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## Do Different Facets of Impulsivity Predict Different Types of Aggression?

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### Abstract

The current study examined the relations between impulsivity-related traits (as assessed by the UPPS-P Impulsive Behavior Scale) and aggressive behaviors. Results indicated that UPPS-P Lack of Premeditation and Sensation Seeking were important in predicting general violence. In contrast, UPPS-P Urgency was most useful in predicting intimate partner violence. To further explore relations between intimate partner violence and Urgency, a measure of **autonomic response to pleasant and aversive stimuli** and facets of Neuroticism from the NEO PI-R were used as control variables. **Autonomic responsivity** was correlated with intimate partner violence at the zero-order level, and predicted significant variance in intimate partner violence in regression equations. However, UPPS-P Urgency was able to account for unique variance in intimate partner violence above and beyond measures of Neuroticism and arousal. Implications regarding the use of a multifaceted conceptualization of impulsivity in the prediction of different types of violent behavior are discussed.

Much research has focused on the origins of aggression, and a host of relevant factors has been identified (Anderson & Bushman, 2002). Although individual violent behavior is undoubtedly a result of a complex series of thoughts, emotions, and contexts, personality characteristics play an important role in predisposing individuals to aggression. Previous research in the traits associated with aggression has focused on several candidate areas, including hypermasculinity (Parrott & Zeichner, 2003), narcissism (Bushman & Baumeister, 1998), entitlement (Campbell, Bonacci, Shelton, Exline, & Bushman, 2004), and self-control (Caspi, 2000; DeWall, Baumeister, Stillman, & Gailliot, 2007; Gottfredson & Hirschi, 1990). Meta-analytic results indicate robust associations with the broad personality dimensions of Neuroticism, Conscientiousness, and Agreeableness from the Five Factor Model (Bettencourt, Talley, Benjamin, & Valentine, 2006; Miller & Lynam, 2001).

Given the robust relations to aggressive and delinquent behaviors, early appearance in development, and overlap with domains of general personality, increasing attention is turning to the area of trait impulsivity as a predictor of aggressive behavior (Caspi, 2000; Krueger, Caspi, Moffitt, White, & Stouthamer-Loeber, 1996; Murphy & Eisenberg, 1997). New, multifaceted conceptualizations of impulsivity have recently been introduced, which have proved useful in predicting a variety of risky behaviors (Cyders & Smith, 2010; Whiteside & Lynam, 2001; Zapolski, Cyders, & Smith, 2009). Despite considerable work in this area, little research has attempted to understand how various aspects of impulsivity are

associated with different types of aggressive acts. This is critical, as relations with specific impulsivity-related traits may inform researchers as to the nature of specific forms of aggression, and assist in the development of effective prevention strategies.

## Impulsivity and Aggression

Several impulsivity traits have been identified as relevant to aggression, including self-control (Baumeister, 1997; Gottfredson & Hirschi, 1990). Self-control is a stable personality trait assessing how much (or little) individuals control their impulses across time and situations (e.g., Caspi, 2000; Tangney, Baumeister, & Boone, 2004; see also Gottfredson & Hirschi, 1990). In their General Theory of Crime, Gottfredson and Hirschi (1990) proposed that low self-control is the single most important factor in understanding and predicting criminality, given that poor behavioral control undoubtedly reduces the individual's ability to override criminal impulses. Subsequent research has supported the link between deficits in self-control and criminal behaviors (Cherek, Moeller, Dougherty, & Rhoades, 1997; Cochran, Wood, Sellers, Wilkerson, & Chamlin, 1998; Gibbs, Giever, & Martin, 1998; Longshore & Turner, 1998; McGuire & BroomWeld, 1994). By and large, criminal acts provide immediate gratification of desires, supply few long-term benefits, and require little to no planning, all of which suggest an impulsive nature not subject to self-control.

Self-control has been linked to aggressive behaviors in several contexts. For instance, in a study by Murphy and Eisenberg (1997), children with dispositionally poor self-regulation had more angry conflicts with others and acted out more hostile responses to anger in a role-playing scenario with puppets, as compared to other children. In addition, Tangney, Baumeister, and Boone (2004) found that people low in self-control reported responding to anger-evoking situations with significantly greater outward aggression compared to people high in self-control. DeWall and colleagues showed that depleting people of their self-control strength increased their aggression in response to insult (DeWall et al., 2007).

Self-control has also been associated with aggression toward intimate partners. Specifically, Finkel, DeWall, Slotter, Oaten, and Foshee (2009) examined the relation between several self-regulatory processes and intimate partner violence. With regard to depletion of resources, individuals who had fewer self-regulatory resources behaved more aggressively toward intimate partners than did individuals whose self-regulatory resources had not been depleted. Further, those individuals with lower trait-level self-control were more likely to perpetrate intimate partner violence, suggesting that self-control is important for understanding aggressive behaviors directed at both strangers and intimate partners (Finkel et al., 2009).

Despite progress in this area, many studies examining relations between trait-level self-control and aggression focus on situational factors that undermine self-control, rather than the trait construct itself. Therefore, it is desirable to examine the contribution of the trait of self-control across a variety of settings to gain a greater understanding of how much this trait can predict different types of aggressive behavior. In addition, most studies in the aggression literature have treated the trait of self-control/impulsivity as a unitary construct. However, there is a growing body of research, to which we turn next, that suggests that there exists no single self-control or impulsivity trait (Cloninger, Przybeck, & Svrakic, 1991; Whiteside & Lynam, 2001).

## Multiple Impulsivity-Related Traits

The trait of impulsivity appears in every major conceptualization of personality. However, the underlying structure of this characteristic continues to be explored. Several authors have suggested that the construct of impulsivity is multidimensional in nature (Buss & Plomin,

1975; Cloninger, Przybeck, & Svrakic, 1991; Patton, Stanford, & Barratt, 1995; Zuckerman, Kuhlman, Thornquist, & Kiers, 1991). Although many conceptualizations of impulsivity exist, few have attempted to incorporate facets from all personality models.

With a focus on exploring multiple aspects of impulsivity, Whiteside and Lynam (2001) factor analyzed several widely used self-report impulsivity measures to identify the factor structure of this broad construct. Four factors were identified, and the UPPS Impulsive Behavior Scale was subsequently created to represent these factors (Whiteside & Lynam, 2001). The UPPS measures four distinct pathways to impulsivity: Negative Urgency, (lack of) Premeditation, (lack of) Perseverance, and Sensation Seeking. Negative Urgency refers to the tendency to act impulsively when experiencing negative affect. Lack of Premeditation refers to a failure to reflect on the consequences of an act before engaging in that act. Lack of Perseverance refers to an inability to focus or follow through on difficult or boring tasks. Sensation Seeking, as it is assessed on the UPPS, refers to “a tendency to enjoy and pursue activities that are exciting and an openness to trying new experiences that may be dangerous” (pg. 561; Whiteside, Lynam, Miller, & Reynolds, 2005). Each of the four scales of the UPPS corresponds to a facet of one of the Five Factor Model (FFM) domains of personality, a general trait model of personality, as measured by the NEO Personality Inventory - Revised (NEO-PI-R; Costa & McCrae, 1992). Negative Urgency corresponds to the N5: Impulsivity facet of Neuroticism, Lack of Premeditation corresponds to the C6: Deliberation facet of Conscientiousness, Lack of Perseverance corresponds to the C5: Self-Discipline facet of Conscientiousness, and Sensation Seeking corresponds to the E5: Excitement-Seeking facet of Extraversion.

Additional work with the UPPS saw the inclusion of a fifth impulsivity-related dimension: Positive Urgency. Positive Urgency refers to the tendency to act rashly when experiencing an unusually positive mood (Cyders & Smith, 2007; Lynam, Smith, Whiteside, & Cyders, 2006). Although this trait has shown moderate overlap with Negative Urgency, Positive Urgency has demonstrated unique predictive utility over other facets of the UPPS (Cyders et al., 2007; Cyders & Smith, 2007; Cyders & Smith, 2010). In longitudinal designs, Positive Urgency relates to higher rates of gambling behavior, illegal drug use, and risky sexual behavior in college students (Cyders & Smith, 2010; Zaploski, Cyders, & Smith, 2009), suggesting that the tendency to act rashly under circumstances of positive affect may have an important place in the impulsivity literature.

To our knowledge, only three prior studies have examined relations between the traits assessed by the UPPS and aggression. Miller, Flory, Lynam, and Leukefeld (2003) examined the ability of the four facets of the UPPS (measured via corresponding facets from the NEO PI-R) in the prediction of recent aggression as measured by the Conflict Tactics Scale (Straus & Gelles, 1990). Significant correlations between aggression and all facets of the UPPS were found, although in simultaneous regression analyses with all facets of the UPPS entered, only Negative Urgency accounted for significant variance in aggression.

Lynam and Miller (2004) examined the ability of the four facets of the UPPS (measured via corresponding facets from the NEO PI-R) in the prediction of aggressive responses to vignettes in undergraduate college students. Lynam and Miller found that Lack of Premeditation was related to generating and choosing to enact aggressive responses to hypothetical interpersonal vignettes, whereas Negative Urgency was related to making more hostile attributions (2004). Further, Seibert, Miller, Pryor, Reidy, and Zeichner (2010) examined relations between UPPS facets of impulsivity and aggressive responses from a response choice aggression paradigm in college undergraduates. Although it was hypothesized that Negative Urgency would relate to aggressive responses under

provocation, contrary to expectations, no significant relations between UPPS facets and aggressive responses were found (Seibert et al., 2010).

These studies suggest that Lack of Premeditation and Negative Urgency are uniquely relevant to aggression (Lynam & Miller, 2004; Miller et al., 2003; Seibert et al., 2010). However, none of the previous studies utilizing the UPPS-P has examined relations with aggression toward intimate partners, suggesting that further exploration of this area is necessary. In addition, none of these studies utilized a lifetime indicator of aggression. Therefore, it is useful to investigate relations between the UPPS-P measure and different forms of aggressive acts over the lifecourse so that relations between facets of impulsivity and behavior across a variety of settings can be explored.

## Autonomic Arousal and Aggression

In addition to personality factors, autonomic arousal may be a factor that influences individuals' decision to make aggressive responses. Indeed, a meta-analysis of 95 studies found that electrodermal reactivity was positively associated with aggression, but negatively associated with psychopathy, suggesting that something specific to aggressive responses (but not necessarily antisociality) is associated with arousal (Lorber, 2004). In addition, high heart rate reactivity is associated with aggression and conduct problems, further suggesting that generalized autonomic arousal is associated with aggressive acts (Lorber, 2004).

Crucially, in this meta-analysis, aggression was defined as "physical behavior intended to harm or injure another person, including studies of fighting with peers, shocking laboratory confederates, and physical aggression in families" (p. 533, Lorber, 2004). Physiological arousal findings are less clear regarding psychophysiological arousal in specific types of aggressive acts (Babcock, Green, Webb, & Yerington, 2005). Although heart rate *hyperarousal* is associated with spouse-directed hostility and anger (Brown & Smith, 1992; Smith & Brown, 1991), and low levels of violence toward spouses (Babcock et al., 2005), heart rate *hypoarousal* has been found in severely violent batterers (Babcock et al., 2005). Therefore, more research is needed to better understand the relationship between physiological arousal and aggression.

## Affect, Autonomic Arousal and Urgency

Based upon emerging research, the construct of Urgency plays a significant role in predicting aggression. Notably, Negative Urgency corresponds to the Neuroticism factor of the Five Factor Model of personality (FFM), indicating strong associations with negative affect. Given meta-analytic findings that Neuroticism relates to aggressive behaviors, particularly under provoking conditions (Bettencourt, Talley, Benjamin, & Valentine, 2006; Miller & Lynam, 2001), relations between Negative Urgency and aggression are not surprising. However, because Negative Urgency reflects a specific form of impulsivity, rather than generalized negative affect, it may be useful to examine whether Negative Urgency has unique predictive utility beyond other Neuroticism indicators.

It is also critical to differentiate autonomic arousal to stimuli from the UPPS-P construct of Negative Urgency. Whiteside and Lynam's (2001) original description of Negative Urgency describes this trait as "the tendency to experience strong impulses, particularly under conditions of negative affect" (p. 685). While arousal does play a role in priming subsequent impulsivity, this definition does not indicate that individuals high in Negative Urgency are necessarily more or less autonomically reactive than their low Negatively Urgent counterparts. It is therefore worthwhile to investigate whether it is the trait of Negative Urgency or autonomic arousal itself that serves as a predictor of violent behavior, as this

will clarify how the dimensions of Neuroticism and Negative Urgency relate to forms of aggression.

## The Current Study

The current study attempts to clarify relations between two types of self-reported violent behavior (General Violent Behavior and Intimate Partner Violent Behavior), and a multifaceted impulsivity model, the UPPS-P. Through the use of a multifaceted impulsivity measure, we hope to bring clarity to the relations between facets of impulsivity and violent behavior. Based upon previous research, several relations are hypothesized.

It is hypothesized that the UPPS-P dimension of Lack of Premeditation will relate to both General Violent Behaviors and Intimate Partner Violence Behaviors (Lynam & Miller, 2004). In addition, because previous work has indicated relations between Neuroticism and provoked aggression (Bettencourt et al., 2006), and Negative Urgency and aggression (Miller et al., 2003), we expect that facets of Neuroticism and the UPPS-P scales assessing Urgency will relate to both forms of aggression, but they will be most strongly associated with aggression which takes place in the context of emotional arousal, such as aggression toward an intimate partner.

In addition to primary measures, a measure of autonomic responsivity was included in the present study to explore relations to specific forms of aggressive behaviors. Finally, other indicators of negative affect were included to examine whether Urgency provides unique predictive utility above and beyond other measures of arousal and affect.

## Method

### Participants

Participants were male undergraduates at the University of Kentucky. One hundred and thirty-one participants were allowed to sign up from the general pool of participants from undergraduate psychology classes. To ensure that a number of individuals participating in the study endorsed delinquent behaviors, seventy participants were selected from introductory psychology classes based on scores from a subset of items of a psychopathy screening measure, the Hare Self-Report Psychopathy Scale (HSRP; Paulhus, Hemphill, & Hare, in press), which was administered in a mass screen of all introductory psychology classes. Screening forms were completed by 362 individuals. Ninety-one individuals scoring in the top 25% (with a total score > 54) of the HSRP item subset were selected and contacted to participate in the study. This selection process served to ensure that the top of the general distribution of delinquency and behavioral problems was well represented. In addition to scores on the screening measure, participant's reported their age on screening forms.

### Self-Report Measures

**UPPS-P Impulsivity Scale**—The UPPS-P Impulsivity Scale (Lynam, Smith, Whiteside, & Cyders, 2006; Whiteside & Lynam, 2001) is a 59-item self-report measure designed to assess five impulsivity-related traits, including Negative Urgency (12 items), Lack of Premeditation (11 items), Lack of Perseverance (10 items), Sensation Seeking (12 items), and Positive Urgency (14 items). Whiteside and Lynam (2001) have found that the UPPS demonstrates excellent internal consistency and convergent validity, and later studies have indicated that the subscales of the UPPS make unique contributions to different disorders, suggesting that these subscales represent important aspects of impulsivity not assessed in other impulsivity measures (Whiteside, Lynam, Miller, & Reynolds, 2005).



Initial analyses found considerable overlap between UPPS-P Negative Urgency and UPPS-P Positive Urgency ( $r = .74, p < .001$ ), suggesting that Positive Urgency shares considerable variance with Negative Urgency. All additional analyses were conducted using Positive and Negative Urgency as separate predictors, but upon finding similar results for both Urgency variables, they were combined for final analyses. Thus, final analyses were conducted using a variable that combines both Positive and Negative Urgency, which we refer to hereafter as "Urgency." The UPPS-P was scored using a 5-point likert scale (1 = *Strongly Disagree* to 5 = *Strongly Agree*). Reliabilities (i.e., coefficient alphas) for the subscales ranged from .82 for Perseverance to .95 for Urgency.

**Crime and Analogous Behavior Scale**—The CAB (Lynam, Whiteside, & Jones, 1999) is a 69-item self-report inventory that asks the respondent about interpersonal aggression (i.e., intimate partner violence, fighting, use of weapons) and delinquent behavior (i.e., stealing, driving while intoxicated). Two variables were created for the study. Variety of General Violence Behaviors (GVB) included a count of the number of general violence behaviors reported (i.e., ever in a physical fight, ever attacked a person with a weapon, ever hurt another person so badly that they needed bandages or a doctor, ever commit armed robbery). Variety of Intimate Partner Violence Behaviors (IPVB) included a count of the number of intimate partner violence behaviors (i.e., ever thrown something at an intimate partner, ever twisted an intimate partner's arm or pulled hair, ever pushed or shoved an intimate partner, ever grabbed an intimate partner, ever slapped an intimate partner, ever punched or hit an intimate partner with something that could hurt).

Variety variables were created to count the different types of behavior individuals may have engaged in, rather than the frequency with which individuals may have engaged in specific behaviors. The decision to create variety variables was based upon evidence which suggests benefits over frequency variables. Variety variables are 1) More accurate (e.g., participants are more likely to accurately recall types of acts rather than specific numbers of times they may have engaged in acts), 2) Less vulnerable to skew, 3) Less vulnerable to the over-reporting of minor acts, and 4) More reliable predictors of future behaviors than frequency scores (Monahan & Piquero, 2009). Coefficient alpha for GVB was .30, and for IPVB was .73. The coefficient alpha for GVB was likely so low because of the low numbers of items on this particular scale.

**NEO PI-R**—The NEO PI-R is a self-report questionnaire developed by Costa and McCrae (1992) to assess general personality dimensions based on the Five Factor Model of personality. It consists of 240 items, which are rated on a 5-point scale, anchored by 1 (*strongly disagree*) and 5 (*strongly agree*). This personality inventory provides a score for all five domains (Neuroticism, Extraversion, Openness to Experience, Conscientiousness, and Agreeableness) based on 48 questions per domain, and assesses six facets within each domain using 8 items per facet. For this sample, only the facets from the domain of Neuroticism were included. Reliabilities (i.e., coefficient alphas) for the facets ranged from .78 for N1: Anxiety to .60 for N5: Impulsiveness and reliability for the domain of Neuroticism was .90.

## Laboratory Measures

**Startle Response**—The autonomic response tasks were conducted following the design used by Patrick, Bradley, and Lang (1993). Specifically, participants viewed twenty-seven images from the International Affective Picture System previously chosen and categorized by Patrick et al. (1993): Nine pleasant images included opposite sex nudes, food, sports scenes, and children; nine neutral images included household objects and neutral faces; nine unpleasant images included mutilations, aimed guns, and snakes. Images were randomly

presented for 6 seconds each in blocks of nine, with three pleasant, three neutral, and three unpleasant images in each block.

On six of the trials for each image type, an acoustic startle probe consisting of a 50-ms burst of 95dB (A) white noise with instantaneous rise time was presented through stereo headphones at either 3.5, 4.5, or 5.5 seconds after the presentation of the image. Orbicularis oculi electromyogram (EMG) was measured using two miniature domed Ag/AgCl electrodes (4 mm) filled with a standard electrode gel (Surgicon Systems) and attached with double-sided adhesive collars. The first electrode was placed approximately 1 cm below the lower lid of the left eye (directly under the pupil), and the second electrode was placed to the right 1 cm laterally. The raw EMG signal was amplified with a Biopac EMG100C amplifier (Biopac Systems, Inc., Santa Barbara, CA; Gain = 5000; Low Pass = 500 Hz, 100 Hz High Pass = Off, High Pass = 10 Hz; Bandstop = 60 Hz), and was sampled at a rate of 200 Hz (AcqKnowledge Version 3.7.3.0). The startle blink magnitude is scored from the smoothed EMG signal as a baseline to peak difference following each noise probe trial. Higher EMG scores indicate a greater startle response.

From EMG scores, two variables were created: Aversive Responsivity and Pleasant Responsivity. To compute these variables, all EMG onset variables (3.5, 4.5, 5.5) were averaged to form Neutral, Aversive, and Pleasant EMG categories. Next, all averaged scores were standardized. Neutral EMG was subtracted from Aversive EMG to form Aversive Responsivity. Neutral EMG was subtracted from Pleasant EMG to form Pleasant Responsivity.

## Procedure

The current study was part of a larger protocol administered over the course of two 1.5-hour testing sessions. One hundred and ninety-three participants completed two 1.5-hour sessions for which they received course credit and the chance to earn modest monetary incentives. Participants were tested individually. In the first session, participants were asked to provide informed consent before completing questionnaires, including the NEO PI-R, and laboratory tasks, including the Startle Response task. During the second session, participants were administered five self-report questionnaires, including the UPPS-P and the CAB. Measures were presented in counterbalanced order. For completion of both parts of the study, participants received \$30.00. A researcher was always present during testing, and participants were encouraged to ask questions if clarification was necessary. Procedures for recruitment, data collection, and data storage were approved by the University of Kentucky Institutional Review Board.

## Analyses

### Analysis of Startle Response Data

Due to initial problems with psychophysiological recording hardware, only 162 participants provided EMG data. EMG was filtered (FIR/Band Pass Low Frequency = 28 Hz, high frequency 100Hz) and rectified using AcqKnowledge version 3.7.3.0. Due to low sampling rate, smoothing of the EMG waveform was not conducted. Response magnitude was derived from the rectified channel and was defined as the maximum value of the response curve reached within 20 to 450 ms after stimulus onset. A response was scored as zero if no responses occurred within 20 to 450 ms after stimulus onset. A trial was scored missing if the EMG baseline was too unstable (i.e., larger than 20 mV) to judge the presence of a response or if a response began within less than 20 ms after stimulus onset. Based on these criteria, 5.8% of the trials were excluded from the analysis. A participant's entire startle data were discarded if more than half of the responses across the experiment were zero responses and/or missing ( $n = 3$ ).

Because EMG was recorded at lower frequency than recommended (200 Hz vs. 2000 Hz), this prevented recording of responses in the higher frequency range (above 100 Hz), resulting in a loss of power likely present in responses. While this flaw in recording was significant, visual inspection of the EMG waveforms suggested that analyses could be carried out to completion with the exception of smoothing the wave, as the wave was essentially smoothed via the low sampling rate (T. Blumenthal, personal communication, July 29, 2008).

## Results

Descriptive statistics for age, facets of the UPPS-P, violence variables, autonomic response variables, and NEO PI-R Neuroticism facets are presented in Table 1. Correlations were computed between facets of the UPPS-P, autonomic responsivity variables (Aversive Responsivity and Pleasant Responsivity), violence variables (Variety of General Violent Behaviors and Variety of Intimate Partner Violent Behaviors), and age (see Table 2). Not surprisingly, Variety of General Violent Behaviors (GVB) correlated positively with Variety of Intimate Partner Violent Behaviors (IPVB;  $r = .17, p < .05$ ).

As expected, General Violent Behaviors correlated significantly and positively with UPPS-P Lack of Premeditation. Although not predicted, Variety of General Violent Behaviors also correlated positively with UPPS-P Sensation Seeking. Taken together, these results indicate that General Violent Behaviors are associated with the failure to consider actions and trait-level risk-taking. In contrast, Variety of Intimate Partner Violent Behaviors correlated positively with UPPS-P Urgency, but it was unrelated to UPPS-P Lack of Premeditation. These results suggest that intimate partner violence is associated with impulsivity that comes about in the context of strong emotional reactions. Thus, impulsivity related to a lack of premeditation and risk taking is associated with engaging in generalized aggressive behavior, whereas impulsivity related to acting rashly in the context of strong affect is associated with engaging in more aggressive acts toward intimate partners.

Neither Pleasant nor Aversive Responsivity correlated with any facets of the UPPS-P. Both Pleasant and Aversive Responsivity correlated positively with Variety of Intimate Partner Violent Behaviors, but they were not significantly related to Variety of General Violent Behaviors. These findings support results from the UPPS-P self-report measure by showing that impulsivity associated with emotional arousal significantly relates to intimate partner violence, but not to generalized aggression. However, it is important to note that while significant, correlations across violence behavior variables were not significantly different, thereby suggesting that responsivity variables were not effective as differential predictors of IPVB and GVB.

Finally, Age was significantly and positively related to both Intimate Partner Violent Behaviors and General Violent Behaviors ( $r = .32, p < .001$ , and  $r = .27, p < .001$ , respectively), but not to any of the facets of the UPPS-P or responsivity variables.

## Differential Correlation Patterns

To examine differential UPPS-P correlation patterns across violence variables, two-tailed  $t$ -tests were computed using William's procedure (Howell, 2007). Results are reported for both the differences between correlations (using signed correlational values in tests) and differential predictive utility for correlations (using absolute correlational values in tests). Results are reported in Table 2. The comparison of correlations for UPPS-P Urgency with GVB and IPVB indicated that these correlations were significantly different ( $t = -2.54, p < .05$ ), and that UPPS-P Urgency had significantly different predictive utility ( $t = -2.54, p < .05$ ) across violence variables, suggesting that UPPS-P Urgency is a significantly better



predictor of IPVB than GVB. Similarly, the comparison of correlations for UPPS-P Sensation Seeking with GVB and IPVB indicated that these correlations were significantly different ( $t = -2.96, p < .01$ ), but did not indicate that UPPS-P Sensation Seeking is a significantly better predictor of GVB than IPVB ( $t = -1.64, ns$ ).

The comparison of the correlations with UPPS-P Premeditation indicated that these correlations were not significantly different ( $t = .65, ns$ ), and the comparison for UPPS-P Perseverance indicated that these correlations were not significantly different ( $t = -.42, ns$ ), and did not have differential predictive utility ( $t = .65, ns$ , and  $t = .21, ns$ , respectively). The comparison of the correlations for Aversive Responsivity with GVB and IPVB revealed no significant correlation or predictive utility difference ( $t = -.98, ns$ ), nor did the comparison of the correlations obtained for Pleasant Responsivity ( $t = -.59, ns$ ).

### Incremental Predictive Utility

Next, we explored whether general aspects of emotionality (e.g., Neuroticism and autonomic arousal) could account for the relation between Urgency and Variety of Intimate Partner Violent Behaviors. Because Urgency is defined as impulsive tendencies that occur under conditions of strong affect, it is possible that the arousal surrounding the affect could account for significant variance in Intimate Partner Violent Behaviors, thereby reducing the effect of Urgency.

To test this possibility, we conducted a hierarchical multiple regression analysis where Intimate Partner Violent Behavior was regressed onto Age in the first step, facets of Neuroticism (excluding N5: Impulsiveness) in the second step, Aversive Responsivity in the third step, and Urgency in the final step (see Table 3). Due to collinearity, responsivity variables were included in separate analyses. Results indicated that Age accounted for significant variance in the first step ( $B = 0.15, p < .001$ ), none of the facets of Neuroticism accounted for significant variance in the second step, and Aversive Responsivity accounted for marginally significant variance in the third step ( $B = 0.25, p < .10$ ). As predicted, Urgency was significant at the final step ( $B = 0.40, p < .01$ ), suggesting that Urgency accounts for unique variance in Intimate Partner Violence Behaviors above and beyond Age, negative affect, and Aversive Responsivity.

We also conducted a hierarchical multiple regression analysis where Intimate Partner Violent Behavior was regressed onto Age in the first step, facets of Neuroticism (excluding N5: Impulsiveness) in the second step, Pleasant Responsivity in the third step, and Urgency in the final step (see Table 4). Results indicated that Age accounted for significant variance in the first step ( $B = 0.14, p < .001$ ), none of the facets of Neuroticism accounted for significant variance in the second step, and Pleasant Responsivity accounted for significant variance in the third step ( $B = 0.32, p < .05$ ). As before, Urgency was significant at the final step ( $B = 0.41, p < .01$ ), suggesting that Urgency accounts for unique variance in Intimate Partner Violence Behaviors above and beyond Age, negative affect, and Pleasant Responsivity.

### Discussion

Aggression and violence have plagued the world since time immemorial. Some people aggress because they feel too much, while others aggress because doing so quenches their thirst for excitement and novelty or because of their general tendency to not consider the future ramifications of their behavior. The aggression literature has identified many risk factors for aggression, including antagonism, hypermasculinity, narcissism, and impulsivity. Impulsivity is closely linked to aggression and criminality, but little research has attempted to understand how different facets of impulsivity relate to different types of aggressive acts.

The current work adds to this burgeoning area of research in multiple novel ways. First, we identified relations between two forms of aggression, Intimate Partner Violence and General Violent Behaviors, and the subscales of a multifaceted measure of impulsivity, the UPPS-P. Consistent with prior work (Lynam & Miller, 2004), participants who generally act without consideration of the future consequences of their actions (i.e., Lack of Premeditation) reported engaging in higher levels of generalized aggression, including physical fighting, using a weapon, severely hurting another person, and armed robbery. Further, participants scoring highly on Sensation Seeking, a facet of impulsivity associated with strong desires for novelty and excitement, were more likely to report engaging in generalized forms of aggressive acts. Neither Lack of Premeditation nor Sensation Seeking predicted how much participants reported behaving aggressively toward intimate partners. In contrast, the facet of impulsivity relating to acting rashly under conditions of positive and negative emotion (i.e., Urgency) consistently predicted higher rates of intimate partner violence perpetration, but was unrelated to aggression toward non-intimates. These findings highlight the utility of considering impulsivity as a heterogeneous personality construct consisting of lower-order facets that predict different types of aggression.

Second, we attempted to clarify findings from the psychophysiological literature by using a startle-response task paradigm as an indicator of arousal. Previous findings using electrodermal activity and heart rate found that autonomic *hyper*reactivity is associated with high levels of intimate partner hostility (Brown & Smith, 1992; Smith & Brown, 1991), but that heart rate *hypo*reactivity is found in individuals who commit severe intimate partner aggression (Babcock et al., 2005). The current results indicate that startle response to both pleasant and aversive stimuli correlated positively with intimate partner violence perpetration, but were unrelated to General Violence, thereby suggesting that autonomic hyperarousal is specifically associated with intimate partner aggression. However, it is important to note that differential correlations were not found between responsivity measures and intimate partner vs. general violent behavior, suggesting that continued work in this will be necessary to clarify these relations.

Finally, we performed hierarchical multiple regression analyses to explore whether UPPS-P Negative Urgency could account for variance in Intimate Partner Violent Behavior above and beyond other indicators of affect and arousal. Although both age and responsivity variables accounted for significant variance Intimate Partner Violent Behavior, Urgency accounted for significant incremental variance in the final steps of regression equations. This suggests that Urgency is distinct from simple affective arousal and plays a unique role in the prediction of aggression toward an intimate partner.

## Implications

These results have several implications. First, subscales from a multifaceted model of impulsivity have an important place in conceptualizations of violent behavior. Specific impulsivity-related traits bear differential relations to General Violent Behavior and Intimate Partner Violent Behavior, suggesting that these types of aggression may arise from very different processes. Therefore, Intimate Partner Violent Behavior is related not simply to diminished self-control, but rather to impulses generated under conditions of strong affect. In the same vein, General Violent Behaviors are related not singularly to poor deliberative ability, but also to a high level of risk taking. With additional research in this area, prevention and treatment strategies may be better informed as to the origins of these two types of behaviors, and may be able to tailor interventions to be more specific to the individual.

Although Sensation Seeking has received significant attention for its ability to predict multiple forms of risky behaviors, including substance use, gambling, and risky sex (Lynam

& Miller, 2004; Miller et al., 2003), relations with aggressive outcomes have not been quite as robust (Miller et al., 2003; Seibert et al., 2010). The current findings indicate that individuals high in Sensation Seeking participate in generalized aggressive acts toward others. There are several possibilities for why this may be the case. It is possible that those high in Sensation Seeking find themselves in more dangerous situations more often than others. In addition, individuals high in Sensation Seeking may use aggressive scenarios to satisfy a need for excitement. More research will be necessary to understand this relation further.

The utility of Urgency in predicting unique variance in Intimate Partner Violence is also quite noteworthy. Individuals high in Urgency are likely to enact impulsive responses under conditions of strong emotion, suggesting that this may be a key to understanding why violent responses are present in intimate partner scenarios. Notably, there was high collinearity between Negative and Positive Urgency in this sample, indicating that combining these aspects of urgency may be useful in future research. The overlap in definition and variance may suggest that the UPPS-P should utilize a broader construct of Urgency to subsume these facets, as indicated by others (Cyders & Smith, 2007). Additional work with the construct of Positive Urgency will be useful for exploring the incremental predictive utility of this facet.

Generally speaking, these results are also applicable to the multiple descriptions of violent typologies. Whether one refers to “hot-blooded” vs. “cold-blooded,” or “reactive” vs. “proactive,” it appears as though these aspects of impulsivity fit nicely within the aggression framework. Hot-blooded, reactive aggression comes about in the context of strong emotions, and relates well to the trait of Urgency. In contrast, cold-blooded, instrumental aggression is that which serves another purpose, and does not come from emotion, but out of practicality or necessity. It is quite possible that sensation seeking individuals aggress to achieve exciting ends, or because through their risk taking, they find themselves in the wrong place at the wrong time. The relation between Lack of Premeditation and General Violent Behavior is somewhat more difficult to subsume under the “hot” and “cold” framework, but it may be the case that instrumentality does not necessarily imply premeditation, but can occur in the moment. For example, an individual who commits armed robbery of a car may not have planned the activity, but decided to use the weapon available in the moment when an opportunity arose.

### Limitations and Future Directions

The current study has several limitations. First, the participants in this study were all male. While men are more likely to commit aggressive acts compared to women, making this gender restriction applicable to the current study, this prohibits examination of potential gender differences. Further, the participants in this study were undergraduate students. Although pre-selection was conducted to increase the likelihood of antisocial tendencies, it is possible that the degree to which undergraduates commit aggression is lower than that of a community sample. Thus, future work would benefit from extending this work to both male and female participants from other settings where rates of aggressive acts are higher.

In addition, because EMG response was recorded at lower frequency than recommended (200 Hz vs. 2000 Hz), it is possible that other relations exist but were unable to be detected in the present analyses. Additional work relating psychophysiological responses, aggression, and facets of impulsivity would be necessary to further explore how arousal affects relations between traits and violent behavior.

Finally, it is necessary to replicate these findings with additional indicators of aggression. Despite adequate reliability in the measure of Variety of Intimate Partner Violent Behaviors,

the reliability of General Violent Behaviors in the current study was quite low. Future work should include more detailed measures of aggressive behaviors to replicate this finding. Additionally, although the measures used in the current study bear similarity to other established measures of aggression (e.g., the Conflict Tactics Scale; Straus & Gelles, 1990), it will be necessary to replicate results with additional assessments so that relations to many different types of aggressive acts can be explored. It is also of note that while relations between laboratory aggression tasks and facets of impulsivity have not shown significant results, continued work in this area is necessary to explore how these traits impact aggressive behavior in the moment. The present study examines general behaviors over the life course, and does not address how traits affect immediate processing and evaluation of stimuli that may result in violence.

### Concluding remarks

The current study sought to replicate and extend findings regarding the relations between two forms of violence and a multifaceted conceptualization of impulsivity. While correlations confirmed some of the previous relations to UPPS-P impulsivity scales, the use of two distinct forms of violence suggest new and important insights into how useful aspects of impulsivity can be to this literature. The UPPS-P facets of Lack of Premeditation and Sensation Seeking related to general aggressive behaviors, while the UPPS-P facet of Urgency related to violence against intimate partners, suggesting that these specific traits may hold an important place in the aggression literature.

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Table 1

## Descriptive statistics

Variable	N	Mean	SD	Min	Max	$\alpha$
Age	180	19.70	2.77	17.00	45.00	
Hare Self-Report Psychopathy Screening Measure	193	2.43	.52	1.20	4.22	.80
UPPS-P Urgency	193	2.46	.72	1.12	4.65	.95
UPPS-P Premeditation	193	2.44	.63	1.00	4.55	.87
UPPS-P Perseverance	193	2.26	.56	1.00	3.80	.82
UPPS-P Sensation Seeking	193	3.89	.70	1.58	5.00	.85
CAB General Violence (GVB)	192	0.81	.74	0.00	4.00	.30
CAB Ever in a physical fight	189	0.64	.48	0.00	1.00	
CAB Ever attacked a person with a weapon	192	0.03	.16	0.00	1.00	
CAB Ever hurt another person so badly that they needed bandages or a doctor?	192	0.18	.38	0.00	1.00	
CAB Ever commit armed robbery	192	0.01	.10	0.00	1.00	
CAB Intimate Partner Violence (IPVB)	193	0.38	.93	0.00	6.00	.73
CAB Ever thrown something at intimate partner	193	0.07	.25	0.00	1.00	
CAB Ever twisted intimate partner's arm or pulled hair	193	0.04	.20	0.00	1.00	
CAB Ever pushed or shoved intimate partner	193	0.07	.25	0.00	1.00	
CAB Ever grabbed intimate partner	193	0.19	.39	0.00	1.00	
CAB Ever slapped intimate partner	193	0.03	.16	0.00	1.00	
CAB Ever punched or hit intimate partner with something that could hurt	193	0.01	.10	0.00	1.00	
NEO PI-R Neuroticism	198	2.77	.42	1.71	4.23	.90
NEO PI-R N1: Anxiety	198	2.97	.60	1.38	4.50	.71
NEO PI-R N2: Hostility	198	2.64	.63	1.38	4.62	.76
NEO PI-R N3: Depression	198	2.71	.67	1.25	5.00	.78
NEO PI-R N4: Self-Consciousness	198	2.85	.60	1.50	4.62	.68
NEO PI-R N5: Impulsiveness	198	3.15	.54	1.62	4.75	.60
NEO PI-R N6: Vulnerability	198	2.29	.49	1.25	4.00	.71
Aversive Responsivity	158	-0.02	.53	-1.52	1.71	
Pleasant Responsivity	158	0.02	.50	-1.85	1.46	

Note. Aversive Responsivity was calculated as the difference score between aversive and neutral image EMG response.

Pleasant Responsivity was calculated as the difference score between pleasant and neutral image EMG response.

Table 2

Correlations between Facets of the UPPS-P and Violent Behavior Variables

Item	Urgency (N = 192)	(lack of) Premeditation (N = 192)	(lack of) Perseverance (N = 192)	Sensation Seeking (N = 192)	Aversive Responsivity (N = 158)	Pleasant Responsivity (N = 157)	GVB (N = 192)	Age (N = 180)
Urgency	--							-.02
(lack of) Premeditation	<b>.49***</b>	--						-.04
(lack of) Perseverance	<b>.49***</b>	<b>.45***</b>	--					-.08
Sensation Seeking	<b>.26***</b>	<b>.34***</b>	-.02	--				-.01
Aversive Responsivity	-.01	-.08	-.07	-.05	--			.02
Pleasant Responsivity	.02	-.02	-.03	.08	<b>.44***</b>			.08
GVB	.03	<b>.17*</b>	-.03	<b>-.21**</b>	.04	.10	--	<b>.27***</b>
IPVB	<b>.26**</b>	.11	.01	.06	<b>.14†</b>	<b>.16*</b>	<b>.17*</b>	<b>.32***</b>
<i>t</i> -test <sup>a,b</sup> <i>r</i> <sub>GVB</sub> vs. <i>r</i> <sub>IPVB</sub>	<b>-2.54*</b>	.65	-.42	<b>-2.96**</b>	-.98	-.59		
<i>t</i> -test <sup>a,c</sup> <i>r</i> <sub>GVB</sub> vs. <i>r</i> <sub>IPVB</sub>	<b>-2.54*</b>	.65	.21	1.64	-.98	-.59		

Note.

Significant correlations presented in bold type. GVB = General Violent Behavior. IPVB = Intimate Partner Violent Behavior.

\*  
*p* < .05\*\*  
*p* < .01\*\*\*  
*p* < .001.<sup>a</sup>Significance based upon two-tailed tests.<sup>b</sup>Signed correlational values were used in *t*-tests to assess whether correlations were different.<sup>c</sup>Absolute values were used in *t*-tests to assess differential predictive utility.

**Table 3**  
Predictive Utility of UPPS-P Urgency beyond Indicators of Age, Negative Affect or Aversive Responsivity

Step and Variable	B	SE <sub>b</sub>	$\beta$	R <sup>2</sup>	F $\Delta$	df1	df2
Intimate Partner Violent Behaviors							
1 Age	<b>0.15</b> <sup>***</sup>	<b>0.03</b>	<b>.38</b>	.15	<b>24.97</b> <sup>***</sup>	1	146
2 NEO PI-R N1: Anxiety	0.15	0.16	.09	.18	1.09	5	141
NEO PI-R N2: Hostility	0.13	0.15	.08				
NEO PI-R N3: Depression	0.15	0.18	.10				
NEO PI-R N4: Self-Consciousness	-0.15	0.18	-.09				
NEO PI-R N6: Vulnerability	-0.02	0.23	-.01				
3 Aversive Responsivity	<b>0.25</b> <sup>†</sup>	<b>0.15</b>	<b>.13</b>	.20	<b>2.94</b> <sup>†</sup>	1	140
4 UPPS-P Urgency	<b>0.40</b> <sup>***</sup>	<b>0.12</b>	<b>.28</b>	.25	<b>10.25</b> <sup>***</sup>	1	139

Note.

\*  $p < .05$

Significant coefficients presented in bold type.

<sup>†</sup>  $p < .10$

\*\*  $p < .01$

\*\*\*  $p < .001$ .

Predictive Utility of UPPS-P Urgency beyond Indicators of Negative Affect or Pleasant Responsivity

Table 4

Step and Variable	B	SE <sub>B</sub>	β	R <sup>2</sup>	F Δ	df1	df2
Intimate Partner Violent Behaviors							
1 Age	<b>0.14</b> <sup>***</sup>	<b>0.03</b>	<b>.38</b>	.14	<b>24.03</b> <sup>***</sup>	1	145
2 NEO PI-R N1: Anxiety	0.14	0.16	.08	.17	.95	5	140
NEO PI-R N2: Hostility	0.11	0.15	.07				
NEO PI-R N3: Depression	0.12	0.17	.08				
NEO PI-R N4: Self-Consciousness	-0.11	0.18	-.06				
NEO PI-R N6: Vulnerability	-0.00	0.24	-.00				
3 Pleasant Responsivity	<b>0.32</b> *	<b>0.16</b>	<b>.16</b>	.20	<b>4.20</b> *	1	139
4 UPPS-P Urgency	<b>0.41</b> <sup>**</sup>	<b>0.13</b>	<b>.28</b>	.25	<b>10.57</b> <sup>**</sup>	1	138

Note.

<sup>†</sup>  $p < .10$

Significant coefficients presented in bold type.

\*  $p < .05$

\*\*  $p < .01$

\*\*\*  $p < .001$ .