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Gender Differences in Emotional Risk for Self- and Other-Directed Violence among Externalizing Adults

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Abstract

OBJECTIVE—Women and men generally differ in how frequently they engage in other- and self-directed physical violence and may show distinct emotional risk factors for engagement in these high-impact behaviors. To inform this area, we investigated gender differences in the relationship of emotional tendencies (i.e., anger, hostility, and anhedonic depression) that may represent risk for other-directed (i.e., physical fighting, attacking others unprovoked) and self-directed violence (i.e., self-injury, suicide attempts).

METHOD—The ethnically-diverse sample consisted of 372 adults (252 men and 120 women ages 18–55) with a history of criminal convictions. Facets of emotional risk assessed with the Aggression Questionnaire (Buss & Warren, 2000) and Mood and Anxiety Symptom Questionnaire (Watson et al., 1995) were entered simultaneously as explanatory variables in regression analyses to investigate their unique contributions to other- and self-directed physical violence in men and women.

RESULTS—Analyses revealed anhedonic depressive tendencies negatively predicted other-directed violence and positively predicted self-directed violence in both men and women, consistent with a model of depression in which aggression is turned inwards (Henriksson et al., 1993). Gender differences, however, emerged for the differential contributions of anger and hostility to other- and self-directed violence. Specifically, trait anger (i.e., difficulty controlling one's temper) was associated with other-directed violence selectively in men, whereas trait hostility (i.e., suspiciousness and alienation) was associated with self- and other-directed violence among women.

CONCLUSIONS—The divergent findings for trait anger and hostility underscore the need to examine gender-specific risk factors for physical violence to avoid excluding potentially useful clinical features of these mental health outcomes.

Keywords

Anger; hostility; anhedonic depression; violence; gender; suicide; aggression

Other- and self-directed physical violence are high-impact behaviors that contribute to morbidity, mortality, and broader social problems (World Health Organization, 2002). These behaviors are particularly prevalent in “externalizing” populations (e.g., showing criminal and substance use behaviors; Skeem & Mulvey, 2001), partly as a consequence of the self-regulation and emotional problems frequently experienced by individuals with externalizing disorders (Ross, Fontao, & Schneider, 2007). Indeed, emotional lability is heightened in individuals with externalizing psychopathology and often linked to violence and suicidality

(e.g., Maiuro, O'Sullivan, Michael, & Vitaliano, 1989; Verona, Patrick, & Joiner, 2001). Despite the potential importance of emotions in promoting violence, distinct facets of emotional tendencies are not generally studied in tandem as risk factors. This investigation would aid in identifying differential mechanisms of risk for other- and self-directed violence. Further, with a few notable exceptions (e.g., Plutchik, van Praag, & Conte, 1989; Tardiff & Sweillam, 1980), there has been a dearth of research that has examined gender-specificity in emotional risk for violence, particularly among adults. Consequently, the present study investigated potential gender differences in the contribution of distinct emotional tendencies for understanding other- and self-directed physical violence in a criminally-involved sample of adults.

Emotional and Behavioral Dysregulation as a Function of Gender

Despite the importance of better understanding the emergence of other- and self-directed violence in men and women, very few studies have examined gender as a potential moderator of the emotional dysregulation associated with violence. At a more descriptive level, consistent gender differences in the base rates of other- and self-directed violence have been demonstrated. In particular, men are much more likely to exhibit aggression and assaultive behavior than women (e.g., Swanson, Holzer, Ganju, & Jono, 1990), whereas women are more likely to engage in suicide attempts than men (e.g., Verona, Sachs-Ericsson, & Joiner, 2004). Men are, however, more likely to complete suicide than women (e.g., Moscicki, 1995). These gender differences provide some impetus for examining whether different emotional experiences underlie the emergence of self- versus other-directed violence for men and women. Research reveals that gender differences exist in the types of relationship contexts that violence typically occurs, with women more likely to use violence in the context of romantic relationships, and with family members and intimate acquaintances (e.g., Kellermann & Mercy, 1992; Magdol et al., 1997). In contrast, men are more likely than women to perpetrate physical violence against non-intimate acquaintances and strangers (e.g., Kellermann & Mercy, 1992). Although these distinctions are important, the primary aim of this study was to examine risk for perpetration of general physical violence across relationship contexts.

Preliminary evidence supports the existence of gender differences in emotional contributors to physical violence. For instance, laboratory research indicates that stress-induced negative affect increases aggressive responding among men but decreases aggression in women (Verona & Curtin, 2006; Verona & Kilmer, 2007). Germane to this study, the experience of anger and hostile ruminations has been found to be a stronger predictor of aggression for men versus women (Verona, 2005; Verona, Reed, Curtin, & Pole, 2007). These studies provide evidence for differential emotional correlates of other-directed harm in men versus women, and underscore the importance of anger as a predictor of other-directed violence in men more so than in women.

Regarding self-directed violence, research finds that the association between psychopathology/personality and suicidal behavior is at times moderated by gender (Canetto & Sakinofsky, 1998; Rich, Ricketts, Fowler, & Young, 1988; Schneider, Bartusch, Schnabel, & Fritze, 2005; Schneider et al., 2006). For example, men who exhibit suicidal behaviors are more likely to meet criteria for substance and personality disorders, whereas women who exhibit suicidal behaviors are more likely to meet criteria for major depressive disorder (Blair-West et al., 1999; Bolton, Belik, Enns, Cox, & Sareen, 2008; Tondo et al., 1999). Other research suggests that co-morbid externalizing and internalizing psychopathology confers stronger risk for suicide attempts in women than men (Verona, Sachs-Ericsson, & Joiner, 2004). These studies suggest that men at risk for suicide may be best characterized by externalizing psychopathology, whereas their female counterparts

exhibit both internalizing and externalizing characteristics. Although providing some evidence for differential contributors to self-directed violence in men versus women, not all studies find gender differences in emotional contributors. For instance, depressive and externalizing psychopathology still predict suicidal behaviors in both men and women (Verona et al., 2004).

Given that the evidence reviewed is preliminary and somewhat equivocal, there is a need for more research on this topic. One potentially fruitful avenue is to focus on underlying emotional tendencies or traits, rather than broad diagnoses or dimensions of psychopathology. Focusing instead on these lower-order facets of emotional tendencies is important for both practice and research, as it may help clinicians identify high-risk individuals regardless of diagnostic status and delineate etiological mechanisms in men and women's pathways to violence. This argument is consistent with research in the personality literature showing specific traits have more predictive validity than broader dimensions (Paunonen, Haddock, Forsterling, & Keinonen, 2003). Towards this end, we examined gender differences in the risk associated with distinct facets of emotional tendencies for engagement in self- and other-directed violence.

Emotional Tendencies Representing Risk for Violence

The construct of negative affectivity is particularly relevant for understanding emotional correlates of violence. Research indicates negative affectivity (also called neuroticism), conceptualized as a long-standing sensitivity to negative or unpleasant stimuli (Tellegen, 1985), is relevant to a variety of psychological disorders and includes affective states related to anger, feelings of rejection, nervousness, and guilt (Watson & Clark, 1984). Indeed, the general distress common across different forms of psychopathology, including depression, conduct disorder, and borderline personality disorder (Clark & Watson, 1991; Krueger, Caspi, Moffitt, Silva, & McGee, 1996), represents a broad vulnerability for experiencing high negative affect (Clark & Watson, 1991).

Negative affectivity is also a promising construct for distilling specific emotional tendencies that may be relevant for violence. That is, above the broad risk conferred by general negative affectivity, research also finds that the specific facets of emotionality contribute to disordered behaviors and mental illness. For example, anger and hostility are both related to negative affect. However, evidence suggests that anger and hostility are also distinct emotional facets that show discriminant relations, indicating they are informative as separable constructs (Watson & Clark, 1992). Further, the features of depression that do not overlap with other internalizing disorders (e.g., anxiety) reflect tendencies toward low positive affectivity and confer risk specifically for the anhedonic symptoms of depression (Clark & Watson, 1991). Based on these literatures, one would expect that examining distinct facets of emotional tendencies should aid in understanding maladaptive behaviors above their shared variance (e.g., general distress factor) when studied in the same model. We chose to study the facets of anhedonic depression, anger, and hostility as emotional risk factors, because these are the most relevant, compared to other facets (e.g., anxious apprehension), to understanding self- and other-directed violence according to the research literature.

Anger and hostility

Research suggests that violence is associated with the underlying emotional and cognitive processes of anger and hostility, two related but distinguishable constructs linked to aggression (Buss & Perry, 1992). Anger is characterized by physiological arousal that prepares the body to act (e.g., Berkowitz, 1990) and is conceptualized as an emotional state that ranges from irritation to rage (Buss & Perry, 1992). In support of this conceptualization,

trait anger on the Aggression Questionnaire (Buss & Perry, 1992) is associated with the tendency to engage in approach-related behaviors after controlling for its relation with general negative affect (Harmon-Jones, 2003). This link may relate to the capacity of an anger experience to mobilize the body for physical aggression, which is an approach-related phenomenon. Self-reported anger also evidences increased risk for future engagement in physical and verbal aggression among incarcerated adolescents (Cornell, Peterson, & Richards, 1999), underscoring its relevance for violence directed towards others.

In contrast, hostility is characterized by feelings of perceived ill will and injustice and is theorized to represent a cognitive (Buss & Perry, 1992) or attitudinal construct marked by negative feelings and opinions about others (Berkowitz, 1993). Research suggests being cynical and mistrusting of others' intentions and motivations, and denigrating the abilities and qualities of others are central components of hostility (for a review, see Eckhardt, Norlander, & Deffenbacher, 2004). These traits are theorized to form a cognitive style that frequently leads to feelings of anger, which are likely to be expressed as more indirect, relational forms of aggression than trait anger (Archer & Webb, 2006). Indeed, hostility correlates with suspiciousness, resentment, frequent anger, and cynical distrust on the Cook and Medley Hostility scale (1954). However, hostility is not as strongly related to overt forms of aggressive behavior (Smith & Frohm, 1985). Thus, the construct of anger is characterized as an emotional state directly related to overt forms of aggression, whereas the construct of hostility is characterized as a cognitive style related to negative perceptions of others and perhaps more covert forms of aggression.

There is a growing literature linking anger to other- and self-directed violence. Individuals can cope with anger either by expressing it outwardly toward others or inwardly by suppressing it (Spielberger, Krasner, & Solomon, 1988). Both expressions of anger have been linked to an increased risk for violence towards others (Ramirez & Andreu, 2006; Norlander & Eckhardt, 2005), possibly via the activation of approach related behaviors, such as verbal or physical assaults, that are aimed at resolving the anger-producing event (Buss & Perry, 1992; Harmon-Jones & Sigelman, 2001). However, recent work has linked experiences of anger to aggressive behavior in men more so than in women (Verona et al., 2007), suggesting that it is important to account for gender differences in identifying emotional tendencies that represent risk for violence. A number of studies have also demonstrated that anger confers risk for suicidality (e.g., Daniel, Goldston, Erkanli, Franklin, & Mayfield, 2009) but have less frequently examined gender differences or the mechanisms that link hostility to self-directed violence.

As with research on anger, a review of the literature indicates that hostility is a risk factor for other- and self-directed violence. Despite its stronger links with covert aggression (Archer & Webb, 2006; Crick, 1995; Eckhardt, Norlander, & Deffenbacher, 2004), high levels of hostility have also been reported by perpetrators of intimate partner violence (for a review, see Norlander & Eckhardt, 2005), associated with reactive physical aggression in males (Lento-Zwolinski, 2007), and shown to discriminate between violent and nonviolent offenders (Selby, 1984). However, at least one study has linked hostile ruminations more strongly with physical aggression in men than women (Verona, 2005). Further, hostility is useful in predicting suicide attempts (for a review, see Brezo, Paris, & Turecki, 2006), with some studies conceptualizing suicidal behaviors as hostility turned inward (Shneidman, 1969). High levels of hostility are seen in both suicide attempters and violent offenders relative to controls (Engstrom, Persson, & Levander, 1999; Maiuro et al., 1989), which suggests that hostility represents a common vulnerability for violence, regardless of whether it is directed inward or outward.

In summary, the existing literature suggests that both hostility and anger are emotional contributors to other- and self-directed violence. However, these studies have not compared the explanatory power of these emotional tendencies in regards to self- and other-directed violence in men versus women, despite research showing distinct emotional correlates for these behaviors in men and women (Verona, 2005; Verona et al., 2007). For example, expressed anger and trait hostility are linked to greater autonomic reactivity and sustained arousal among men but not women (e.g., Burns, 1995), suggesting that these emotional tendencies may relate to different types of outcomes in men and women. The present study attempted to investigate this hypothesis in regards to emotional risk for other- and self-directed physical violence that emerges across contexts in men and women.

Anhedonic depressive tendencies

Epidemiological studies suggest that a diagnosis of major depressive disorder alone does not predict engagement in other-directed violence but rather substance use disorders account for the association between depression and violence (Arseneault, Moffitt, Caspi, Taylor, & Silva, 2000; Elbogen & Johnson, 2009). Research with clinical samples is quite mixed, with some studies reporting no relationship (e.g., Soliman & Reza, 2001), some reporting a positive relationship (e.g., Kay, Wolkenfeld, & Murrill, 1988), and still others reporting a negative relationship between depression and inpatient violence (e.g., Ferguson et al., 2005). Given the multidimensional nature of depression, the discrepant findings may be due to a lack of understanding of the features of depression that are best predictive of other-directed violence. For instance, the anhedonic features of depression may confer less risk for other-directed violence, given their association with relatively less motivation to engage in approach-related or pleasurable behaviors (Henriques & Davidson, 2000). However, little research has distinguished the features of depression that confer risk or protection for violence.

Unlike other-directed violence, research consistently demonstrates that depression is related to an increase in self-directed violence. A widely studied area, depressed mood is a known risk factor for suicidality, self-harm, and violence directed inward (e.g., Henriksson et al., 1993). The anhedonic features of depression in particular have been shown to increase risk for suicide attempts. In a sample of 954 psychiatric patients, severe loss of pleasure or interest was associated with engaging in a suicide attempt within one year (Fawcett et al., 1990). Thus, the lack of approach motivation associated with anhedonic depression does not translate into reduced risk for self-directed violence. Anhedonia may selectively increase risk for self-directed but not other-directed violence, because the lack of energy and engagement in pleasurable activities causes individuals with anhedonic depression to become more hopeless, increasing risk for self-directed violence, at the same time that they isolate themselves from others, thus decreasing risk for other-directed violence. Whether the relations between anhedonic depression and self- versus other-directed violence vary as a function of gender is unknown.

Present Study

The present study sought to investigate the interrelationships among facets of emotional tendencies as risk factors for other- and self-directed physical violence in an externalizing sample of adults. More specifically, the goal of the study was to examine potential gender differences in the associations of hostility, anger, and anhedonic depressive tendencies with histories of 1) other-directed violent behavior in the form of physical altercations and unprovoked attacks on others that occur across relationship contexts, and 2) self-directed violence in the form of self-harm without the intent to die and suicide attempts with intent to die (O'Carroll, Berman, Maris, & Moscicki, 1996). Based on our literature review, we expected anger and hostility to be positively associated with both other- and self-directed

violence. Anhedonic depression was hypothesized to be positively related to self-directed violence, as is consistently seen in the research literature, but inversely related to other-directed violence given that we primarily assessed the anhedonic features of depression.

Our analysis of gender differences in these relationships was fairly exploratory, given the dearth of research on gender as a moderator of emotional contributors to violence. Based on existing research suggesting that anger is a stronger predictor of other-directed violence in men than women (Verona, 2005; Verona et al., 2007), we hypothesized that the relationship between anger and other-directed violence would be stronger for men than women. To our knowledge, there is no evidence to suggest gender differences in the relationships of hostility and anhedonic depression to other- and self-directed violence and, thus, no hypothesis was developed.

Method

Participants

Participants consisted of 252 male (68%) and 120 female (32%) adults ranging in age from 18 to 55 ($M = 30.3$, $SD = 8.8$). To help ensure a diverse sample with a range of suicide and assault-related behaviors, we recruited adults incarcerated in local county jails ($n = 150$, 40%) and adults in the community with a history of legal convictions, most of whom were currently on parole or probation ($n = 222$, 60%). For the latter group, individuals with legal convictions were targeted through the use of fliers posted at substance use treatment centers, as well as state, federal, and county probation/parole agencies, and through newspaper advertisements.

Table 1 provides the demographic and descriptive statistics for the overall sample and men and women separately. About half of participants were African-American ($n = 210$, 56 %), followed by Caucasian ($n = 136$, 37 %), mixed-ethnicity/other ($n = 16$, 4 %), and Hispanic ($n = 10$, 3 %) adults. The sample was diverse in terms of education level, with approximately one-third reporting that they did not complete high school ($n = 129$, 35 %) and one-third reporting that they completed some college ($n = 133$, 36 %). The sample included more African-American men than women and more Caucasian women than men, $X^2(3) = 14.2$, $p = .003$. No other gender differences emerged on the demographic variables assessed.

Informed consent was obtained both verbally and in writing after the study procedures were explained to participants. The study was approved by the university's institutional review board prior to data collection.

Measures of Other- and Self-Directed Violence

The 10-item Life History of Aggression interview (LHA; Coccaro, Berman, & Kavoussi, 1997) was developed for the purposes of reliably assessing trait aggressive behavior as it manifests in acts of aggression directed towards other people or things (i.e., physical and verbal fights, unprovoked assaults, temper tantrums, property destruction) and the self (i.e., suicide attempts, self-harm). It further assesses the extent to which the individual has experienced functional impairments (i.e., academic, occupational, legal problems) as a result of acting aggressively and antisocially. This measure of trait aggression does not assess the relationship contexts the violence occurred in (e.g., intimate partner violence versus stranger violence), and thus these variables were not investigated in the present study. Items on the LHA were rated by a diagnostic interviewer based on a life history interview that was conducted with each participant. Items were rated on a scale from 0 to 5 according to how frequently the individual reported engaging in a given behavior since age 13 (from “Never” to “Too many times to count”). In the present study, the “physical fighting” item was coded

according to the number of physical altercations the individual had engaged in since age 13. The “assaults on other people” item was modified slightly from the original version of the LHA in that it was coded to reflect the number of times an individual attacked another person *without* provocation to differentiate it from the more general “physical fighting” item. In combination, these two items served as our measure of Other-directed Violence. A Self-directed Violence composite measure was also created by summing the “assaults on self” item, which was coded to reflect the number of times an individual injured themselves (e.g., cutting, burning) in the absence of an intent to die, and the “suicide attempts” item, coded to reflect the number of self-injurious acts committed with an intent to die. Suicide attempts were limited to non-fatal suicidal gestures. Three self-directed violence scores that were greater than 3.5 standard deviations above the mean were removed from analysis. Across the entire sample, 16% ($n = 61$; Men: $n = 25$, 10%; Women: $n = 36$, 30%) attempted suicide at least once, 16% ($n = 60$; Men: $n = 34$, 14%; Women: $n = 26$, 22%) self-injured without intent to die at least once, 95% ($n = 352$; Men: $n = 246$, 98%; Women: $n = 106$, 88%) engaged in physical fighting at least once, and 47% ($n = 173$; Men: $n = 133$, 53%; Women: $n = 40$, 33%) attacked others without provocation at least once. Over one-third of participants reported engaging in 10 or more acts of other-directed violence since the age of thirteen.

Facets of Emotional Tendencies

Anger and hostility—The Aggression Questionnaire (AQ; Buss & Warren, 2000) is a 34-item measure of trait aggressive attitudes and behaviors. Participants rated the extent to which they generally feel or act in the manner described on a scale from 1 (“*Not at all*”) to 5 (“*Extremely*”). The Anger and Hostility subscales were used in the present study as predictors of other- and self-directed violence. The Anger subscale (Cronbach’s $\alpha = .81$) was composed of 7 items that index anger-related emotional reactivity and loss of control (“*I sometimes feel like a powder keg ready to explode*”, “*I have trouble controlling my temper*”), whereas the Hostility subscale (Cronbach’s $\alpha = .80$) consisted of 8 items that measure suspiciousness of others (“*When people are especially nice, I wonder what they want*”), feelings of resentment (“*Other people always seem to get the breaks*”), and feelings of alienation (“*I know that ‘friends’ talk about me behind my back*”).

While anger and hostility are conceptualized as being theoretically distinct, we took further steps to substantiate the discriminant validity of the Anger and Hostility subscales by examining the construct validity of each subscale after covarying out their shared variance. The unique variance associated with AQ Anger correlated positively with various forms of aggressive behavior (Physical $r = .42$, Property $r = .25$, Verbal $r = .32$, Relational $r = .15$, and Passive-Rational $r = .20$; $ps < .01$), measured using an independent measure of aggressive behavior, the Forms of Aggression Questionnaire (FOA; Verona, Sadeh, Case, Reed, & Bhattacharjee, 2008). In contrast, the variance associated with AQ Hostility only correlated with the non-physical, covert forms of aggressive behavior (Verbal $r = .20$, Relational $r = .26$, Passive-Rational $r = .25$; $ps < .001$) but not physical aggression (Physical $r = .00$; Property $r = .07$). Consistent with this latter finding, the unique variance associated with AQ Hostility was moderately correlated with a measure of hypersensitivity to interpersonal slights ($r = .48$, $p < .001$), The Hypersensitive Narcissism Scale (HSNS; Hendin & Cheek, 1997). However, the variance unique to AQ Anger was only weakly correlated with this measure ($r = .11$, $p < .05$). Thus, AQ Anger and Hostility demonstrated distinct relationships with external criteria, verifying them as separable constructs.

Anhedonic depression—Twenty-two items from a modified version of the Mood and Anxiety Symptom Questionnaire (MASQ; Watson et al., 1995) were used to assess anhedonic depressive tendencies (Cronbach’s $\alpha = .91$). The MASQ was developed to

test a tripartite model of depression and anxiety (Clark & Watson, 1991) by measuring and differentiating non-specific general distress from anxious arousal and anhedonic depression. We used the latter subscale as a trait index of anhedonic depressive tendencies by instructing participants to rate the extent to which they generally feel or act in the manner described on a 5-point scale from “Not at all” to “Extremely”. The anhedonic depression subscale included 8 items that assessed loss of interest in pleasurable activities/low energy (“Felt like nothing was very enjoyable”, “Felt like being alone”), and 14 items related to low positive affectivity (“Felt optimistic” – reverse scored, “Had a lot of energy” – reverse scored). One score greater than 3.5 standard deviations above the sample mean was removed prior to analysis.

Data Analysis

Prior to conducting regression analyses, we examined bivariate correlations between study variables. We then used separate hierarchical linear regressions to examine the variance in LHA Other-directed and Self-directed Violence as a function of AQ Anger, AQ Hostility, and MASQ Anhedonic Depression. In each analysis, age and level of education were entered as covariates in block 1, followed by gender, AQ Anger, AQ Hostility, and MASQ Anhedonic Depression in block 2, and the interactions between each of the emotional facets and gender in block 3. Income level was not used as a covariate in this study, because it is likely a less sensitive measure of socioeconomic status (as compared to education level) given the recent incarceration history of many of our participants (i.e., individuals recently paroled from prison often report an income of \$0).

We had no *a priori* hypotheses about interactions between the emotional facets, and for the sake of parsimony, chose not to include interactions between the emotional facets in the model. To deconstruct significant interactions between emotional facets and gender, we examined relationships between emotional facets and violence separately within each gender. Lastly, follow-up analyses were conducted to determine whether results generalized to each item of the composite other-directed violence (i.e., unprovoked assaults, physical altercations) and self-directed violence (i.e., self-harm, suicide attempts) variables. We tested for and did not find multicollinearity problems in the regression analyses, as evidenced by tolerance levels all above $> .20$ (Gaur & Gaur, 2006).

Results

Descriptive Statistics and Zero-Order Correlations between Study Variables

The bottom of Table 1 reports descriptive statistics for the study variables in the total sample and men and women separately. Expectedly, men scored significantly higher on Other-Directed Violence, $t(370) = -6.26, p = .002$, whereas women scored higher on Self-Directed Violence, $t(370) = 3.61, p < .001$. On the AQ, women scored higher on hostility than men, $t(370) = 2.2, p = .027$, but the genders did not differ on trait anger. Finally, women reported higher levels of anhedonic depressive tendencies than men, $t(370) = 4.79, p < .001$.

Bivariate correlations of the study variables for the overall sample and men and women separately are provided in Table 2 as a reference for the multivariate analyses conducted below. Other- and self-directed violence on the LHA did not covary, indicating they were relatively independent indices of violence. AQ Anger, AQ Hostility, and MASQ Anhedonic Depression showed moderately strong positive relationships, suggesting they assessed overlapping but unique features of emotional tendencies. Further, AQ Anger and Hostility correlated positively with both other- and self-directed violence, whereas MASQ Anhedonic Depression only correlated positively with self-directed violence. The unique explanatory

power of these emotional tendencies and their interactions with gender were investigated in the regressions below.

Hierarchical Linear Regression

Other-directed violence—As illustrated in Table 3, the results of the regression analyses indicated that AQ Anger ($\beta = .36, p < .001$) and MASQ Anhedonic Depression ($\beta = -.13, p = .017$) showed opposing relationships with LHA Other-directed Violence, whereas AQ Hostility did not directly relate to this type of violence. In particular, anger and depressed mood evidenced positive and negative relationships with violence against others, respectively. The seemingly protective effect of anhedonic depression symptoms against acts of violence did not interact with gender. Follow-up analyses were conducted to examine the effect of anhedonic depression symptoms on each component of other-directed violence, which revealed that anhedonic depression scores evidenced a significant relationship with unprovoked attacks on others ($\beta = -.16, p = .008$), but not physical fighting ($\beta = -.06, ns$).

Importantly, gender moderated the relationship of anger (AQ Anger x Gender interaction, $\beta = .16, p = .007$) as well as hostility (AQ Hostility x Gender interaction, $\beta = -.13, p = .039$) with other-directed violence. To interpret these interactions, we examined the relationship between anger and other-directed violence separately within each gender and reported the findings in the first column of Table 4. Follow-up analyses indicated that AQ Anger was associated with other-directed violence in men ($\beta = .45, p < .001$) but not women ($\beta = .13, ns$). Analyses also revealed that AQ Anger explained variance in both components of the composite other-directed violence variable in men, including unprovoked attacks on others and engagement in physical fights ($\beta = .37$ and $.41$, respectively, $ps < .001$). Examination of the AQ Hostility x Gender interaction within gender showed that in women, hostility rather than anger, predicted LHA Other-directed Violence ($\beta = .25, p = .05$), a relationship that did not appear for men ($\beta = -.07, ns$). The association between AQ Hostility and other-directed violence in women was significant for unprovoked attacks on others ($\beta = .26, p = .045$), but not physical fighting ($\beta = .14, ns$). Thus, whereas anger was associated with more other-directed violence in men, hostility was related to more other-directed violence in women.

Self-directed violence—As demonstrated in Table 3, analysis of LHA Self-directed Violence revealed a main effect of MASQ Anhedonic Depression ($\beta = .20, p < .001$), with depressive tendencies positively related to a history of self-directed violence. The risk conferred by depressive tendencies for self-directed violence did not differ between the genders and was present for both self-injurious behavior ($\beta = .19, p = .002$) and suicide attempts ($\beta = .15, p = .002$). Above the influence of anhedonic depression, an AQ Hostility x Gender interaction also emerged ($\beta = -.20, p = .003$). To deconstruct this interaction, we examined the strength of the relationship between hostility and self-directed violence within each gender and reported these analyses in the second column of Table 4. The regression analyses revealed that AQ Hostility was positively associated with LHA Self-directed Violence in women ($\beta = .31, p = .011$) but not men ($\beta = -.03, ns$). For women, the relationship between hostility and self-directed violence was present for suicide attempts ($\beta = .27, p = .035$) and self-injurious behavior ($\beta = .27, p = .026$). No simple or interaction effects emerged for the relationship between AQ Anger and self-directed violence in either gender. Thus, hostile tendencies were associated with self-directed violence in women but not men, whereas anger was not associated with self-directed violence in either gender.

In summary, anhedonic depressive tendencies negatively predicted other-directed violence and positively predicted self-directed violence in both men and women. However, gender differences emerged for the differential contributions of anger and hostility to violence.

Specifically, AQ Anger was associated with other-directed violence among men but not women. Instead, AQ Hostility predicted higher levels of other- and self-directed violence in women. Unlike the findings for women, neither anger nor hostility predicted self-directed violence in men above the influence of anhedonic depression.

Discussion

The present study is one of the first to examine gender differences in the unique contributions of anhedonic depression, anger, and hostility for other- and self-directed violence in an externalizing sample where these dysregulated behaviors frequently occur. Consequently, the findings have important implications for risk assessment in the domains of other- and self-directed violence, which are among the most serious mental health outcomes encountered by clinicians. Our research supports studies that have found that anhedonic features of depression are important risk factors for violence against the self, and tendencies toward hostility and anger are associated with a heightened risk for violence against others. Importantly, our findings advance the literature on risk for violence by identifying gender differences in a sample of externalizing adults. Anger was associated with other-directed violence selectively in externalizing men, whereas hostility was associated with both other- and self-directed violence in externalizing women. The divergent findings for anger and hostility underscore the need to examine gender-specific risk factors for violence to avoid ignoring potentially useful clinical features of these mental health outcomes.

Tendencies toward Anger and Hostility as Gendered Risk Factors

One contribution of the present study was the finding that tendencies toward anger solely predicted engagement in other-directed violence in externalizing men. Anger did not differentially contribute to self-directed violence in men, suggesting difficulty controlling one's temper and angry outbursts in men do not necessarily increase risk for self-injury or suicide attempts. Given that only non-fatal suicide attempts were measured in the present study, it is still possible that anger is related to fatal suicides in men, who are more likely to complete suicide than women (e.g., Moscicki, 1995). For instance, anger could increase the likelihood of using violent or lethal means in a suicide attempt (e.g., handgun), which would make it an extremely relevant risk factor to consider in male suicide prevention. Emotional risk for fatal suicides was not assessed in the present study, though future research using longitudinal methods could address this question specifically. The AQ anger subscale did evidence strong relationships with both physical altercations and unprovoked attacks on others, underscoring its potential utility for risk assessments of violence in externalizing men, as has been found across numerous studies (e.g., Cornell et al., 1999).

The link between anger and violence for men, though not surprising, may be related to evolved or learned socialization processes that dictate the use of outward violence as an appropriate and particularly masculine expression of one's distress (e.g., Verona & Kilmer, 2007; Wood & Eagly, 2002). That is, norms that exist around appropriate expressions of anger differ for men and women, where men may learn to direct their anger outward while women are less likely to do so, even in criminally-involved samples. These socialization processes are well exemplified by research on peer validation, which suggests that men often receive messages from their peer networks condoning the use of violence in response to anger (e.g., Schwartz & DeKeseredy, 2000).

One contribution of the present study that has implications for clinical practice is the relationship that emerged between hostility and both self- and other-directed violence in externalizing women but not men. The consistency of this relationship for engaging in dysregulated behavior implicates hostility as a central indicator of emotional risk for women

and lends support for the assessment of hostility as a gender-specific risk factor for both other- and self-directed violence. It is possible that hostility was more relevant for women than men in the present study, because trait hostility, as a cognitive antecedent of aggression, is associated with high levels of resentment and rumination (Eckhardt et al., 2004). Women are more likely to ruminate than men, when coping with distress (Nolen-Hoeksema, 1987), which helps explain why hostility was associated with reactive behaviors of the women in this sample.

Interestingly, our findings also indicate that traditional techniques of anger management with a goal of preventing assaultive behavior maybe more relevant to men than women, given that anger did not uniquely predict other-directed violence in women, even in an externalizing sample. Questioning the extent to which anger management is as appropriate for women has been echoed elsewhere (Howells & Day, 2003), though more research is needed in this area, since few studies have directly examined gender differences in effectiveness of anger management programs. That other-directed violence is not a universal expression of anger per se suggests it may be important to attend to more specific aggressive tendencies, such as hostility, that more directly drive the use of women's violence. For instance, the findings for women suggest that therapies that focus on reducing hostility may be effective in reducing and/or preventing engagement in both other- and self-directed violence. Given that hostility involves rumination and feelings of resentment towards others, cognitive-based therapies, such as Dialectical Behavior Therapy (Linehan, 1993), that work to increase mindfulness and interpersonal effectiveness skills while decreasing rumination and interpersonal conflict may greatly benefit externalizing women. In contrast, the anger relationship with other-directed violence found in men suggests that externalizing men may benefit more from treatments that help them regulate angry outbursts, such as anger management treatment or those that offer strategies for regulating behavior despite angry feelings. Further, these therapeutic interventions might benefit from increasing access to educational resources or promoting educational skills, given that education level was negatively correlated with other-directed violence in the present study.

In regards to clinical assessment, the finding that hostility predicted both self-injurious behavior and suicide attempts in women above the influence of anhedonia indicates that both depression and hostility are important to assess in women who are at risk for self-directed violence. Indeed, research suggests that assessing suicide risk should not only include the characteristics of an individual's depression, but also other mood states (e.g., hostility) and personality traits (e.g., aggressiveness, impulsiveness; for a review, see Brezo, Paris, & Turecki, 2006). Thus, in addition to regularly screening for suicidality by assessing depressive symptoms, the present findings recommend that clinicians also consider hostile perceptions of others (e.g., suspiciousness, resentment, alienation) as risk factors for self-directed violence in externalizing women. The generalizability of these findings for other types of clinical samples is unclear, making the examination of whether the link between hostility and suicidal behaviors is specific to women who engage in externalizing behaviors a potential area for future research.

The association between hostility and other-directed violence that emerged for women also has implications for clinical risk assessment. In general, clinicians underestimate the prevalence of violence in women with psychopathology (e.g., Skeem et al., 2005), which suggests assessment instruments do not include all of the relevant predictors of female aggression and/or clinicians are biased by gender norms in their assessments (e.g., because gender norms dictate the use of violence is largely a male-dominated enterprise). In addition, very few studies have examined the predictive validity of violence risk assessments for externalizing women, likely contributing to the finding that violence prediction in women is poor relative to men (e.g., Skeem et al., 2005). The present results suggest that the inclusion

of hostility, which links conflict in interpersonal relationships to physical altercations in women, could improve the predictive validity of violence risk assessments for externalizing women. These results also have implications for violence prevention and suggest that prevention efforts could benefit from tailoring their programs to be more gender-specific. This is a particularly important issue, because many violence prevention efforts were developed based on research on male violence (Chesney-Lind & Pasko, 2004). However, our results provide some empirical support that violence may develop from different risk factors in men and women.

The target of the aggressive acts (e.g., partner, stranger) and the contexts in which they occurred were not coded in the present study, which leaves the possibility that hostility and anger are differentially or selectively associated with particular types of other-directed violence in women and men. For instance, research indicates that women are more likely to perpetrate violence in the home context and in intimate relationships. In contrast, men are more likely than women to perpetrate violence against strangers and non-intimate associates (Kellermann & Mercy, 1992; Magdol et al., 1997). Thus, it is possible that the emotional variables assessed in the present study are differentially associated with violence that occurs across relationship contexts. This would be a useful question to pursue in future studies.

Anhedonia and Violence

Another interesting finding involves the differential associations between anhedonic depressive symptoms and other- vs. self-directed violence. Not only did anhedonia heighten risk for self-directed violence in men and women, but it also decreased risk for other-directed violence across both genders. One explanation for the protective effect of anhedonic depression on other-directed violence can be garnered from research that suggests decreased approach motivation in depressed individuals. More specifically, depressed individuals are theorized to have deficits in the approach motivational system (for a review, see Davidson, 1998), as manifested in reduced behavioral activation (Martell, Addis, & Jacobson, 2001). The decrease in approach-related behaviors has been linked to the anhedonic characteristics of depression and is thought to result from reduced sensitivity to positive reinforcements (Henriques & Davidson, 2000). Given that the MASQ depression subscale primarily indexes the anhedonic features of depression (i.e., loss of interest, low positive affect), the protective influence of these traits on other-directed harm supports these literatures. Also, an implication of the present findings is that practitioners may need to reassess risk for other-directed violence as an individual with externalizing or aggressive tendencies comes out of an anhedonic depressive episode. Detailing whether these findings also generalize to other forms of depression represents a fruitful avenue for future research.

Strengths & Limitations

The present study has several strengths, including the investigation of gender-specific risk factors for behavioral dysregulation and the clinical implications of these associations, a generally understudied area. Further, other- and self-directed violence are highly relevant outcomes for forensic populations that have serious consequences for both the individual and society. We were able to obtain a good representation of other- and self-directed violence in our sample (e.g., 16% reported suicide attempts) despite examining low base rate phenomena, and we recruited a relatively large sample of women with a history of violence. The understudied nature of our sample and diversity in gender and ethnicity enhances the novelty of the findings.

As with any investigation, however, this study also has limitations. First, our sample included more men than women, which may have overrepresented the experience of men in terms of risk factors for violence and suicidality. Although the number of men in this sample

was disproportionate to the general population, men and women were proportionally represented according to forensic populations (FBI, 2008). Second, the use of self-report data for our risk factors is a limitation, given that this methodology may be influenced by social desirability. Our use of clinician-rated dependent variables, however, limited the influence of social desirability and/or method overlap. Third, we used a cross-sectional design that limited our assessment to retrospective accounts of the other- and self-directed violence, which make them susceptible to memory bias, and obscure the directionality of the effects. Fourth, the results of the study may be limited in generalizability to externalizing samples and non-fatal suicide attempts as a result of our sample characteristics (i.e., individuals with a criminal history who did not fatally attempt suicide). Finally, our measure of other-directed violence did not assess the relationship contexts the violence occurred in, a potentially important gender moderator of our findings. This limits the implications of our findings for violence risk.

Potential confounding variables may exist as a result of our sampling that should be noted. For instance, it is likely that the strong associations between anger and hostility with physical violence were found in our study, because many of the individuals in our sample are highly impulsive. That is, in less impulsive samples, trait anger or hostility may not necessarily predict physical violence, because these individuals would be able to regulate their behaviors despite angry or hostile feelings. Additionally, our sample was marked by particularly low socioeconomic status (as is typical in forensic samples), which is a stressor that might exacerbate emotional reactivity and increase the association among study variables. Nonetheless, it is unlikely that impulsivity and/or socioeconomic stress would explain the moderating effect of gender, because both genders are likely affected. These are important empirical questions that should be considered in future research.

Despite these limitations, the results of the current study provide important information on the differential contributions of anger, hostility, and anhedonic depression for other- and self-directed violence, particularly in externalizing samples. These data extend our lens for gender specificity in risk and protection factors associated with violence engaged in by high-risk adults.

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Table 1

Descriptive Statistics for Total Sample and within each Gender.

	Total Sample (N = 372)			Men (n = 252)			Women (n = 120)			Statistical Difference Test
	M (SD)	Min/Max		M (SD)	Min/Max		M (SD)	Min/Max		
Age	30.3 (8.8)	18/55		29.7 (8.8)	18/55		30.0 (8.5)	18/53		$t(370) = .28$, ns
Ethnicity										
Caucasian	136	37		76	32		60	50		$\chi^2(3) = 14.2$, $p = .003$
African-American	210	56		157	59		53	44		
Hispanic	10	3		8	2		2	1.7		
Mixed/Other	16	4		11	7		5	4.2		
Education										
Less than HS	129	35		93	37		36	30		$\chi^2(5) = 4.59$, ns
HS Diploma	73	20		51	20		22	18		
Current College	14	4		8	3		6	5		
Some College	133	36		86	34		47	39		
Higher Education	23	5.5		14	6		9	8		
Aggression Questionnaire										
Anger	15.8 (6.0)	6/33		15.6 (6.0)	6/33		16.0 (5.9)	7/32		$t(370) = .72$, ns
Hostility	18.9 (6.2)	6/39		18.5 (6.1)	6/35		20.0 (6.4)	9/38		$t(370) = 2.27$, $p = .027$
MASQ Anhedonic Depression	52.6 (15.5)	17/100		50.1 (14.5)	17/100		58.1 (16.3)	18/96		$t(370) = 4.79$, $p < .001$
Life History of Aggression										
Other-Directed Violence	4.7 (2.6)	0/10		5.3 (2.6)	0/10		3.6 (2.2)	0/10		$t(370) = -6.26$, $p < .001$
Self-Directed Violence	.7 (1.5)	0/7		.5 (1.3)	0/6		1.1 (1.9)	0/7		$t(370) = 3.61$, $p < .001$

Note. MASQ = Mood and Anxiety Symptom Questionnaire (Watson *et al.*, 1995).

Table 2

Bivariate Inter-correlations among Study Variables

	AQ Anger	AQ Hostility	MASQ Anhedonic Depression	LHA Other-directed Violence	LHA Self-directed Violence
Men					
AQ Anger	1				
AQ Hostility	.66*	1			
MASQ Anhedonic Depression	.42*	.55*	1		
LHA Other-directed Violence	.18*	.16	-.08	1	
LHA Self-directed Violence	.37*	.45*	.32*	.04	1

Women					
AQ Anger	1	.55*	.39*	.39*	.23*
AQ Hostility	.66*	1	.45*	.15*	.17*
MASQ Anhedonic Depression	.42*	.55*	1	.02	.32*
LHA Other-directed Violence	.18*	.16	-.08	1	.04
LHA Self-directed Violence	.37*	.45*	.32*	.04	1

Note. AQ = Aggression Questionnaire (Buss & Warren, 2000). LHA = Life History of Aggression (Coccaro, Berman, & Kavoussi, 1997). MASQ = Mood and Anxiety Symptom Questionnaire (Watson et al., 1995). Shaded boxes contain correlations for Women ($n = 120$) while un-shaded boxes contain correlations for Men ($n = 252$).

Table 3
Hierarchical Regression Analysis of LHA Violence on AQ Anger, AQ Hostility, and MASQ Anhedonic Depression.

	LHA Other-directed Violence				LHA Self-directed Violence			
	β	(SE β)	R^2 / ΔR^2	β	(SE β)	R^2 / ΔR^2	β	(SE β)
Block 1								
Age	-.01	.02	.07*	-.17	.01	.03*		
Education level	-.26*	.10		.13	.06			
Block 2								
Gender	.28*	.26	.18*	-.11	.16	.15*		
AQ Anger	.36*	.03		.13	.02			
AQ Hostility	-.01	.03		.10	.02			
MASQ Anhedonic Depression	-.13*	.01		.20*	.01			
Block 3								
AQ Anger x Gender	.16*	.06	.02*	-.02	.03			
AQ Hostility x Gender	-.13*	.06		-.20*	.03			
MASQ Anhedonic Depression x Gender	.04	.02		.06	.01			

Note. $N = 372$. AQ = Aggression Questionnaire (Buss & Warren, 2000). LHA = Life History of Aggression (Coccaro, Berman, & Kavoussi, 1997). MASQ = Mood and Anxiety Symptom Questionnaire (Watson et al., 1995).

* = $p < .05$.

Hierarchical Linear Regression of LHA Violence on AQ Anger, AQ Hostility, and MASQ Anhedonic Depression within Gender

Table 4

Men	LHA Other-directed Violence			LHA Self-directed Violence		
	β	(SE β)	$R^2/\Delta R^2$	β	(SE β)	$R^2/\Delta R^2$
Block 1			.07 *			.02
Age	-.03	.02		-.14	.01	
Education Level	-.25 *	.12		.09	.06	
Block 2			.14 *			.11 *
AQ Anger	.45 *	.03		.13	.02	
AQ Hostility	-.07	.03		.03	.02	
MASQ Anhedonic Depression	-.10	.01		.28 *	.01	
Women						
Block 1			.06 *			.06
Age	.03	.02		-.22	.02	
Education Level	-.24 *	.14		.16	.12	
Block 2			.09 *			.19 *
AQ Anger	.13	.04		.10	.04	
AQ Hostility	.25 *	.04		.31 *	.04	
MASQ Anhedonic Depression	-.24 *	.01		.09	.01	

Note. $N = 372$. Men $n = 252$. Women $n = 120$. AQ = Aggression Questionnaire (Buss & Warren, 2000). LHA = Life History of Aggression (Coccaro, Berman, & Kavoussi, 1997). MASQ = Mood and Anxiety Symptom Questionnaire (Watson et al., 1995).

* = $p < .05$.