

Attributional and Emotional Determinants of Aggression Among African-American and Latino Young Adolescents

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Attribution theorists propose that negative actions of others perceived as intended elicit anger, and anger then functions as a motivator of hostile behavior. We examined the understanding of these attribution-affect-action linkages among young ethnic minority adolescents. Forty-four Latino and African-American middle-school children labeled as aggressive and a matched group of nonaggressives read causally ambiguous scenarios describing negative outcomes initiated by a hypothetical peer. They then made judgments about the peer's intentions, their own feelings of anger, and the likelihood that they would behave aggressively toward that peer. Concerning the relations between these variables, the data supported a mediational model of emotion as postulated by attribution theory. The implications of these findings for attributional change were discussed.

Studies of childhood aggression reveal a social phenomenon rapidly emerging as a serious contemporary problem. A large empirical literature has documented the stability of aggression from childhood to young adulthood (Loeber, 1982; Olweus, 1979) as well as its relation to a host of negative outcomes, including school dropout in adolescence (Cairns, Cairns, & Neckerman, 1989), rejection among peers (Coie, Dodge, & Kupersmidt, 1990), juvenile delinquency (Loeber & Stouthamer-Loeber, 1987), and even adult criminality and psychopathology (Kohlberg, Ricks, & Snarey, 1984; Robins, 1978; Wilson & Herrnstein, 1985). The societal ramifications of this problem have become even more compelling with the growing realization that many of the known correlates of childhood aggression listed previously are disproportionately prevalent among ethnic minorities, particularly African-American males. It is well documented, for example, that Black male youths are less likely than their White counterparts to complete high school (Jaynes & Williams, 1989; Reed, 1988), more likely to have been arrested as juveniles (Farrington, 1987), and more likely to have been imprisoned for criminal behavior as young adults (Wilson & Herrnstein, 1985). It is, therefore, not surprising that the last decade has produced a burgeoning psychological literature concerned with the antecedents of antisocial behavior among children and adolescents.

One particularly fruitful approach to this topic has been provided by psychologists working within a social cognitive perspective. These researchers investigated how children's infer-

ences about others in social situations are related to subsequent aggressive behavior. For example, guided largely by the work of Dodge and his colleagues, a number of studies reported that aggressive children display a marked attributional bias to infer hostile intent following a peer-instigated negative event (e.g., being pushed while waiting in line), particularly when the cause of the event is portrayed as ambiguous (see review in Dodge & Crick, 1990). Such biased intentionality attributions are then hypothesized to lead to retaliatory behavior. Even among nonaggressive populations, the child who believes that another acted with malicious intent can feel justified in the endorsement of aggressive behavior. The problem with aggressive children, however, is that, either through some process of social cue distortion or selective recall of available information, they often inappropriately assume hostile peer intent in situations of attributional ambiguity.

Although this research capitalizes on an implicit attribution-behavior linkage, the processes relating intentionality judgments to aggressive responding in children have yet to be fully explored. Why, for example, does perceiving a peer as responsible for a negative event lead to aggression? That is, what mediating processes and mechanisms account for the proposed cognition-to-action sequence documented by Dodge and others?

To address this question, we turn to attribution theory as conceptualized by Weiner (1985, 1986), which deals extensively with the construct of causal responsibility and the related concept of causal intentionality (also see Weiner, 1991). According to this formulation, responsibility attributions are linked to behavior through the mediating influence of emotion. To illustrate, consider the evidence supporting these linkages that has been gathered in the domain of helping behavior. When people are perceived as not responsible for negative outcomes, this tends to elicit pity and prosocial behavior such as help (imagine a normal child's reaction to a mentally handicapped peer who continually experiences academic difficulty). In contrast, individuals judged as responsible for negative events often elicit anger, and help tends to be withheld (consider the same child's reaction to the gifted peer who never completes assignments).

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Anger is, therefore, a moral emotion often associated with judgments of "ought," "should have," or "could have" (see Averill, 1982). Furthermore, a very reliable finding in this attribution literature is that emotions of pity and anger, more so than responsibility attributions, directly influence helping behavior (see Graham & Weiner, 1991; Schmidt & Weiner, 1988). Thus, attribution theorists propose a thought-emotion-action sequence in which thoughts determine feelings and feelings, in turn, function as guides to behavior. This sequence is consistent with other emotion theories that view emotions as responses to cognitive appraisal (e.g., Roseman, 1984) as well as precursors to action (Tompkins, 1970).

As intimated previously here, much of the empirical support for the proposed motivational role of emotion has come from research in the helping domain. However, we view aggression and helping behavior as theoretically complementary motivational domains. Although phenotypically different behaviors, both helping and aggression are partly the consequence of perceived responsibility in others; thus, the same attribution principles relating responsibility inferences to emotions and action should be applicable to both. Applying these principles to the study of peer aggression, imagine a situation in which a child experiences a negative outcome, such as damage to a favorite video game, at the hands of a peer. Among socially competent children, to the degree that the peer provocation is perceived as intentional (i.e., the provocateur is responsible for the damage), we expect feelings of anger to be evoked and anger, in turn, to be directly related to retaliation. In contrast, to the degree that the damage is perceived as unintended, anger should be mitigated and hostile behavior less likely to be endorsed.

The attributional conception of affects as motivators of both prosocial and antisocial behavior is consistent with current developmental approaches to emotion that focus less on the disorganizing function of emotions and more on their capacity to organize and regulate adaptive behavior (see Thompson, 1990). Thus, from an attributional perspective, the thinking-feeling-acting linkages hypothesized here represent rational sequences in response to social dilemmas, and they are also part of competent social information processing. Individuals process social cues to infer intentionality in others, and from these inferences certain emotional reactions and behaviors toward others logically follow. Yet much of the current literature indicates that aggressive children are less competent social information processors than their nonaggressive counterparts, particularly when the context requires accurate inferences about intent (see Dodge & Crick, 1990). This raises the question of whether aggressive children's thoughts, feelings, and actions following peer provocation are consistent with the sequence outlined previously.

Figure 1 graphically depicts this sequence, beginning with the antecedent cues, such as the recency of the provocation or the distinctiveness of the provocateur's behavior, that elicit intentionality inferences. We already know that aggressive children often use such cues in a manner that biases them toward perceiving peer provocations as intentional (Linkage 1). However, are feelings of anger systematically related to these attributional inferences? An alternative model might predict that socially deviant children experience intense anger following peer provocation somewhat independently of perceived intent; both feelings of anger (Linkage 3) and inferences about intentional-

ity (Linkage 4) then influence aggressive behavior. Thus, the breakdown in the temporal sequence proposed by attribution theory occurs with the thought-to-emotion path (Linkage 2). This is consistent with the portrayal of aggressive children as having low thresholds for emotional arousal following negative social encounters (see Parke & Slaby, 1983).

Yet another temporal sequence could be hypothesized in which the initial response to peer provocation is anger arousal. Perhaps aggressive children first respond with anger toward the peer provocateur, and anger, in turn, influences judgments about intent. Pertinent to this model, Dodge and Somberg (1987) reported that aggressive boys who were exposed to a condition of interpersonal threat (which heightened feelings of being "upset") showed more biased intentionality attributions than when they were in an affectively neutral condition. In the emotion literature, moreover, a number of researchers documented the effects of feeling states on subsequent cognitive processing (e.g., Bower & Cohen, 1982), so there are both theoretical and empirical precedents for hypothesizing an emotion-to-attribution linkage.

We pursued these questions regarding the role of emotion in peer aggression in the study reported here. Because our interest in peer aggression grows out of our concern with the psychological functioning of ethnic minority youth, our research participants were aggressive and nonaggressive African-American and Latino adolescents. These children were given a set of scenarios describing negative outcomes initiated by a hypothetical peer, with the cause of the outcome manipulated to be either prosocial, accidental, ambiguous, or hostile. They then made judgments about the intentions of the peer provocateur, their own feelings of anger, and the likelihood that they would respond aggressively toward that peer.

This methodology allowed us to examine two basic research questions. First we asked, "Are there mean differences between aggressives and nonaggressives in reported inferences about intentionality, anger, and hostile behavior across a range of negative outcomes varying in the causal intent of a peer provocateur?" On the basis of previous research, we predicted that, in ambiguous situations, aggressive children would infer greater peer intentionality and endorse more hostile behavioral options than would their nonaggressive counterparts. We also expected aggressives to report experiencing more intense anger. Second, we asked, "Does the social information processing of the young adolescents sampled here reveal systematic relations among thinking, feeling, and aggressive action tendencies as postulated by attribution theory?" Causal modeling procedures were used to test the mediational model of emotion and to compare it with the alternative models suggested previously. We anticipated that reported anger would mediate the relation between perceived intentionality and behavior among nonaggressive adolescents. With aggressive subjects, we were uncertain as to how thought, feeling, and action would be interrelated and considered this an important question to be addressed in the present research.

Method

Selection of Subjects

Participants were selected from a junior high school located in an economically depressed community of metropolitan Los Angeles. Its

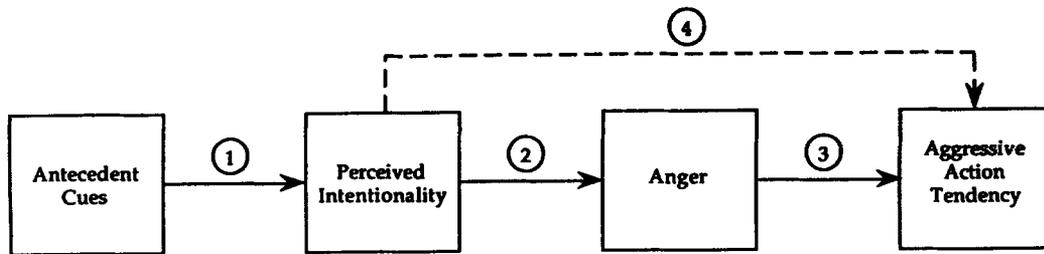


Figure 1. An attribution-emotion-action temporal sequence in the domain of aggression.

ethnic composition was almost exclusively African-American and Latino. The school was a recipient of Chapter One compensatory education funds and about 30% of its students qualified for the district free-lunch program. Participation in this program requires a family income below the poverty level. Thus, by all available indicators, the population from which our sample was drawn was of low socioeconomic status.

Approximately 300 seventh and eighth graders, distributed across nine classrooms and from whom parental permission was obtained, initially were screened as possible subjects. We used a combination of both teacher ratings of aggression and peer nominations as a criterion for subject selection.

Teacher ratings. The nine participating teachers completed an eight-item aggression scale for each child in their homeroom. Adapted from Coie and Dodge (1988), the items on the scale described common types of childhood aggression (e.g., "This child threatens or bullies others to get his or her own way") to which teachers responded on 5-point scales (1 = *not at all*; 5 = *very much*). Scores therefore ranged from 5 to 40; high numbers indicated more perceived aggressiveness.

Peer nominations. Students were administered groupwide sociometric interviews by one of three African-American female experimenters. With the aid of a classroom roster, children were asked to write down the names of the three students in their homeroom whom they liked most, the three whom they liked least, and the three who best fit each of five behavioral descriptions. Three of these descriptors portrayed aggressive behavior (e.g., starts fights, disrupts the group, has a very short temper), whereas the remaining two described prosocial behavior (e.g., works well with others, is helpful to other students). Children were encouraged to be honest in their nominations and they were assured of response confidentiality. To alleviate any discomfort that may have been elicited by negative evaluations of others, the sociometric procedure concluded with a competitive game, complete with the awarding of prizes, that most children appeared to find very engaging.

Seven individual scores for each child were first calculated by summing the number of nominations received in each of the seven categories. From these totals, we then derived a social preference score for each child, calculated as the number of "liked most" minus "liked least" nominations, an aggression score, which was the sum of the nominations on the three aggressive behavioral descriptions, and a prosocial score, computed as the sum of the nominations for the two prosocial categories.¹

To be classified as aggressive, a child had to (a) score above the teacher median on perceived aggressiveness; (b) have a social preference score less than 0; and (c) have at least twice as many aggressive as prosocial nominations. Our goal in the selection procedures was to unambiguously identify an aggressive sample by choosing children who were not only perceived as aggressive but who were also disliked by peers and not viewed as behaving prosocially. More specifically, then, the sample consisted of aggressive-rejected young adolescents. Our methods were similar, although not identical to, the classification

schemes based on teacher ratings and peer nominations used in other studies of aggressive children (e.g., Dodge & Somberg, 1987; Sancilio, Plumert, & Hartup, 1989).

From the initial pool, 44 children met all of these criteria. As is typically the case in research of this type, boys in our sample were overrepresented among those perceived as aggressive (37 boys vs. 7 girls). However, inasmuch as girls are often not investigated in social cognitive studies of aggression, the decision was made to include both genders in this study. In terms of ethnic composition, there were 15 Latino and 22 African-American boys in addition to 1 Latina and 6 African-American girls. On the selection criteria, the aggressive group (M age = 13.55 years) had the following characteristics: teacher rating $M = 30.32$, $SD = 7.89$; social preference $M = -2.55$, $SD = 4.52$; peer-nominated aggression $M = 21.21$, $SD = 15.31$; and peer-nominated prosocial behavior $M = 1.23$, $SD = 1.49$.

To create a nonaggressive socially accepted group, we selected 44 subjects matched by gender and ethnicity with the experimental group but who (a) scored below the teacher median on perceived aggression; (b) had a social preference score greater than 0; and (c) had received at least twice as many prosocial as aggressive peer nominations. It should be noted that these adolescents were not an extreme nonaggressive group inasmuch as girls by far were perceived as least aggressive in the entire sample. However, the 37 boys and 7 girls who comprised the nonaggressive sample (M age = 13.48 years) differed significantly from the aggressive sample on all of the selection criteria: teacher rating $M = 12.02$, $SD = 5.58$; social preference $M = 1.77$, $SD = 2.66$; peer-nominated aggression $M = 1.66$, $SD = 2.39$; and peer-nominated prosocial $M = 7.71$, $SD = 5.71$ (all $ps < .001$).

Attributional Questionnaire

We created eight story themes that described a negative outcome occurring to the respondent, initiated by a hypothetical peer provocateur, with the intent of the provocation manipulated to be either prosocial, accidental, ambiguous, or hostile. The negative outcomes described either damage to one's property (e.g., a homework paper that gets ruined), physical harm (e.g., getting pushed by someone playing ball during recess); goal obstruction (e.g., losing one's place to someone who cuts in line); or social rejection (e.g., making plans with someone who fails to show up). Four versions of each story were created to match the four intentionality conditions. For example, in the homework paper theme subjects first read the following:

Imagine that you are on your way to school one morning. You are walking onto the school grounds. At that moment, you happen to look down and notice that your shoelace is untied. You put the notebook that you are carrying down on the ground to tie your

¹ We used raw preference scores rather than standardized scores because class sizes across the nine selected classrooms were very similar, ranging from 29 to 31 students.

shoelace. An important homework paper that you worked on for a long time falls out of your notebook. Just then, another kid you know walks by and steps on the paper, leaving a muddy footprint right across the middle.

The scenario was then completed with one of the four intent manipulations:

1. This other kid turns to you and says, "I could see that your paper was going to blow in the gutter. I'll help you copy it over." (prosocial)
2. The other kid stops and says, "Excuse me. I didn't see your paper lying there." (accidental)
3. The other kid looks down at your homework paper and then up at you. (ambiguous)
4. The other kid laughs at you, says, "That's your tough luck" and then turns and runs into the school. (hostile)

Dependent Variables

For each scenario, children made 11 judgments, all reported on 7-point rating scales. Two questions assessed attributions of intentionality. Participants were reminded of the negative outcome and were then asked whether the hypothetical peer provocateur "meant to do that to you" and whether he or she did it "on purpose." The rating scales were anchored with *for sure no* and *for sure yes* and at the midpoint with *maybe*.

The next set of questions dealt with children's affective reactions to the outcome. Although many emotions are likely to be elicited by the scenarios used here, we focused only on that subset theoretically linked to perceived responsibility in others. Participants were, therefore, asked how mad, angry, and grateful (thankful) they would feel toward the peer provocateur if the negative outcome actually occurred. We included the positive emotion of gratitude inasmuch as one scenario was manipulated to be of prosocial intent. Children reported their affective intensities on scales anchored with *not at all mad* (angry and so on) and *very mad*.

Following the intentionality and affect questions, subjects were presented with six behavioral alternatives, partially adapted from Dodge, Murphy, and Buchsbaum (1984). The behaviors varied along a continuum and could be categorized as prosocial ("do something nice for this other kid"), neutral ("do nothing, just forget it"), instrumental ("ask the other kid why they did that"), appealing to authority ("tell an adult"), indirectly hostile ("do something to get even"), or directly and immediately hostile ("have it out right then and there"). Only the last two behavioral alternatives were considered to be full-blown aggressive responses. The six behavioral options were presented as "some things other kids say they would do right away if this happened to them." Children were requested to think about what they probably would do first if the negative outcome described actually happened to them. They then rated each behavioral alternative on a scale anchored with *definitely would not do this* and *definitely would do this*.

Ratings of intentionality, emotion, and behavioral choice were elicited in that order for all eight stories, although within a category of dependent variables the order of specific questions was varied. Maintaining a constant order was judged necessary to avoid confusing subjects across repeated presentation of the same questions and to help sustain their attention, given the necessity of administering the questionnaire in groups.²

Design and Procedure

Approximately 1 month following completion of the sociometric interviews, the same three female experimenters returned to the school to administer the attributional questionnaire. To avoid singling out the target sample, all students with parent permission who were present on

the testing days were administered the questionnaire in groups of 8 to 12 either in their regular classroom or in a resource room made available for the research.

The attributional questionnaire consisted of the eight story themes, each paired with one type of intent manipulation. There was one prosocial-intent scenario, one hostile-intent scenario, two scenarios that were manipulated to be accidental, and four scenarios of ambiguous intent. We balanced the intent conditions in this manner because we wanted to oversample ambiguous situations (the context of much previous research) but at the same time have a range of causal conditions represented. The order of presenting the intent manipulations was the same for all subjects, with ambiguous stories presented first and last and then alternating with the other intent manipulations in the second through seventh scenarios. What varied between subjects were the eight stimulus orders created by pairing the story themes with the causal manipulations.

The questionnaire was assembled in booklet form and distributed to the participants. The experimenter read all of the scenarios and dependent measures out loud while subjects followed along and responded independently. Each subject made 88 judgments: 8 scenarios with 11 dependent variables. The entire procedure lasted about 25 min.

Results

Preliminary analyses showed no effect of subject ethnicity, gender, or stimulus order. These variables are, therefore, ignored in subsequent analyses. Because ratings on the two measures of causal inference were highly correlated (average $r = .84$), these judgments were combined into a single intentionality index. Ratings of "mad" and "angry" were similarly interrelated (average $r = .66$) and were also averaged to create a single anger index. These averaged variables were then analyzed in separate 2×8 (Status Group \times Causal Condition) analyses of variance with repeated measures on the second factor.

Intentionality

Table 1 shows the ratings on intentionality as a function of status group and causal condition. The analysis revealed a main effect of causal condition, $F(7, 602) = 31.57, p < .001$. All subjects inferred that the negative outcome was least intended by the peer provocateur in the two accidental causal conditions ($M = 3.74$) and the prosocial condition ($M = 3.76$) and most intended in the hostile condition ($M = 6.46$), with the four ambiguous attributional conditions ($M = 4.70$) falling between these two extremes. Post hoc analyses using Fisher's least significant difference test indicated that the means for the accidental

² Initially, we had planned to test subjects individually and vary the order of presenting attribution, emotion, and behavior questions. However, unanticipated time constraints imposed by the school administrators required that children be tested in groups of 8 to 12 rather than individually. After pilot work in the group setting, we became convinced that, with this population, it was considerably easier to proceed through the questionnaire with a constant ordering of the dependent variables. We acknowledge that this particular ordering may have biased the results in favor of the attribution-emotion-behavior sequence that we hypothesize. On the other hand, in similar such judgments studies in the helping domain (albeit with college students), the order of asking the questions has not been shown to influence subjects' judgments (Schmidt & Weiner, 1988; B. Weiner, personal communication, March 20, 1991).

Table 1
Mean Ratings on Intentionality, Emotions, and Aggressive Action as a Function of Status Group and Causal Condition

Variable	Causal condition								<i>M</i>
	Pro	Acc 1	Acc 2	Amb 1	Amb 2	Amb 3	Amb 4	Hos	
Intentionality									
Nonaggressive	3.6	3.7	3.5	3.6	4.1	4.8	4.4	6.4	4.3
Aggressive	3.9	3.8	4.0	4.1	4.9	5.8	5.8	6.5	4.9
Anger									
Nonaggressive	3.9	4.3	4.5	5.0	5.2	5.8	5.7	6.6	5.1
Aggressive	3.8	5.1	5.1	5.5	5.6	5.7	6.0	6.6	5.4
Gratitude									
Nonaggressive	3.5	1.7	1.7	1.3	1.2	1.1	1.3	1.1	1.6
Aggressive	3.1	1.7	1.4	1.8	1.7	1.5	1.3	1.3	1.7
Get even									
Nonaggressive	2.6	3.4	3.7	4.4	4.5	4.9	4.8	6.2	4.3
Aggressive	3.6	4.3	4.6	5.0	4.8	5.3	5.4	6.1	4.9
Have it out									
Nonaggressive	2.5	2.9	3.4	4.1	3.8	4.6	4.3	5.8	3.9
Aggressive	3.2	3.9	3.8	4.7	4.7	5.5	4.8	6.0	4.6

Note. Rating scales range from 1 to 7. $n = 44$ in both the aggressive and nonaggressive groups. High numbers indicate greater perceived intentionality, reported emotion, and likelihood of aggressive action. Pro = prosocial; Acc = accidental; Amb = ambiguous; and Hos = hostile.

and prosocial conditions did not differ ($ps > .10$), whereas all other comparisons between marginal means were significant ($ps < .05$).

There also was a main effect of status group, $F(1, 86) = 13.82$, $p < .001$. Across all causal conditions, aggressive adolescents perceived the peer-instigated negative outcomes as more intended ($M = 4.85$) than did their nonaggressive counterparts ($M = 4.28$). Although the Status Group \times Causal Condition interaction was not significant ($p > .15$), planned contrasts between group means using the Bonferroni statistic (Kirk, 1968) indicated that the differences between aggressives and nonaggressives were not significant in the prosocial, accidental, and hostile intent conditions. However, when the cause of the provocation was portrayed as ambiguous, the intent attributions of aggressive subjects were significantly higher in three of the four scenarios ($ps < .05$).

Emotion

Turning next to reported affective intensity, the anger ANOVA yielded a main effect of cause, $F(7, 602) = 33.22$, $p < .001$. Similar to intentionality judgments, subjects reported that they would feel least angry in the prosocial condition ($M = 3.61$) and most angry in the hostile condition ($M = 6.61$). Independent of manipulated intent, however, aggressive youths reported feeling more angry than did nonaggressives: For the status group main effect, $F(1, 86) = 3.83$, $p = .05$.

For the positive emotion of gratitude, only the cause main effect was significant, $F(7, 602) = 35.63$, $p < .001$. In both status groups, Table 1 shows that reported feelings of gratitude were predictably very low in all scenarios except the one manipulated to be prosocial. Ratings of gratitude in the prosocial condition were significantly higher ($ps < .01$) than in each of

the other causal conditions, which did not differ from one another.

Action Tendencies

The six behavioral ratings were analyzed in a 2×8 (Status Group \times Causal Condition) multivariate ANOVA with repeated measures on the second factor. The analysis revealed a multivariate main effect of cause, $F(42, 602) = 5.44$, $p < .001$, that also was documented in each univariate ANOVA ($ps < .05$). Children's endorsement of response options varied by manipulated intent although not in a systematic manner. More important, the analysis also yielded a multivariate main effect of status group, $F(6, 81) = 2.52$, $p < .05$. Univariate analyses revealed that aggressive and nonaggressive respondents differed only in their endorsement of the two most hostile behavioral alternatives: "get even," $F(1, 86) = 5.11$, $p < .05$, and "have it out right then and there," $F(2, 86) = 7.19$, $p < .01$. As Table 1 shows, aggressive children were more likely to prefer these behavioral alternatives. The multivariate Status Group \times Causal Condition interaction was not significant ($F < 1$), indicating that the differences between aggressives and nonaggressives on action tendencies were not more evident given particular kinds of attributional cues.

In sum, the strongest finding in the analyses of mean differences between status groups was the tendency among aggressive adolescents to infer greater intentionality in situations of ambiguous peer provocation. Relative to their nonaggressive counterparts, aggressive subjects were also more likely to report feeling angry at the peer provocateur and to endorse hostile retaliatory behavior. Unlike the attributional judgments, however, these group differences in emotion and behavioral choice were more evenly distributed across all eight causal conditions.

Relations Between Variables

In the next set of analyses, we examined correlations among ratings of intentionality, anger, and hostile action tendencies across the range of causal conditions and social dilemmas considered (Table 2). For ease of presentation, in this and all subsequent analyses, ratings on the two aggressive action tendencies ("get even" and "have it out") were averaged to create a single behavioral variable. Furthermore, to ensure response independence in this repeated measures design, the data for the correlational analyses were based on one set of scenario ratings from each subject randomly selected from among the eight scenarios to which all participants had responded. With 88 subjects, this selection procedure allowed for each causal condition to be represented 11 times, approximately equally distributed among aggressive and nonaggressive children.³

For nonaggressive subjects, Table 2 shows strong positive correlations among intentionality, anger, and likelihood of behaving aggressively. The more individuals perceive a peer as intentionally causing them harm, the more anger they feel and the greater the likelihood of their behaving aggressively. All of these relations are in accord with attributional predictions. The same pattern of findings is also true for aggressive children, although Table 2 reveals that the magnitude of the correlations is not as great among this group.

Model Testing

Next we examined the temporal relations between these variables. We have proposed that thoughts guide feelings and feelings, in turn, determine behavior. Are the data for aggressive and nonaggressive adolescents in the present study consistent with this mediational model of emotion?

To address this question, we used structural equation modeling (SEM) using the multisample analysis of the EQS statistical program (Bentler, 1989). As in other SEM approaches such as LISREL, EQS calculates parameter estimates (path coefficients) of the structural model as well as a goodness-of-fit chi-square statistic that evaluates whether or not a tested model reproduces the sample data (i.e., the covariance matrix). A non-significant chi-square indicates that the proposed model is consistent with the data and, therefore, represents an adequate fit. Because the chi-square statistic is sensitive to both large and small samples, EQS also reports a measure of practical fit that is independent of sample size: the Bentler-Bonett Normed Fit Index (NFI). The values of this index can range from 0 (no fit) to 1 (perfect fit), with values greater than .90 indicating an acceptable fit (Bentler & Bonett, 1980). Finally, the multisample EQS procedure generates a goodness-of-fit chi-square that simultaneously tests the fit of a hypothesized model in more than one group. Thus, we were able to test whether a particular model was the same in both nonaggressive and aggressive subjects.

Using EQS, we tested the model in which perceived intent was hypothesized to influence anger and anger then exerted a direct influence on aggressive action tendency (Linkages 2 and 3 in Figure 1). The influence of intent on action was assumed to be indirect, that is, mediated by anger. We examined this model in relation to one that included the path from intent to action

Table 2
Means, Standard Deviations, and Correlations Among
Intentionality, Anger, and Aggressive
Action Tendency by Status Group

Measure	Status group	
	Nonaggressive	Aggressive
Intent		
<i>M</i>	4.23	4.44
<i>SD</i>	1.844	1.872
Anger		
<i>M</i>	5.26	5.24
<i>SD</i>	1.619	1.486
Action		
<i>M</i>	8.64	9.26
<i>SD</i>	4.035	3.837
Intent × Anger correlation	.70***	.51***
Intent × Action correlation	.61***	.33*
Anger × Action correlation	.66***	.41**

* $p < .05$. ** $p < .01$. *** $p < .001$.

(Linkage 4), and we compared it with two alternative models suggesting different relations between the variables. With these relatively simple three-variable models, the small sample size analyzed here does not pose serious interpretative problems.

Table 3 shows the parameter estimates of each model, expressed as standardized path coefficients, their associated test statistics (z tests), and, where applicable, the chi-square and Bentler-Bonett NFI generated to evaluate the fit of the model. Because the multisample procedures revealed differences between status groups in all but one analysis (Model 1 presented later), the data are reported separately for nonaggressive and aggressive subjects.

The first set of parameters in Table 3 (Model 0) estimates the coefficients for the model that included direct paths from intent and anger to action as well as the influence of intent on action that is mediated by anger (Linkages 2, 3, and 4 in Figure 1). Because Model 0 is completely saturated (i.e., all of the variables are interconnected), it cannot be tested with chi-square procedures. However, Model 0 is of interest for comparative purposes because it estimates the strength of the direct path from intent to action and, therefore, sheds light on whether this linkage is necessary to adequately represent the data. Whereas the paths from intent to anger (B_1) and anger to action (B_2) are significant in Model 0 of both status groups, Table 3 shows that

³ Even with this representation of all causal conditions, using only one set of ratings per subject might not adequately represent the general pattern of data. We, therefore, repeated the selection procedure seven times, each time selecting a different set of ratings from each subject. Correlations between intent-anger, intent-action, and anger-action were calculated for each set of ratings separately by status group. We then tested the difference between these correlations using r -to- z transformations (Hedges & Olkin, 1985). None of these sample r s was significantly different in either status group (all $ps > .05$). Thus, the correlations presented in Table 2 are believed to capture the relationships between variables that are based on subjects' data in all eight scenarios.

Table 3
Parameter Estimates and Goodness of Fit of Four Structural Models by Status Group

Parameter	Status group									
	Nonaggressive					Aggressive				
	Path	<i>z</i>	χ^2	<i>p</i>	NFI	Path	<i>z</i>	χ^2	<i>p</i>	NFI
Model 0 (saturated model)										
B ₁ : Path from intent to anger	.702	6.46				.513	3.92			
B ₂ : Path from anger to action	.459	2.97				.332	2.08			
B ₃ : Path from intent to action	.288	1.86				.162	1.01			
Model 1 (mediational model)										
B ₁ : Path from intent to anger	.702	6.46	3.330	<i>ns</i>	.942	.513	3.92	1.016	<i>ns</i>	.954
B ₂ : Path from anger to action	.661	5.77				.415	2.99			
Model 2 (independent effects)										
B ₁ : Path from intent to action	.320	2.62	29.181	< .001	.490	.167	1.18	13.110	< .001	.411
B ₂ : Path from anger to action	.508	4.16				.341	2.42			
Model 3 (mediational model)										
B ₁ : Path from anger to intent	.702	6.46	8.016	< .01	.860	.513	3.92	4.115	< .05	.815
B ₂ : Path from intent to action	.610	5.05				.332	2.31			

Note. A *z* score greater than 1.96 indicates a significant path. For all chi-square tests, *df* = 1, *N* = 44. NFI = Bentler-Bonett Normed Fit Index.

the direct path from intent to action (B₃) is relatively weak and fails to reach conventional levels of significance. This suggests that freeing the path from intent to action (i.e., B₃ = 0) might be a more parsimonious model to account for the data of both aggressive and nonaggressive children.

This model, which evaluates the hypothesized mediational role of emotion, is tested in Model 1. The multisample analysis yielded $\chi^2(2, N = 88) = 4.346, p > .10, NFI = .945$. This indicates a good fit of the model in each status group. For nonaggressives, Table 3 reveals that Model 1 generated a nonsignificant $\chi^2(1, N = 44) = 3.330, NFI = .942$. Similarly, for aggressives, Model 1 yielded $\chi^2(1, N = 44) = 1.016, NFI = .954$.

Next we tested two alternative models that might also be plausible. Earlier we raised the possibility of independent effects of cognition and emotion. Among aggressive children, for example, it may be that attributions to intent instigate hostile behavior without the mediating (and regulating) influence of affect or that feelings of anger precipitate aggression even in the absence of perceived hostile intent. Thus, Model 2 evaluates whether perceived intentionality and reported anger independently determine aggressive action tendency without any mediational effects. The significant chi-squares and low NFI values suggest that this model should be rejected in both status groups.

Finally, Model 3 tested a mediational model that reversed the causal relations between cognition and emotion. Feelings of anger toward the peer provocateur were hypothesized to influence perceived intent, and intent, in turn, directly influenced hostile action tendencies. This model also revealed an unacceptable fit among both groups of children. In sum, for this data set at least, the model proposing a mediational role for emotion remains the most parsimonious one for both nonaggressive and aggressive children.⁴

Relations Within Ambiguous Contexts

These analyses considered the full range of causal conditions to which children responded. However, because previous re-

search on attributional bias among aggressive children has mainly examined this phenomenon in ambiguous contexts, we conducted the same causal modeling procedures using only the data from the four ambiguous causal conditions. One set of ratings in an ambiguous condition was randomly selected from each subject and used as input for the analyses (see Table 4).

Because of the restrictions in the range of causal conditions, it was expected that the magnitude of the correlations would be reduced when only the data from ambiguous conditions were analyzed. Comparing the zero-order correlations in Table 2 to those in Table 4, it is evident that this proved to be the case. Nonetheless, Table 4 reveals that the correlations among intent, anger, and aggressive action tendency remained significant for both status groups and that, as before, the relations were stronger for nonaggressive adolescents.

The EQS results for each status group are displayed in Table 5. For nonaggressives, the findings are consistent with the overall analyses and again document the mediational role of emotion. That is, the nonsignificant chi-square generated for Model 1 indicated a good fit of the model. This was supported by the nonsignificant path from intent to action in the saturated model (B₃ = .234). In addition, the significant chi-squares gen-

⁴ In a replication, we ran the same EQS analyses on another randomly selected set of correlations. The pattern of results was quite similar to that reported in Table 3. Specifically, Models 2 and 3 were rejected in both status groups. For nonaggressives, Model 2 $\chi^2(1, N = 44) = 37.413, p < .001, NFI = .530$; and Model 3 $\chi^2(1, N = 44) = 11.744, p < .001, NFI = .853$. For aggressives, Model 2 $\chi^2(1, N = 44) = 11.969, p < .001, NFI = .639$; and Model 3 $\chi^2(1, N = 44) = 10.667, p < .01, NFI = .617$. Model 1 yielded an acceptable fit among aggressives, $\chi^2(1, N = 44) = 3.226, p > .05, NFI = .903$. The one deviation from the pattern in Table 3 was the fit of Model 1 among nonaggressives. Model 1 yielded $\chi^2(1, N = 44) = 4.351, p < .05$, suggesting questionable fit. However, the measure of practical fit (NFI = .945) indicated an acceptable model.

Table 4
Means, Standard Deviations, and Correlations Among the Variables in the Ambiguous Causal Conditions by Status Group

Measure	Status group	
	Nonaggressive	Aggressive
Intent		
<i>M</i>	4.280	4.900
<i>SD</i>	1.942	1.580
Anger		
<i>M</i>	5.440	5.450
<i>SD</i>	1.356	1.281
Action		
<i>M</i>	8.800	9.610
<i>SD</i>	3.468	3.289
Intent × Anger correlation	.47**	.36*
Intent × Action correlation	.44**	.36*
Anger × Action correlation	.56**	.34*

* $p < .05$. ** $p < .001$.

erated by Models 2 and 3 indicated that neither of these alternative conceptualizations was acceptable.

With the aggressive sample, on the other hand, the pattern of findings is not consistent with the overall analysis. Even though Model 1 was acceptable, $\chi^2(1, N = 44) = 3.387, p > .05$, an NFI of .767 suggested questionable fit. Furthermore, there was evidence that Model 3, which reversed the sequence between intent and anger, also was tenable, $\chi^2(1, N = 44) = 2.600, p > .09$, NFI = .821. It was not possible to directly compare these models with chi-square difference tests because they are not hierarchically nested. The model that tested independent effects, however, was again rejected.

Discussion

In 1983, Parke and Slaby concluded their critique of the social cognitive literature on childhood aggression by observing that "the extent to which cognitive models of aggression incor-

porate other dimensions such as affect will determine their ultimate usefulness; it is unlikely that simple cognitive models alone will suffice" (p. 573). In the present article, we have taken up the challenge implied in Parke and Slaby's remarks. Our goal has been to document the usefulness of an attributional approach to childhood aggression that also incorporates emotion.

In so doing, we set out to answer two basic questions. The first asked whether there were differences between aggressives and nonaggressives in their perceptions of peer intent, their feelings of anger, and the likelihood that they would behave aggressively toward that peer. Concerning attributions to intent, we replicated the well-documented finding of biased intentionality inferences among aggressives, in this case with a population of ethnic minority adolescents. Although many of the previous studies include ethnic minority children in their samples, few have been concerned with adolescent populations (see Coie et al., 1990). Aggressive youths were also more likely to state that they would feel angry toward the peer and to endorse hostile behavioral alternatives.

The differences between aggressives and nonaggressives on these individual variables admittedly were not great. For example, all of the adolescents in this sample reported relatively high anger and at least moderate endorsement of aggressive behavior. Nonetheless, in agreement with Dodge and Crick (1990), we argue that the cumulative effects of multiple measures are likely to be substantial and, therefore, capture meaningful differences between aggressive adolescents and their nonaggressive counterparts.

The second question guiding our research asked how perceived intent, anger, and hostile behavior were interrelated among the populations studied. Here we tested a particular set of relations postulated by attribution theory. Specifically, we examined a temporal sequence whereby perceived intentionality elicits anger, and anger then functions as a guide to aggressive behavior.

When considering the full range of causal conditions examined here, the causal modeling analyses supported the pro-

Table 5
Parameter Estimates and Goodness of Fit of Four Structural Models in the Ambiguous Causal Conditions by Status Group

Parameter	Status group									
	Nonaggressive					Aggressive				
	Path	<i>z</i>	χ^2	<i>p</i>	NFI	Path	<i>z</i>	χ^2	<i>p</i>	NFI
Model 0 (saturated model)										
B ₁ : Path from intent to anger	.470	3.49				.356	2.50			
B ₂ : Path from anger to action	.446	3.21				.242	1.64			
B ₃ : Path from intent to action	.234	1.69				.277	1.88			
Model 1 (mediational model)										
B ₁ : Path from intent to anger	.470	3.49	2.751	<i>ns</i>	.906	.356	2.50	3.387	<i>ns</i>	.767
B ₂ : Path from anger to action	.556	4.39				.340	2.37			
Model 2 (independent effects)										
B ₁ : Path from intent to action	.248	1.92	10.714	< .001	.635	.284	2.01	5.814	< .05	.598
B ₂ : Path from anger to action	.470	3.63				.247	1.75			
Model 3 (mediational model)										
B ₁ : Path from anger to intent	.470	3.49	9.227	< .01	.686	.356	2.50	2.600	<i>ns</i>	.821
B ₂ : Path from intent to action	.444	3.25				.363	2.56			

Note. A *z* score greater than 1.96 indicates a significant path. For all chi-square tests, $df = 1, N = 44$. NFI = Bentler-Bonett Normed Fit Index.

posed mediational role of emotion with both aggressive and nonaggressive children. Substantively, we interpret this to mean the following: When socially deviant and normal adolescents reason about, for example, social rejection or some other interpersonal dilemma with negative consequences, much of the relationship between what they think (e.g., "He did it on purpose") and the way they intend to behave (e.g., "Let's have it out right here and now") can be accounted for by how they feel (e.g., "I'm really angry about this"). As previously indicated, we view the use of these thinking-feeling-action linkages as both a rational response to social dilemmas and as part of competent social information processing.

Aggressive adolescents appear to display less of this competence in situations of attributional ambiguity. A model that tested the influence of feelings on attributions described aggressive subjects' data in the ambiguous conditions just as well as the attributional conception in which emotions are consequences of cognitions. At present, then, we are uncertain as to how thought, feeling, and action are interrelated when aggressive children are confronted with ambiguously caused peer provocation. If the alternative model is plausible, then emotions may play a greater role on the antecedent side of biased intentionality attributions than the more cognitively oriented approaches suggest. Most of the research on attributional antecedents in the peer-aggression literature has been guided by cognitive information-processing paradigms. Understanding how children integrate various informational cues to arrive at accurate interpretations of intent has been the goal of such work (Dodge & Crick, 1990). Yet there is growing interest in the role that emotions like fear, distress, and even anger play in the initial response to provocation (Dodge, in press). We believe our methods and our approach are useful for researchers concerned with both the determinants of intentionality inferences among aggressive children, be they cognitive or emotional, as well as their consequences and relation to subsequent behavior.

Implications for Intervention

A natural outgrowth of the burgeoning literature on social cognitive determinants of aggression has been an increased interest in the development of intervention programs for aggressive children based on social cognitive skill training (see Coie & Koeppl, 1990). Along these lines, some empirically based programs that include an attributional component have reported promising results (e.g., Guerra & Slaby, 1990; Lochman, Burch, Curry, & Lampron, 1984).

The present findings also have implications for intervention research, particularly when conceptualized in terms of a thinking-feeling-acting temporal sequence. Referring back to this sequence as outlined in Figure 1, it is clear that a reasonable starting point for intervention can be at the level of attributional change, that is, training aggressive-prone children to perceive peer provocations as less intentional (Linkage 1 in Figure 1). It then follows logically that feelings of anger should be mitigated (Linkage 2). Yet most interventions that focus on the anger component of aggression have been fashioned after cognitive behavior modification programs of Michenbaum and others in which aggressive children are taught to control their anger by various self-talk strategies (e.g., Camp, 1977; Michenbaum, 1985). Few, if any, such programs relate feelings of anger back to their attributional antecedents.

As our data indicate, among aggressive children in ambiguous situations, perceived intent and feelings of anger were less systematically related. Thus, an important dimension in interventions that focus on the anger component of aggression might not so much be training in anger reduction as training children to realize that anger is an appropriate emotional response only when a peer's negative actions are clearly (unambiguously) guided by hostile intent. If the attributional change agent can help strengthen the relationship between the emotion and its eliciting antecedent thoughts in aggressive children, then it is reasonable to expect that anger can take on the more adaptive role of regulator rather than instigator of negative other-directed behavior.

Of course, caution must be exercised when drawing implications from our findings, given the hypothetical nature of the stimuli used here as well as the invariant order of eliciting judgments about causal thoughts, feelings, and behavior. Nonetheless, we do not wish to understate what we see as the theoretical richness and heuristic value of our conceptual analysis as a model for intervention based on attributional change.

Implications for the Study of Aggression Among African-Americans

Because African-American boys are overrepresented among school-aged children labeled as *aggressive*, it is common practice for studies of childhood aggression to include large numbers of Black males in their samples. Often this is acknowledged almost parenthetically as part of sample description. Rarely do such studies attempt to relate their findings back to issues that may be particularly relevant to the sampled population.

The sample in this study was exclusively ethnic minority, predominantly African-American. This makes sense inasmuch as peer aggression and its correlates are such serious problems among African-American males. At a more theoretical level, however, we chose to study African-Americans in this context because we believe that attributional approaches to the topic of aggression are particularly relevant for this group. The central constructs of attribution theory—perceived responsibility (in self as well as others), emotional reactions to success and failure (both academic and social), and expectations for the future—are the variables that have proved most durable in research concerned with social cognitive functioning of African-Americans (see Graham, 1988).

That a biased attributional tendency was documented in our ethnically diverse adolescent population certainly adds to our belief in the robustness of that phenomenon. Moreover, the presence of systematic thinking-feeling-action relations among nonaggressive ethnic minority youth supports the generality of some basic attribution principles relating emotion to thought and behavior. Whether these relations would be the same or different among populations other than ethnic minorities is less central to our concern. For rather than engage in comparative racial analyses, we study general psychological principles that apply to a great range of subject populations. African-American and nonethnic children may just fall at different points along a basic dimension, in this case, for example, amount of exposure to peer aggression.

On the other hand, we also must acknowledge that causal

thinking and reported emotion accounted for only a modest amount of variance in action tendencies of the aggressive adolescents who participated in this study (about 19% in multiple regression analyses). This was in contrast to 48% of the variance in the analysis that sampled all causal conditions. At the least, these data remind us of the complex array of nonattributional (and nonsocial cognitive) factors that are known determinants of aggression in ethnic minority youths, such as low intelligence quotient, poor school performance, economic deprivation, and family instability to name but a few. Furthermore, given the sociocultural environment from which our sample of young adolescents was drawn, it is unclear to what extent being quick to assign blame or having a low threshold for retaliatory behavior might operate as genuine survival strategies for coping with the vagaries of daily life that have come to be characteristic of the urban minority underclass. In sum, as psychologists who study a social phenomenon that seems to be particularly prevalent in African-Americans, we acknowledge the need to place our findings (including prescriptions and proscriptions) within our subjects' broader sociocultural context.

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