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Hostile Attributions in Incarcerated Adult Male Offenders: An Exploration of Diverse Pathways

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Hostile attributions were examined in 150 incarcerated males to test the possibility that there are two pathways associated with hostile attributions: one related to psychopathy as assessed using the Psychopathy Checklist-Revised [PCL-R; Hare, 1991] and one related to depressogenic attributional style, as assessed using the Inferential Styles Questionnaire [ISQ; Rose et al., 1994]. Ten hypothetical vignettes were used to assess attributions of intent. Both PCL-R and ISQ scores were significant predictors of hostile attributions. Further, the two processes appeared to relate differentially to the race of the participants, such that an ISQ-hostile attribution association was stronger among African American participants than among Caucasian participants. Contrary to prediction, hostile attributions did not mediate associations between personality and violent crime. Aggr. Behav. 31:99–115, 2005.

Keywords: hostile attribution; psychopathy; attributional style

The psychopathic individual, most vividly described by Cleckley [1976], is characterized by a tendency to exhibit inadequately motivated antisocial behaviors, to express little or no guilt or remorse for these behaviors, and to seem unable to connect with others emotionally. Simultaneously, he or she may appear quite charming and intelligent. Although psychopathic individuals make up only 1–3% of the general population, these individuals are responsible for a disproportionate amount of crime and violence and comprise 15–30% of the nation's prison population [Hare, 1996].

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Researchers and clinicians have conceptualized the psychopathic individual as one who views the world as a hostile, unpredictable place [Cleckley, 1976; Hare, 1991; Millon, 1981; Newman and Wallace, 1993]. This extreme hostility is often indexed by callous and antisocial beliefs such as: "The victims got what they deserved" and "This world is about survival—you have to look out for number one" [Hare, 1991]. Such hostile distortions have been invoked as a contributory factor to psychopathic individuals' antisocial behaviors [e.g., Newman and Wallace, 1993; Serin and Kuriychuk, 1994], and have also been described as the psychopathic individual's attempt to rationalize his behavior after the fact [e.g., Millon, 1981]. Despite their centrality to the psychopathy construct, psychopathic individuals' hostile distortions/misperceptions have not often been investigated. This is particularly striking when contrasted with the attention that has been paid to hostility and hostile distortions in other antisocial groups (e.g., children with conduct disorder, juvenile delinquents).

There is an extensive literature examining attributions of hostility made by children and adolescents with conduct problems. One of the most robust findings in this area is the tendency for these individuals to exhibit a "hostile attribution bias" (HAB). When these individuals are confronted by another person's provocative, yet ambiguous, behaviors, they are more likely than others to attribute those behaviors to hostile intent [Crick and Dodge, 1994; Dodge and Coie, 1987; Dodge and Frame, 1982; Dodge and Newman, 1981; Dodge and Tomlin, 1987; Dodge et al., 1990; Gomez et al., 2001; Orobio de Castro et al., 2002; Van Oostrum and Horvath, 1997].

In one of the few studies conducted to examine hostile attributions in psychopathic individuals, Serin [1991] adopted the HAB construct to test the hypothesis that psychopathic individuals would be more likely than non-psychopathic individuals to attribute hostile intent to others' behaviors. To this end, he used a series of six hypothetical, provocative vignettes to examine the attributional styles of 87 adult male offenders who were classified as psychopathic or non-psychopathic, using a cutting score of 28 on the Psychopathy Checklist-Revised [PCL-R; Hare, 1991].

The study found that, in situations rated as particularly provocative, psychopathic individuals were more likely than non-psychopathic individuals to make attributions of hostile intent. Specifically, the psychopathic participants were more likely to say that the provocateur in each situation was behaving deliberately out of disrespect, and because the provocateurs believed that they were right [Serin, 1991]. Thus, in situations in which they placed themselves in the role of the victim, the psychopathic individuals were more likely than the nonpsychopathic individuals to perceive others as behaving towards them in an intentionally harmful way.

Serin's [1991] finding represents an important first step in understanding the content and implications of psychopathic individuals' hostile attributions. Ideally, this study would serve as a basis for the same programmatic research that has helped to clarify and refine the phenomenon in children and adolescents. For example, research with children has shown that the HAB is present in both boys and girls, and can be elicited through the use of hypothetical as well as real-life situations [Steinberg and Dodge, 1983]. HABs also appear to be specific to reactive aggression and are unrelated to nonviolent crime and socialized aggression [Dodge et al., 1990]. Further, compared with other children, those who make these biased attributions tend to utilize less information and are more likely to rely on self-schemas when explaining their decisions [Dodge and Tomlin, 1987; Dodge and Newman, 1981]. Finally, children's hostile attributional biases have also been linked to their aggressive behaviors. For example, children who exhibit attributional biases display high rates of reactive aggression

when interacting with their peers [Dodge and Coie, 1987], and commit greater numbers of violent crimes [Dodge et al., 1990].

Although certain groups of aggressive children are prone to making hostile attributions, this bias may not be specific to these children. In a comparison of aggressive and depressed children, Quiggle et al. [1992] found that when presented with hypothetical, provocative situations, both groups of children were more likely than controls to make attributions of hostile intent. At the same time, the biased reactions to these events were associated with distinct correlates within each group, suggesting that the hostile attributions may have represented the outcome of two separate processes. Whereas aggressive children were likely to endorse an aggressive response to the provocation presented in the vignettes, depressed children were not. On the other hand, depressed children were more likely than aggressive children to make internal, stable, global attributions (''depressogenic attributions'') for the hypothetical event [Quiggle et al., 1992].

A conceptual parallel to Quiggle et al. [1992] is found in a study by Blackburn and Lee-Evans [1985]. In this study of adult male offenders, the authors found that when confronted with a hypothetical situation wherein they were threatened with physical or psychological harm, psychopathic individuals exhibited more extreme reactions (higher levels of self-reported cognitive, physical, and emotional arousal) than did non-psychopathic individuals [Blackburn and Lee-Evans, 1985]. Moreover, the study showed that offenders who fell at the extreme end of a social withdrawal dimension (i.e., highly withdrawn) exhibited the most intense reactions to these situations. Social withdrawal and psychopathy did not interact [Blackburn and Lee-Evans, 1985]. Rather, the constructs represented additive pathways that separately contributed to the reactions exhibited by these individuals. As in Quiggle et al. [1992], reactions to hypothetical provocation were associated with an aggressive (psychopathic) component, and an internalizing/depressogenic (social withdrawal) component.

If it is the case that the hostile attributions expressed by criminal offenders may be influenced by negative affectivity/depressogenic attributional style and/or psychopathy, it is necessary to consider these processes separately when assessing hostile attributions in this group. This is particularly important in light of the fact that, although depressogenic attributional style per se has never been assessed in psychopathic individuals, there is clear evidence that there are psychopathic individuals who are socially withdrawn [Blackburn and Lee-Evans, 1985] and who express high levels of trait anxiety and negative affectivity [Schmitt and Newman, 1999]. Thus, it is likely that there are also psychopathic individuals who exhibit the depressogenic attributional style.

The purpose of the present study was to replicate Serin's [1991] study of hostile attribution biases in psychopathic individuals, while considering the potentially separable contributions of psychopathy and depressogenic attributional style to the attributional process. To this end, this study includes the PCL-R [Hare, 1991] to assess psychopathy, and the Inferential Styles Questionnaire [ISQ; Rose et al., 1994], as a measure of depressogenic attributional style. The ISQ is similar to the measure used by Quiggle et al. [1992], and allowed for characterization of participants' attributions along the dimensions of internal/external (e.g., the event was caused by me versus caused by others), stable/unstable (e.g., the cause of the event will or will not lead to similar problems in the future), and global/specific (e.g., the cause of the event also does or does not affect other areas of my life).

Research on the assessment of psychopathy and the correlates of the psychopathy construct has revealed important differences between African American and Caucasian male offenders. First, the PCL-R functions differently between the two groups, as evidenced by

differences in the factor structure of the measure [e.g., Kosson et al., 1990], as well as differential item functioning [e.g., Bolt et al., 2002]. These differences alone provide a strong rationale for examining the correlates of the PCL-R separately in the two races. As Ben-Porath [1990] notes, when factor structures differ between cultural or racial groups, "the investigator is alerted that a qualitative change has occurred in the instrument" (p. 33).

In addition to differences in the assessment measure, race differences have also been found in the associations between PCL-R psychopathy groupings and etiologically relevant correlates of psychopathy. For example, Kosson et al. [1990] found significant race differences in the PCL-R's association with impulsivity as well as its ability to predict performance on a laboratory measure of passive avoidance. More recent studies using the PCL-R have replicated the existence of racial differences in the association between PCL-R scores and passive avoidance [Newman and Schmitt, 1998; Thornquist and Zuckerman, 1995].

The failure to replicate associations between PCL-R psychopathy and laboratory measures of information processing found in samples of Caucasian male offenders using samples of African American male offenders extends beyond tests of passive avoidance [e.g., Lorenz and Newman, 2002a; Newman et al., 1997; Schmitt et al., 1999]. For example, research with Caucasian offenders has reliably shown that psychopathic men are hyporeactive to emotional words on a lexical decision task, relative to nonpsychopathic men [e.g., Williamson et al., 1991; Lorenz and Newman, 2002b]. However, this finding failed to generalize to a sample of African American male offenders [Lorenz and Newman, 2002a].

In light of this evidence, it would be unfounded to assume that the correlates of psychopathy generalize across race. Indeed, there is growing awareness in the field of psychology that the generality of scientific findings must be tested rather than assumed. As Sue [1999] notes: "Many principles can be applied to different populations. Problems occur when the assumption of generality is made. Generality is a phenomenon that should be empirically tested" (p. 1074).

Differences in the base-rates of incarceration between Caucasians and African Americans [U.S. Department of Justice, 1997] highlight a third consideration. Based upon 1997 incarceration rates, 28% of African American males would be incarcerated in their lifetime, compared to 4.4% of Caucasian males. Whereas in 1997 there were 386 sentenced, Caucasian male inmates per 100,000 Caucasian males in the population, there were 3,209 sentenced, African American incarcerated males per 100,000 African American males [U.S. Department of Justice, 1997]. This disproportionate representation of African American males in the United States prison system suggests that particular factors may be differentially influencing the criminal behavior and incarceration rates of African Americans versus Caucasians.

There are potential racial differences in the assessment of psychopathy, the association between PCL-R psychopathy and etiological variables, and the factors contributing to criminal behavior and incarceration. As a result of these differences, these researchers elected to conduct multi-group path analyses to test for differences in the proposed pattern of associations across race.

On the basis of previous research with psychopathic adults and aggressive children, three primary hypotheses were formulated. The first prediction follows Serin [1991], that there would be a significant positive association between hostile attributional style and psychopathy.

The second prediction, following Quiggle et al. [1992], suggests a significant positive association between hostile attributions and depressogenic attributional style assessed using

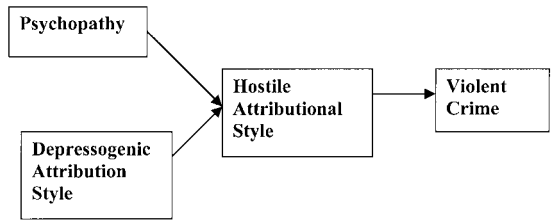

Fig. 1. Hypothesized path model.

the ISQ. In addition, based upon the findings of Quiggle et al., as well as Blackburn and Lee-Evans [1985], it was expected that psychopathy and depressogenic attributional style would represent independent, noninteracting pathways associated with the hostile attribution bias.

Third, in light of the literature supporting a link between hostile attributions and aggressive behavior [e.g., Dodge and Coie, 1987; Dodge and Frame, 1982; Dodge et al., 1990], this study predicted that individuals who exhibited a hostile attributional bias would be more likely to have been arrested or convicted for violent crimes (i.e., robbery, assault, and murder) than individuals who did not exhibit this bias. Further, on the basis of research showing that hostile attributions will mediate a child's decision to behave aggressively [Dodge and Frame, 1982], it was expected that this association would mediate the relations between psychopathy and violent crime.

These hypotheses form the basis for the model proposed in Figure 1. In this model, PCL-R scores and ISQ scores are significant predictors of hostile attributional style which, in turn, is a significant predictor of violent criminality.

Although the PCL-R is most often used as a unidimensional instrument, it is composed of two correlated factors: Factor 1 is argued to tap the "affective and interpersonal characteristics" associated with psychopathy and captures the psychopathic individual's callous disregard for the feelings and rights of others (including such items as lack of guilt/remorse, callous/lack of empathy, and shallow affect). Factor 2 is believed to tap the psychopathic individual's persistent antisocial behavior (including juvenile delinquency and criminal versatility) [Hare et al., 1990]. It is possible that hostile attributions may be differentially related to these two factors. For example, hostile attributions may be more closely associated with the antisocial lifestyle of the psychopathic individual than with his characteristic disregard for the feelings and rights of others. As a result, this study will include supplemental analyses examining the relations between each of the factors and hostile attributions to determine if both factors are relevant to this relation.

METHOD

Participants

Participants were 150 male offenders (73 Caucasian and 77 African American) incarcerated at the Oakhill and Columbia Correctional Institutions in Wisconsin. These participants were part of an ongoing study of psychopathy in male offenders. Participants were drawn from minimum, medium, and maximum security levels. Participants were excluded on the basis of age (no participants over 40), any current use of psychotropic medication, and academic level

(all participants must have 4th grade reading and mathematical abilities).[1] Participants who met the inclusion criteria were informed of the project both orally and in writing and were then invited to participate.

Procedure

Psychopathy ratings. Psychopathy was assessed using the PCL-R [Hare, 1991]. The PCL-R is considered a reliable measure of psychopathy with demonstrated convergent, discriminant, and predictive validity [Hare, 1991, 1996]. The PCL-R is composed of 20 items that tap the personality and behavioral characteristics of psychopathy (e.g., "grandiose sense of self worth", "juvenile delinquency"). Each item is rated as 0 (not present), 1 (may be present), or 2 (definitely present). Scores in this study were based upon information gathered by trained graduate students during a one hour semi-structured interview covering family, relationship, educational, employment, and criminal history, and through a review of the inmates' prison files, which included pre-sentence investigation/s and conduct reports. Inter-rater reliabilities for PCL-R scores for the entire project are .87 for Caucasians and .88 for African Americans.

Assessment of information processing patterns. Participants were interviewed by undergraduate experimenters who were blind to psychopathy ratings. Participants were read 10 brief vignettes in counterbalanced order (see Appendix A for the vignettes). Participants were asked to imagine themselves as the subject of the vignettes, all of which involved a negative outcome for the subject as a result of the actions of another individual. All of the vignettes were used to elicit participants' attributions of others' behaviors in negative situations. Six of the vignettes were taken from Serin [1991] and included both institutional and non-institutional settings. These vignettes were originally designed to assess hostile attributions. The remaining four vignettes were adapted from the ISQ, which was designed to measure depressogenic attributional style along the dimensions of internal/external, stable/unstable, and global/specific. After hearing each vignette, participants responded orally and in writing to a series of questions. The same set of questions was asked for each vignette. Thus, regardless of where the vignette had been used originally [by Rose et al., 1994 or by Serin, 1991], the vignettes were now all followed by questions assessing attributions of hostile intent, and questions assessing depressogenic attributions along the dimensions of the internality/externality, stability/instability, and globality/specificity of the cause. In essence, the different vignettes and attribution questions were merged into a single measurement instrument.

Attributions of intent. After hearing each vignette, participants were asked why the agent/s in the story had behaved in the way he/she/they did. As in Serin [1991], open-ended responses were supplemented for all participants with four specific probes to use in scoring: "Do you think his/her/their actions were accidental?" "Do you think his/her/their actions were deliberate?" "Do you think his/her/their actions were done out of disrespect?" "Do you think he/she/they thought his/her/their actions were right?" Responses to each of these probe questions were scored as one or zero. Thus, hostile attribution scores for each vignette ranged

[1]Exclusion criteria are employed as part of the ongoing research project being conducted at the two institutions in order to minimize the confounding effects of IQ/education, age, and psychotropic medication on the questionnaires and laboratory tasks that are administered to all participants. Although these factors may be important for the self-report measures and laboratory assessments used in other components of the overall project, effects of age, reading level, or psychotropic medication on responses to the hostile attribution assessments were not expected.

from 0–4. Participants who answered "maybe" to the probe question were asked to provide a yes or no response, depending upon which they thought was "most likely."

ISQ attributions. Following the assessment of attributions of intent, participants were presented with a shortened version of the ISQ [Rose et al., 1994]. For each vignette, the same set of three ISQ items was completed by the participant. The ISQ begins by asking participants to think of one major cause for what happened in the vignette. The participant then rates this cause on a scale of 1–7 for each of three dimensions: internal/external, stable/unstable, and global/specific. For example, the participant could place the cause anywhere along the internal/external dimension between a 1 (*Totally caused by other people or circumstances*) and a 7 (*Totally caused by me*). The standard method for calculating depressogenic attributional style like that examined by Quiggle et al. [1992] is to calculate a negative generality score based on the stability and global dimensions of the ISQ [Abramson, personal communication, September, 1997]. Following this standard, a mean negative generality score was calculated for each participant by summing his scores on these dimensions across the ten vignettes and then taking the mean of that sum.[2]

Measuring number and types of crimes. In order to score item 20 of the PCL-R [Hare, 1991] "Criminal Versatility," interviewers must use file and interview information to document the number of each of 15 types of crimes with which the inmate has been charged or has been convicted of committing. A violent crime variable was created based on this information, consisting of the number of charges for murder, robbery, and assault.

The Symptom Checklist–90–Revised [SCL–90; Derogatis, 1992]. The SCL–90 is a 90–item questionnaire that assesses the degree to which a participant is experiencing current major psychiatric symptoms. The measure consists of nine primary symptom scales (e.g., depression, schizophrenia) and three global indices. The Global Symptom Index (GSI) is one of the three indices and provides an estimate of individuals' overall self-reported pathology. The SCL–90 demonstrates test-retest reliability coefficients ranging from .80–.90 [Derogatis, 1992], and correlates with other measures of psychopathology (e.g. MMPI, Social Adjustment Scale, and General Health Questionnaire) [Derogatis, 1992].

RESULTS

Preliminary Analyses

Vignettes were presented in counterbalanced order, and a one-way ANOVA first computed to determine if order of presentation had a significant effect on either hostile attribution scores or ISQ scores. The results of these analyses were not significant for hostile attribution scores in either the Caucasian (F (1,72) = 1.34, n.s.) or the African American (F (1,75) = .27, n.s.) samples. Similarly, the results showed no significant effect of order on ISQ scores for either the Caucasian (F (1, 72) = .61, n.s.) or the African American (F (1,75) = 1.34, n.s.) samples. Thus, order was not included as a factor in any subsequent analyses.

In order to establish the internal consistency of the measures used in this study, Cronbach's alpha was computed for the various scales separately for each race. Results can be found on

[2]This method of computing depressogenic attributional style does not include scores obtained from the item assessing the internality/externality of the cause. When all three items from the ISQ were included in the analyses, there were no changes in the results. In keeping with the current use of the ISQ, only the globality/specificity and stable/unstable dimensions were retained.

TABLE I. Coefficient Alphas Indexing the Internal Consistency of the PCL-R, ISQ, and Hostile Attribution (HAS) Measures in Caucasian and African American Samples

Measure	*alpha*	
	Caucasians	African Americans
PCL-R	.86	.84
ISQ	.84	.80
HAS	.73	.48
HAS-revised	.71	.54

Note: PCL-R = Psychopathy Checklist-Revised; ISQ = Depressogenic attributional style score; HAS = Hostile attribution score; HAS-revised = Adjusted hostile attribution score.

TABLE II. Mean Age, Education, SCL-90 Scores, PCL-R Scores, ISQ Scores, and Hostile Attribution Scores for Caucasian and African American Samples

	Caucasians (n = 73)	African Americans (n = 77)
Age	28.20 (5.9)	27.28 (5.5)
Education (GED-corrected)	11.77 (0.7)	11.20 (1.7)
PCL-R	22.98 (7.9)	24.64 (7.2)
PCL-R Factor 1	8.73 (3.69)	9.33 (3.27)
PCL-R Factor 2	10.51 (3.91)	11.29 (3.53)
ISQ	2.98 (.87)	2.82 (.83)
SCL-90-R	.59 (.64)	.61 (.56)
HAS	2.51 (.45)	2.41 (.38)
Violent Crime	2.49 (.98)	2.01 (1.06)

Note: PCL-R = Psychopathy Checklist-Revised; ISQ = Depressogenic attributional style score; HAS = Hostile attribution score; SCL-90-R = Symptom Checklist-90-Revised.

Table I. Overall, the internal consistency of the PCL-R and the ISQ were adequate for both races. However, the internal consistency of the hostile attribution measure was not. While adequate in Caucasian participants (alpha = .73), it was unacceptably low for African American participants (alpha = .48). Excluding responses to one of the vignettes increased the internal consistency of the measure in African Americans to .54, and decreased it only slightly in Caucasians (to .71). Although omission of the vignette reduced the internal consistency to .71 in Caucasians, the vignette was excluded for all participants, so that the hostile and depressogenic attribution scores would be comparable across race.

Participant demographics can be found in Table II. Comparison between races on the demographic variables revealed a significant difference for mean education, $F(1,149) = 7.66$, $p < .05$, with Caucasian participants attaining higher levels of education than African American participants = 11.77 ($SD = .69$) versus $M = 11.20$ ($SD = 1.73$).

Testing the Proposed Path Model

In order to test the hypothesized model, a multigroup path analysis was conducted, using LISREL 8.51. Although there may be differences in the predicted relations between variables across race, where these differences would occur a priori was not specified. Thus, the initial model assumed no differences between Caucasians and African Americans in the predicted

paths. However, the relation between the exogenous variables, psychopathy, and depressogenic attributional style, for which there were no a priori predictions, was also included and was allowed to vary across race.

This first analysis indicated a poor fit between the model and the data, χ^2 (7, N = 150) = 33.21, $p < .0001$. Standardized root mean squared residual (*SRMR*) = .15. Comparative fit index (*CFI*) = .49. Goodness of fit index (*GFI*) = .88.

The proposed model specified that the relation between PCL-R scores and violent criminal behavior would be mediated by hostile attributional style. Examination of the modification indices suggested that this assumption was contributing to the model's poor fit. Thus, the model was modified, allowing for a relation between PCL-R scores and violent crime. This analysis indicated an improved fit between the model and the data, χ^2 (6, N = 150) = 10.95, $p = .09$; *SRMR* = .09, *CFI* = .91, *GFI* = .96. The change in chi-square ($\Delta\chi^2$) from the initial model to the modified model, $\Delta\chi^2 = 22.26$, df = 1, $p < .05$, indicates that this non-mediational model represents a significantly better fit to the data.

This model assumed no racial differences among the predicted relations. However, evidence suggests that different factors may influence the criminal behavior of Caucasian versus African American offenders. Thus, the model was tested for whether fit might be improved further by allowing for race differences in the relations between PCL-R scores and hostile attribution scores and between ISQ scores and hostile attribution scores. When the path between PCL-R scores and hostile attribution scores was freed to vary across race, the model fit did not improve significantly, $\Delta\chi^2 = .89$, df = 1, n.s. However, allowing the path between ISQ scores and hostile attributions to vary across race did lead to a significant improvement in model fit, relative to the non-mediational model, χ^2 (5, N = 150) = 6.80, p = .24, $\Delta\chi^2 = 4.15$, df = 1, $p < .05$; *SRMR* = .08, *CFI* = .96, *GFI* = .97.

The final models for each race are presented in Figure 2 and Figure 3. The standardized path coefficients indicate that the hypothesized relations between variables were supported. As predicted, increases in PCL-R scores were associated with increases in hostile attribution scores (path coefficient = .20, $p < .05$) in both Caucasian and African American participants. However, increases in ISQ scores were associated with increases in hostile attribution scores (path coefficient = .47, $p < .05$) among African American participants only. This relation was nonsignificant among Caucasian participants (path coefficient = .15).

Supplementary Analyses Using the PCL-R

To examine the relations between Factors 1 and 2 of the PCL-R and hostile attributions, LISREL 8.51 was used to test the differences between two models within each race. In the

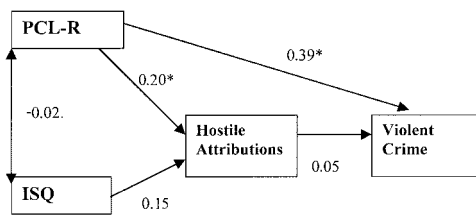

Fig. 2. Final path model for Caucasian participants. SRMR = .06, GFI = .98 *p < .05; Within group contribution to overall chi-square = 2.56.

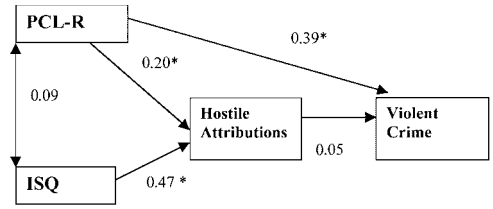

Fig. 3. Final path model for African American participants. SRMR = .08, GFI = .97 *p < .05; Within group contribution to overall chi-square = 4.40.

TABLE III. Correlations Among Measures for Caucasian and African American Participants

Variable	1	2	3	4	5	6
1. HAS	—	.18	.14	.21	.50**	−.05
2. PCL-R	.28*	—	.90**	.92**	.09	.40
3. PCL-R Factor 1	.26*	.86**	—	.71**	.12	.27*
4. PCL-R Factor 2	.25*	.88**	.55**	—	.10	.30*
5. ISQ	.14	−.02	−.01	−.00	—	−.12
6. Violent Crime	.31**	.41**	.27*	.30*	.02	—

Note: Correlations for African American participants are presented above the diagonal; correlations for Caucasian participants are presented below the diagonal. HAS = Hostile attribution score; PCL-R = Psychopathy Checklist-Revised; ISQ = Depressogenic attributional style score.
*$p < .05$.
**$p < .01$.

first (unconstrained) model, the paths from each factor to hostile attribution scores were allowed to differ. In the second (constrained) model, these paths were set to be equal. Among Caucasians, there was no statistically significant difference between the two models, $\Delta\chi^2 = .02$, df = 1, $p = .89$. Similarly, there was no statistically significant difference among the African Americans between the two models, $\Delta\chi^2 = .62$, df = 1, $p = .89$. These results suggest that for neither race is there a statistically significant difference between the path coefficients to hostile attribution scores for Factor 1 and Factor 2 scores on the PCL-R. Correlations between variables can be found in Table III.

DISCUSSION

This study supported the hypothesis that there are at least two distinct pathways associated with the tendency for incarcerated offenders to make attributions of hostile intent. Among offenders overall, the tendency to make hostile attributions was related to both depressogenic attributional style, as assessed by the ISQ, and increasing levels of psychopathy, as assessed by the PCL-R. Further, it appears that these pathways may be differentially influential among different offender groups. In this sample, the pathway characterized by depressogenic attributional style did not operate in the Caucasian offender sample, but was influential among the African American offenders.

Due to the two-factor nature of the PCL-R, it was possible that the observed relation between psychopathy and hostile attributions could have been due to the contribution of

only one of the factors. This was not necessarily the case. Although the zero-order correlation between Factor 1 and hostile attribution scores among African American participants did not achieve significance, tests of alternative models suggest that there is no statistically significant difference between the path coefficients to hostile attribution scores for Factor 1 and Factor 2 scores for either race. This highlights that it is the construct of psychopathy as a whole, including the components of antisocial lifestyle (i.e., Factor 2), as well as a callous, exploitative interpersonal style (i.e., Factor 1), that relate to psychopathic individuals' attributions of hostile intent among certain offender groups.

The finding that there are at least two separable pathways associated with hostile attributions in an incarcerated sample has important implications for the understanding and interpretation of attributions of hostility by different offenders. In this study, one pathway was associated with a depressogenic attributional style that represents an individual's tendency to have negative thoughts about the self, the world, and others. Thus, among these individuals, the tendency to make hostile attributions is associated with a tendency to make negative attributions more broadly. The second pathway, however, was not related to this broader attributional style. Rather, it was associated with the personality construct of psychopathy. The fact that psychopathy is, in part, defined on the basis of hostile, callous, and self-serving attitudes about others, suggests that hostile attributions made by psychopathic individuals may be a reflection of these underlying characteristics.

These findings support the argument made by Quiggle et al. [1992], that there are different processes underlying the tendency to make hostile attributions. Moreover, the fact that both these pathways occur in a prison population highlights the importance of examining offender groups in more process-oriented, specific ways. Delineating the mechanisms underlying hostile attributions may be a necessary step in intervening to prevent the development and maintenance of antisocial behavior. However, if the processes resulting in hostile attributions differ across populations, attempts to evaluate potential mechanisms will be hindered by the use of heterogeneous groups. In this regard, it would be necessary to distinguish between individuals exhibiting a hostile attribution bias associated with psychopathy from those whose bias reflects a more general, depressogenic attributional style.

This may be particularly important when trying to understand the development of the hostile attribution bias. For example, elsewhere Wallace et al. [1999] have argued that the hostile attributional style of psychopathic offenders results from an interaction between specific cognitive processing deficits associated with psychopathy and various environmental factors (e.g., frequent interpersonal conflicts). This cognitive processing deficit, referred to as a response modulation deficit, is proposed to interfere with individuals' ability to automatically shift their attention from the implementation of ongoing behavior to the evaluation and modification of that behavior in response to relevant environmental cues [Newman, 1998; Newman and Wallace, 1993; Patterson and Newman, 1993].

As a result of this response modulation deficit, it is proposed that the psychopathic individual is more likely to rely on his or her initial assessment of a situation and is less able to modify responses in light of information contrary to this initial assessment. Thus if, as a result of previous experience with negative interpersonal interactions or exposure to aggression, this initial assessment is hostile, then the psychopathic individual will be vulnerable to interpreting the situation as hostile and will respond accordingly [Wallace et al., 1999]. If this were the case, the psychopathic individual's hostile attribution bias would best be remediated by addressing the individual's response modulation deficit, rather than by attempting to change his negative schemas.

The finding that the pathway associated with depressogenic attributional style appeared to be influential among African American, but not Caucasian, participants raises additional questions regarding the development and maintenance of the hostile attribution bias. Is it the case that negative attributions about the self, the world, and the future are more likely to be associated with feelings of hostility in some groups than in others? One possibility is that, based either their own experiences or the observation of others' experiences, the African American males in this sample have developed a negative expectancy for the behavior of others. This pessimistic expectancy, based on direct or indirect experience, might make them more likely to hold negative beliefs about themselves, the world, and their futures, and may also make them more likely to attribute intentional hostility to others' behaviors. A second alternative is that, within our sample, the depressogenic attributional style and hostile attributional style demonstrated by these offenders are both secondary to heightened levels of negative affect based either in situational variables or in temperament.

Although the current findings have implications for understanding the role and source of hostile attributions in incarcerated offenders, there are limitations to this study. The first involves the use of extremely brief, hypothetical situations in the assessment of the hostile attributional style. The second consideration is the failure to show that hostile attributional style acts as a mediator between psychopathy and violence. The third limitation is the lack of internal consistency in the hostile attribution measure among African American participants. Finally, the generality of these findings is limited by the use of incarcerated offenders in this study.

A participant's verbal response to a hypothetical situation, particularly one in which limited information is provided, may be very different from that same individual's response to an actual event. Someone who ascribes hostile intent to a fictional individual in the confines of the lab may actually accept the same behavior as accidental if it were to occur in "real life." However, this does not undermine the contribution of studies using such hypothetical vignettes. Research has demonstrated that responses to hypothetical situations are not only related to aggressive behavior [Dodge and Coie, 1987; Dodge et al., 1990], but may serve as a mediator of this behavior [Dodge and Frame, 1982]. Further, such studies enable researchers to examine how different individuals use and understand social information. By providing a uniform, fairly limited set of facts to each participant, these studies enable the emergence of individual biases in the processing of this information. This makes it possible to study the factors that contribute to the formation of these biases, as well as the ways that these biases interfere with other social information processes and with individuals' behavior. Clearly, these biases are not the only determining factor in individuals' behavior. Factors such as emotional arousal, environmental constraints on behavior, and the strength of behavior inhibition will also contribute to an individual's aggressive response in a given situation. However, these factors do not preclude the role of a hostile attributional bias, or decrease the value of research that helps to develop a more full understanding of the hostile attribution bias in different aggressive groups.

A major factor contributing to interest in the attributional style of incarcerated offenders pertains to the presumed association between hostile attributions and violent behavior and offending. In this regard, failure to demonstrate that hostile attributions mediated the violent criminal behavior exhibited by the psychopathic offenders represents an obvious limitation of these findings. This limitation is compounded by the finding that, according to the path coefficients in the final models, hostile attribution scores were not significantly associated with violent crimes. A practical explanation of this failure is the relatively weak measure of

violence used in this study. Measures of violence were merely a tally of the number of crimes with which an individual had been charged and did not include aggressive acts that escaped legal attention. Further, it was not possible to distinguish between reactive and proactive violence using this measure. In light of research showing that hostile attributions may be associated specifically with acts of reactive aggression [Dodge and Coie, 1987; Dodge et al., 1990], this distinction may be crucial to demonstrating the relation between hostile attributions and violent behavior. In the future, more detailed measures of violence and aggression should be used to examine these associations.

The third limitation involves the difference in the internal consistency of the hostile attribution measure between the races. Obviously, the internal consistency of the measure for African American offenders was undesirably low. However, despite this lack of internal consistency, the predicted associations between depressogenic attributional style and hostile attributions, and between hostile attributions and violent criminal behavior, were supported. This supports the utility of the measure, despite its low homogeneity. One possibility for this apparent contradiction may be that, although the hostile attribution measure was not a homogeneous instrument, there may have been particular situations that were more provocative than others *for each participant*. It may then have been these particularly provocative vignettes that elicited more hostile attributions for a particular subset of offenders and differentiated them from the non-hostile offenders. In other words, although the low internal consistency suggests that the attributions made were not consistent across all situations, the hostile attribution bias might have been revealed due to the reactions of participants to particular, individualized sets of situations.

Although the low internal consistency represents a limitation of this work, it may also reflect important methodological and theoretical issues. For example, the difference in reliability between the races could indicate that this measure of hostile attributions, based mainly on Caucasian samples, is an inadequate measure of this attributional style in African American offenders. This possibility calls either for the development of a hostile attribution assessment that is equally reliable in both races, or for the development of two different but parallel measures of attributional style. If the difference lies in the questions used to assess hostile attributions (e.g., the wording of the free response and probe questions), then the existing measure for both races might be refined. However, if it is the case that different situations provoke hostile interpretations in the different groups, then parallel measures may be required. This highlights the importance of piloting measures of attributional style in different populations in order to ensure reliable and valid assessments of the hostile attribution bias.

More interestingly, the lack of internal consistency in the measure may actually relate to the different pathways underlying the hostile attributions. For example, the results suggested that depressogenic attributional style, relative to psychopathy, was a more influential predictor of hostile attributions among African Americans than among Caucasian participants. However, depressogenic attributional style is not specific to interpersonal situations. Rather, it influences attributions across diverse domains and biases individuals' perceptions not only of others, but of themselves, and their futures. In light of this, scenarios designed to elicit hostile attributions specific to interpersonal interactions may not all relate in the same way to the more general attributional style. In fact, it may be those situations that are most relevant to each individual's self, future, and world-view that are most likely to elicit hostile attributions. If this were the case, a group of vignettes may lack homogeneity, but this would not represent simply a methodological flaw. Rather, the resulting heterogeneity could

be a reflection of how depressogenic attributional style determines an individual's likelihood of making hostile attributions.

Finally, the use of an incarcerated sample naturally limits the ability to generalize these findings to non-offender samples. Evidence from nonincarcerated adolescent samples demonstrates that the hostile attribution bias is not specific to incarcerated individuals, however. Although differences in rates of psychopathy and depressogenic attributional style may exist between offender and non-offender populations, the findings within this sample are consistent with those derived from non-incarcerated samples, suggesting that the pathways proposed here will have relevance beyond incarcerated populations.

A related concern is the absence of information regarding the clinical status of current participants. Although individuals taking psychotropic medication were excluded, this does not preclude the existence of participants experiencing mood disorders in this sample. As a result, there may be some concern that the relation between psychopathy and hostile attributions demonstrated in this study is the result of group differences in psychopathology. This concern is minimized by three important factors. First, in a test of the relation between PCL-R scores and scores on the Global Severity Index of the Symptom Checklist–90 [Derogatis, 1992], a self-report measure of symptomotology, no significant association between the two is found in this sample. Second, there was no relation between PCL-R scores and ISQ scores, which, as an index of depressogenic attributional style, would be likely to relate to psychopathology. Third, research using the PCL-R has repeatedly demonstrated that the PCL-R is not associated with DSM Axis I disorders, with the exception of substance abuse diagnoses [Hare, 1991]. Thus, it is unlikely that there were significant differences in the clinical status of psychopathic and nonpsychopathic participants in this study.

Overall, this study attempted to test the hypotheses that there may be alternative constructs associated with hostile attributional style. It is hoped that as these two pathways are more fully explicated, their influence on behavior will be tested across a variety of populations. Such studies will only increase understanding of the mechanisms underlying aggressive behavior in its many forms.

Hostile attributions are a major component of cognitive models of the development of aggressive behavior. They are associated with distinct patterns of information processing and recall, as well as behavioral responses [e.g., Crick and Dodge, 1994; Huesmann, 1988]. Despite its limitations, this study refines understanding of hostile attributions in adult offenders by delineating two distinct pathways associated with the hostile attributions that are associated with different personality characteristics, attributional styles, and criminal behaviors.

Further clarification of these pathways will not only aid understanding of the potentially causal role of hostile attributions in violent adult offending, but will also increase understanding of the ways that the hostile attribution bias relates to the processing and recall of social information. It is likely that the depressogenic attributional style and the psychopathy pathways delineated in this study will be differentially associated with these atypical social-information processing patterns. Thus, in addition to contributing to understanding of antisocial behavior, the explication of the two pathways will contribute to understanding of social information processing in general.

This study provides evidence of the need, when studying hostile attributions in adult offenders, to distinguish between attributions related to depressogenic attributional style, and attributions related to antisocial syndromes. Failure to do so will only hinder attempts to

explain, predict, and prevent the antisocial behaviors of psychopathic individuals and other offenders.

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APPENDIX A

Vignettes Used to Assess Hostile Attributional Style

1) You asked a buddy, Ted, to do you a favor. You explained to Ted that it was really important. Ted agreed to do it. You have just found out that Ted hasn't done what he promised and now it's too late. This leaves you in a real bind.

2) You are at a hotel bar with some friends and someone who has been loud bumps into you and spills his drink in your lap.

3) It's early Saturday morning and your roommate is listening to his radio turned up very loud. You find that you can't read, write, or sleep. You ask your roommate and say, "Why don't you turn that radio down now? I'm trying to sleep and I'm sure other guys are, too." The other guy says, "Yeah, yeah, in a little while," and just ignores you.

4) You receive a negative evaluation of your job performance from your employer.

5) You are at a party with your partner and she spends most of the time ignoring you and talking to other men.

6) You come back a bit late from work to the cafeteria and find that someone has taken too many portions and there is no meat left for your dinner. This is the second time this week this has happened to you.

7) You receive an upsetting letter from home and immediately request a phone call. Unfortunately, your social worker is not on and the other staff won't give you phone call because you had a call earlier this week.

8) A person with whom you really want to be friends does not want to be friends with you.

9) Your relationship with your wife/girlfriend ends, even though you would like it to continue.

10) You and your parents are not getting along well.

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