2008). A social neuroscience perspective on adolescent risk-taking. *Developmental Review*, *28*(1), 78–106. https://doi.org/10.1016/j.dr.2007.08.002

Steinberg, L., Albert, D., Cauffman, E., Banich, M., Graham, S., & Woolard, J. (2008). Age differences in sensation seeking and impulsivity as indexed by behavior and self-report: Evidence for a dual systems model. *Developmental psychology*, *44*(6), 1764–1778. https://psycnet.apa.org/doi/10.1037/a0012955

Steinberg, M. S., & Dodge, K. A. (1983). Attributional bias in aggressive adolescent boys and girls. *Journal of Social and Clinical Psychology*, *1*(4), 312–321. https://doi.org/10.1521/jscp.1983.1.4.312

Tedeschi, J. T., & Felson, R. B. (1994). *Violence, aggression, and coercive actions*. Washington: American Psychological Association.

Thaler, R. H. (2015). *Misbehaving: The making of behavioral economics*. New York: W. W. Norton.

Thomas, K. J., Hamilton, B., & Loughran, T. A. (2018). Testing the transitivity of reported risk perceptions: Evidence of coherent arbitrariness. *Criminology*, *56*(1), 59–86. https://doi.org/10.1111/1745-9125.12154

Tibbetts, S. G. (2014). Traits and states of self-conscious emotions in criminal decision-making. In J. van Gelder, H. Elffers, D. Reynald, & D. Nagin (Eds.), *Affect and cognition in criminal decision making* (pp. 221–238). New York: Routledge.

Topalli, V., & Wright, R. (2014). Affect and the dynamic foreground of predatory street crime. In J. van Gelder, H. Elffers, D. Reynald, & D. Nagin (Eds.), *Affect and cognition in criminal decision making* (pp. 42–57). New York: Routledge.

Tversky, A., & Kahneman, D. (1973). Availability: A heuristic for judging frequency and probability. *Cognitive Psychology*, *5*(2), 207–232. https://doi.org/10.1016/0010-0285(73)90033-9

van Gelder, J., Elffers, H., Reynald, D., & Nagin, D. (2014). Affect and cognition in criminal decision making: Between rational choices and lapses of self-control. In J.-L. van Gelder, H. Elffers, D. Reynald, & D. Nagin (Eds.), *Affect and cognition in criminal decision making* (pp. 1–19). New York: Routledge.

van Gelder, J., Nee, C., Otte, M., Demetriou, A., van Sintemaartensdijk, I., & van Prooijen, J. (2017). Virtual burglary: Exploring the potential of virtual reality to study burglary in action. *Journal of Research in Crime and Delinquency*, *54*(1), 29–62. https://doi.org/10.1177/0022427816663997

van Gelder, J.-L. (2013). Beyond rational choice: The hot/cool perspective of criminal decision-making. *Psychology, Crime & Law*, *19*(9), 745–763. https://doi.org/10.1080/1068316X.2012.660153

van Gelder, J.-L. (2017). Emotions in offender decision making. In W. Bernasco, J.-L. van Gelder, & H. Elffers (Eds.), *The Oxford handbook of offender decision making* (pp. 466–478). New York: Oxford University Press.

van Gelder, J.-L., & De Vries, R. E. (2012). Traits and stated: Integrating personality and affect into a model of criminal decision making. *Criminology*, *50*(3), 637–671. https://doi.org/10.1111/j.1745-9125.2012.00276.x

van Gelder, J.-L., & De Vries, R. E. (2014). Rational misbehavior? Evaluating an integrated dual-process model of criminal decision-making. *Journal of Quantitative Criminology*, *30*, 1–27. https://doi.org/10.1007/s10940-012-9192-8

van Gelder, J. L., de Vries, R. E., Demetriou, A., van Sintemaartensdijk, I., & Donker, T. (2019). The virtual reality scenario method: Moving from imagination to immersion in criminal decision-making research. *Journal of Research in Crime and Delinquency*, *56*(3), 451–480.

van Gelder, J.-L., Reynald, D., & Elffers, H. (2014). Anticipated emotions and immediate affect in criminal decision making: From shame to anger. In J.-L. van Gelder, H. Elffers, D. Reynald, & D. Nagin (Eds.), *Affect and cognition in criminal decision making* (pp. 161–178). New York: Routledge.

VanderWeele, T., & Vansteelandt, S. (2014). Mediation analysis with multiple mediators. *Epidemiologic Methods*, *2*(1), 95–115. https://doi.org/10.1515/em-2012-0010

Warr, M. (2002). *Companions in crime: The social aspects of criminal conduct*. Cambridge: Cambridge University Press.

Warr, M. (2016). Crime and regret. *Emotion Review*, *8*(3), 231–239. https://doi.org/10.1177/1754073915586818

Weinberg, J. D., Freese, J., & McElhattan, D. (2014). Comparing data characteristics and results of an online factorial survey between a population-based and a crowdsource recruited sample. *Sociological Science*, *1*, 292–310. https://doi.org/10.15195/v1.a19

West, C., & Zimmerman, D. H. (1987). Doing gender. *Gender & Society*, *1*, 125–151. https://doi.org/10.1177/0891243287001002002

Wiers, R., Ames, S. L., Hofmann, W., Krank, M., & Stacy, A. (2010). Impulsivity, impulsive and reflective processes and the development of alcohol use and misuse in adolescents and young adults. *Frontiers in Psychology*, *1*(144), 1–12. https://doi.org/10.3389/fpsyg.2010.00144

Wikström, P.-O. H. (2006). Individuals, settings, and acts of crime: Situational mechanisms and the explanation of crime. In P.-O. H. Wikström & R. J. Sampson (Eds.), *The explanation of crime: Context, mechanisms and development* (pp. 61–107). Cambridge, England: Cambridge University Press.

Wikström, P.-O. H., Tseloni, A., & Karlis, A. (2011). Do people comply with the law because they fear getting caught? *European Journal of Criminology*, *8*(5), 401–420. https://doi.org/10.1177/1477370811416415

Wilson, T. D., & Gilbert, D. T. (2003). Affective forecasting. *Advances in Experimental Social Psychology*, *35*, 345–411.

Zimring, F. E., & Hawkins, G. J. (1973). *Deterrence: The legal threat in crime control*. Chicago: University of Chicago Press.

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SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section at the end of the article.

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APPENDIX

TABLE A1 Bivariate correlations between behavioral intentions

Variable	1	2	3	4	5	6
1. Yell	1.00					
2. Push	.53*	1.00				
3. Assault	.45*	.77*	1.00			
4. Ignore	–.34*	–.37*	–.45*	1.00		
5. Leave	–.16*	–.35*	–.35*	.39*	1.00	
6. Seek Help	.00	–.03	–.12*	.16*	.41*	1.00

*$p < .05$.