Outwardly directed aggression is associated with suicide attempts, but aggression is a heterogeneous construct. Increased specificity in our understanding of the link between aggression and suicide attempts can be attained by examining subtypes of aggression. We studied the relationships of reactive and proactive aggression to history of a suicide attempt among 96 criminal offenders in a pretrial supervision program. Consistent with prior findings in nonoffender samples, reactive aggression was associated with a history of suicide attempt after controlling for gender and depression. Proactive aggression was unrelated to suicide attempts. Results indicate that suicide risk assessments in forensic settings may be informed by the measurement of reactive aggression.

**Keywords:** proactive aggression; violence; suicide; aggression; reactive aggression

Individuals involved with the criminal justice system are at substantially increased risk for suicide attempts (Cook & Davis, 2012) and suicide (Pratt, Appleby, Piper, Webb, & Shaw, 2010), making the identification of factors associated with suicidal behavior (e.g., ideation, planning, attempts) a priority. Outwardly directed aggression is associated with suicide attempts among criminal offenders and in other high-risk populations (Angst & Clayton, 1986; Swogger, You, Cashman-Brown, & Conner, 2011). However, aggression is...
a heterogeneous construct and investigations of aggressive behavior benefit from the increased specificity afforded by the incorporation of aggression subtypes. Aggressive acts can be meaningfully divided into instances of reactive and proactive aggression. Whereas reactive aggression occurs in response to a perceived threat or provocation and involves affective arousal and rash responding, proactive aggression is premeditated and is used as a means to obtain a subsidiary goal (Berkowitz, 1993). Reactive aggression and proactive aggression can be reliably distinguished (Cornell et al., 1996; Stanford et al., 2003), and it has been proposed that the use of the reactive–proactive typology may be important for assessing treatment prognosis (Eaves, Douglas, Webster, Ogloff, & Hart, 2000) and for the prediction of violence (Dodge & Coie, 1987).

A long-standing hypothesis is that individuals with high levels of reactive aggression are at risk for suicidal behavior, and that this link has implications for suicide risk appraisal and suicide prevention (Conner, Duberstein, Conwell, & Caine, 2003; Turecki, 2005). Moreover, reactive aggression may be a particularly important construct among individuals involved in the criminal justice system whose stressful life experiences (e.g., incarceration) may combine with tendencies toward reactive aggression to further increase risk of suicide (Conner et al., 2003). Much of the evidence for the reactive aggression–suicidal behavior hypothesis comes from studies that find imbalances in the serotonergic system among individuals with reactive aggression and suicidal behavior (Bortolato et al., 2013). These imbalances may underlie problems at the psychological level—for example, negative biases in the interpretation of social cues and deficits in social recognition (Bortolato et al., 2013)—that mediate a connection between reactive aggression and suicidal behavior. This line of research provides evidence for the importance of studies that concurrently consider self and other-directed violence. In one such study, Conner, Swogger, and Houston (2009) found a relationship between reactive aggression and suicide attempts in a large, gender-mixed sample of individuals in residential treatment for substance-use disorders.

Although outwardly directed aggression and self-directed aggression are sometimes conceptualized as arising from the same diathesis toward impulsivity (Mann, 2003), it is possible that proactive aggression, a nonimpulsive form, also confers risk for suicidal behavior. The Conner et al. (2009) study found a relationship between proactive aggression and suicide attempts among substance-dependent males. This study provides the first evidence that proactive aggression, in addition to reactive aggression, may be an important marker for suicidal behavior among individuals with drug and alcohol use disorders. However, the extent to which research from clinical samples of individuals who attempt suicide can be validly extrapolated to criminal offenders is not clear.

The first aim of our study was to examine the link between reactive aggression and lifetime history of a suicide attempt in criminal offenders. Based on the reactive aggression–suicidal behavior hypothesis (Conner et al., 2003) and supporting data in nonforensic samples, we hypothesized that reactive aggression is associated with suicide attempts. The second aim of this study was to conduct a novel and exploratory examination of the proactive aggression–suicide attempt relationship in a sample of criminal offenders. Following Conner et al. (2009), who found that gender moderated the relationship between proactive aggression and suicide attempts, and because men and women differ in their propensities for aggression and suicidal behavior, we conducted additional analyses to determine whether gender moderated observed relationships between aggression and suicide attempts.
In regression analyses, we controlled for major depressive disorder due to the relationship of this disorder to suicidal behavior (Moscicki, 2001).

**METHOD**

**PARTICIPANTS**

Participants were 73 male and 23 female \( (n = 96) \) criminal offenders, ages 18 to 62 \( (M = 34.9; SD = 11.1) \) participating in an urban pretrial supervision program in the Northeastern United States subsequent to receiving criminal charges. The sample was 52.1% African American \( (n = 50) \), 29.2% White \( (n = 28) \), and 18.8% Other \( (n = 18) \). Mean education level (i.e., highest grade completed) was 11.7 \( (SD = 2.2) \). The mean number of lifetime violent charges (including robbery, assault, murder, weapons charges, kidnapping, arson, criminal damage to property, and sex crimes; Walsh, Swogger, & Kosson, 2004) was 3.5 \( (SD = 5.0) \).

**PROCEDURES**

Following a brief announcement about the study made by study personnel in the Day Room of the supervision program, individuals who volunteered to participate and provided consent during a brief individual session completed a number of self-report measures. Participants were compensated for their time with $20 gift cards. Among those targeted by the announcement, 73.8% participated. A random subset of the initial sample was asked to participate in a second session consisting of a psychosocial interview and completion of a number of self-report questionnaires, including those analyzed in the present study. All individuals \( (n = 100) \) provided the opportunity for a second session agreed to participate and were compensated with $25 gift cards. Four participants were dropped because they reported no history of aggression (i.e., verbal or physical acts of destructive or punitive behavior toward other persons or objects) as measured by the Lifetime History of Aggression Questionnaire (Coccaro, Berman, & Kavoussi, 1997) and had no history of violent charges, leaving a sample of 96 for analysis. This study was approved by the university Institutional Review Board and a Federal Certificate of Confidentiality was obtained. Data were analyzed using SPSS 19.0 (IBM, 2010).

**MEASURES**

**Reactive and Proactive Aggression**

The Impulsive-Premeditated Aggression Scales (IPAS; Stanford et al., 2003) were developed to yield measures of impulsive (akin to reactive) and premeditated (akin to proactive) aggression. The IPAS consists of statements pertaining to participants’ general perceptions about acts of aggression that they have perpetrated over their lifetimes on a 5-point Likert-type scale. A complete listing of items is available in Stanford et al. (2003). In the original study of the IPAS, a community sample of men with anger/aggression problems were administered the 30-item IPAS, and a principal components analysis yielded a proactive aggression (PA) factor and a reactive aggression (RA) factor (Stanford et al., 2003). These two factors were subsequently validated using the IPAS in forensic patients (Kockler, Stanford, Nelson, Meloy, & Stanford, 2006), conduct disordered adolescents (Mathias et al., 2007), college students (Haden, Scarpa, & Stanford, 2008), and substance-dependent
individuals (Conner et al., 2009). We used the 12-item RA and 13-item PA scales derived from forensic patients (Kockler et al., 2006). In the present study the internal consistency for the RA (α = .86) and PA (α = .82) scales was good (Kline, 1999). Our examination of continuous measures of both types of aggression enabled us to concurrently study the two in each participant. This method avoids the loss of precision and potential biases associated with categorization (Beauchaine, 2003; MacCallum, Zhang, Preacher, & Rucker, 2002).

Suicide Attempts

Participants responded to the question “Have you ever tried to kill yourself or attempted suicide?” This item is a modification of a question from the National Comorbidity Survey (Kessler, Borges, & Walters, 1999) and shows good test–retest reliability (91.8%, K = .82; Conner et al., 2007). In the current sample, 19 (19.8%) reported a lifetime suicide attempt. Presence versus absence (binary) of a lifetime suicide attempt was the criterion variable.

Depression

We administered the Psychiatric Diagnostic Screening Questionnaire (PDSQ; Zimmerman & Mattia, 2001a), Major Depressive Disorder subscale for use as a covariate due to depression’s association with suicidal behavior. The PDSQ consists of yes/no questions designed to assess current and recent symptoms and incorporates cutoff scores. It has been validated in large-scale studies using structured clinical interviews (Zimmerman & Chelminski, 2006; Zimmerman & Mattia, 2001). Internal consistency for the depression subscale in the present study was α = .85. Thirty-two (33.3%) participants were at or above the cutoff for Major Depressive Disorder.

RESULTS

DATA SCREENING AND BIVARIATE ANALYSES

There were no bivariate outliers (defined as ±3 SD from the mean; Gulbay & Kahraman, 2005), the continuous variables showed no significant skewness or kurtosis, and correlations among predictors/covariates (<r = .60; Table 1) indicated an absence of pronounced multicollinearity (Tabachnick & Fidell, 2007). Female gender (r < .01) and depression (r < .05) were significantly associated with a history of suicide attempt in bivariate tests and were retained in the primary analyses as covariates. Self-reported

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<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
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<tbody>
<tr>
<td>1. Female gender</td>
<td>—</td>
<td>.16</td>
<td>—</td>
<td>.17</td>
</tr>
<tr>
<td>2. Reactive aggression</td>
<td>—</td>
<td>—</td>
<td>.59**</td>
<td>—</td>
</tr>
<tr>
<td>3. Proactive aggression</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
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<tr>
<td>4. Major Depressive Disorder</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>5. Suicide attempt history</td>
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</tbody>
</table>

Note. Pearson’s r was used for continuous variables (reactive and proactive aggression) and point-biserial correlations for dichotomous variables (gender, depression, and suicide attempt history.)

*p < .05. **p < .01.
race/ethnicity was not associated with a suicide attempt history, $F(2, 93) = .23, p = .80$. In bivariate tests, reactive aggression ($r_{pb} = .29, p < .01$), but not proactive aggression ($r_{pb} = .10, p = .34$), was related to suicide attempts.

**PRIMARY ANALYSIS**

In a logistic regression, after controlling for gender and depression, reactive aggression remained associated with suicide attempts ($1.09, 1.02-1.17, p < .05$, Nagelkerke $R^2 = .11$). Details of this analysis are shown in Table 2.

**MODERATION ANALYSES**

Next, we examined Gender × Aggression interactions for reactive and proactive aggression. The results for the Gender × Reactive aggression (.96, .82-1.13, $p = .63$) and Gender × Proactive aggression (.98, .82-1.19, $p = .87$) interaction terms were nonsignificant, indicating that the relationship between reactive aggression and suicide attempt history did not differ between males and females.1

**DISCUSSION**

This study is, to our knowledge, the first to examine the relationships of reactive and proactive aggression to lifetime history of a suicide attempt among criminal offenders. Our first hypothesis—that reactive aggression would be associated with lifetime history of a suicide attempt—was corroborated. By contrast, we did not observe a relationship between proactive aggression and suicide attempts as previously reported in a drug treatment sample (Conner et al., 2009).

The relationship between reactive aggression and suicide attempts was expected based on prior theory (Conner et al., 2003; Mann, 2003) and research (Conner et al., 2009), and indicates that offenders who respond to perceived provocations impulsively with aggression are at risk for suicide attempts. Reactive aggression is consistently linked to negative affect (Swogger, Walsh, Houston, Cashman-Brown, & Conner, 2010; Tellegen, 1982), which may partially account for the relationship between reactive aggression and suicide attempts, especially under stressful conditions. Criminal offenders experience high levels of stress (Mezey, 2007) that might further affect their ability to control aggressive impulses.

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**TABLE 2: Logistic Regression Examining Reactive Aggression’s Association With Lifetime History of a Suicide Attempt After Controlling for Depression**

<table>
<thead>
<tr>
<th>B</th>
<th>OR</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Step 1</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female gender</td>
<td>1.27*</td>
<td>3.57*</td>
</tr>
<tr>
<td>Major Depressive Disorder</td>
<td>0.86</td>
<td>2.35</td>
</tr>
<tr>
<td><strong>Step 2</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female gender</td>
<td>1.22*</td>
<td>3.38*</td>
</tr>
<tr>
<td>Major Depressive Disorder</td>
<td>0.94</td>
<td>2.57</td>
</tr>
<tr>
<td>Reactive aggression</td>
<td>0.09*</td>
<td>1.09*</td>
</tr>
</tbody>
</table>

Note. OR = odds ratio; CI = confidence interval. *$p < .05$. 

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Notably, our findings were observed after adjusting for variance accounted for by gender and depression, indicating that reactive aggression accounts for substantial variance in suicide attempts (approximately 11%) even after taking these variables into account.

One potential link between reactive aggression and suicide attempts is impulsivity. A number of researchers (e.g., Mann, 2003; Plutchik, van Praag, & Conte, 1989) have proposed models of suicidal behavior in which impulsive individuals who demonstrate aggressive behaviors are more likely to act on suicidal thoughts because they are prone to rapidly transitioning from suicidal thoughts to action. However, recent research (Swogger, Van Orden, & Conner, 2013; Witte et al., 2008) indicates that impulsivity may be linked to planned suicide attempts, possibly by exposing individuals to situations (e.g., violent altercations) that increase their capability for self-harm through habituation to pain, as proposed by the Interpersonal Theory of Suicide (Joiner, 2005).

We did not find a relationship between proactive aggression and suicide attempts. This is only the second study to examine the relationship of proactive aggression and suicide attempts and more research is necessary. However, our results suggest that the reactive aggression–suicide attempt relationship is more reliable across samples than the relationship between proactive aggression and suicide attempts. Our test of gender as a moderator did not replicate that by Conner et al. (2009) who found a relationship between proactive aggression and suicide attempts that was evident only among men in a drug-dependent sample. One potential reason for the failure to replicate Conner et al.’s findings regarding proactive aggression is that our sample of criminal offenders may have contained a higher number of individuals with psychopathic traits than what might be found in a drug treatment sample. While antisocial individuals are at risk for suicide attempts (Douglas et al., 2008; Swogger, Conner, Meldrum, & Caine, 2009), there is preliminary evidence that individuals with high levels of interpersonal features of psychopathy (e.g., superficial charm, deceitful, and manipulative behavior) are less likely to engage in both self- and other-directed violence compared with those with lower levels of these traits (Swogger, Walsh, Homaifar, Caine, & Conner, 2012). Rather, these individuals are more likely to engage in other-directed violence only. Future studies may want to examine the potential moderating effects of psychopathic traits on the relationship between different types of aggression and suicidal behavior.

Results of the present study raise the possibility that interventions designed to enhance impulse-control among reactively aggressive offenders may also reduce suicide risk. One psychotherapeutic intervention—dialectical behavior therapy—is already being used in forensic settings to treat self-destructive behaviors associated with poor impulse-control (van den Bosch, Hysaj, & Jacobs, 2012). Our results also imply that forensic assessments that distinguish between prior reactive and proactive aggression, rather than simply assessing aggression in aggregate, may have particular utility in helping determine suicide risk, with reactive aggression pointing to a greater need for risk management through intervention.

Several limitations of this study are noteworthy. First, the cross-sectional design prohibits causal inferences. Moreover, our measure of depression used current and recent symptoms, making it difficult to evaluate the temporal relationships between these symptoms and aggression and suicide attempts that have occurred over the lifetime. Our sample size was relatively small (contributing to wide confidence intervals) and comprised largely African American men. Future studies of different samples are necessary to indicate how
well current findings generalize to other offender populations. We had no corroborating data on suicide attempts, which were self-reported. Finally, we did not measure whether suicide attempts were planned or impulsive, data that would help clarify the overlap between reactive aggression and suicide. These weaknesses are balanced by methodological strengths, including the concurrent examination of continuous measures of reactive and proactive aggression, and the use of well-validated assessments.

NOTE

1. We also examined symptoms of substance-use disorder, using Psychiatric Diagnostic Screening Questionnaire (PDSQ) scales for alcohol and drug use disorders, in relation to the aggression–suicide attempt relationships. Neither symptoms of alcohol nor drug use disorder moderated the relationships between RA/PA and suicide attempts and the pattern of significant results remained the same when controlling for substance-use disorders.

REFERENCES


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