

Social-Cognitive and Behavioral Correlates of Aggression and Victimization in Boys' Play Groups

David Schwartz,^{1,7} Kenneth A. Dodge,² John D. Coie,³ Julie A. Hubbard,⁴ Antonius H. N. Cillessen,⁵ Elizabeth A. Lemerise,⁶ and Helen Bateman⁷

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A contrived play group procedure was utilized to examine the behavioral and social-cognitive correlates of reactive aggression, proactive aggression, and victimization via peers. Eleven play groups, each of which consisted of six familiar African-American 8-year-old boys, met for 45-min sessions on five consecutive days. Social-cognitive interviews were conducted following the second and fourth sessions. Play group interactions were videotaped and examined by trained observers. High rates of proactive aggression were associated with positive outcome expectancies for aggression/assertion, frequent displays of assertive social behavior, and low rates of submissive behavior. Reactive aggression was associated with hostile attributional tendencies and frequent victimization by peers. Victimization was associated with submissive behavior, hostile attributional bias, reactive aggression, and negative outcome expectations for aggression/assertion. These results demonstrate that there is a theoretically coherent and empirically distinct set of correlates associated with each of the examined aggression subtypes, and with victimization by peers.

KEY WORDS: Bullying; aggression; social cognition.

Our understanding of the social and psychological processes underlying aggression and victimization in children's peer groups has been greatly enhanced by investigations conducted using contrived play group methodologies. In such procedures, small groups of children are brought together on a regular basis over a short period of time and allowed to interact in a structured play setting (e.g., Coie & Kupersmidt, 1983; Dodge, 1983). A high degree of control over the social context is maintained by the researchers, and the children's interactions can be recorded with hidden audiovisual equipment. Vide-

otaped records can be examined at a later point, facilitating detailed analysis of a relatively large number of aggressive episodes, even though aggression is a low frequency behavior that occurs in limited social contexts (Coie & Dodge, in press; Parke & Slaby, 1983).

In the current study, a contrived playgroup approach was utilized to examine the social-cognitive and behavioral correlates of aggression and victimization in boys' peer groups. We were particularly focused on the correlates of peer group victimization because children who are maltreated by their peers may be at risk for significant psychological and behavioral difficulties (i.e., Boivin, Hymel, & Bukowski, 1995; Schwartz, McFadyen-Ketchum, Dodge, Pettit, & Bates, 1998). In addition, a second area of focus in the current investigation was identification of the cognitive and behavioral correlates of specific subclasses of aggressive behavior. There is evidence that there are distinct developmental outcomes associated with different subtypes of aggression (Dodge, Lochman, Harnish, Bates, & Pettit, 1997).

¹University of Southern California, Los Angeles, California 90089.

²Duke University, Durham, North Carolina 27708.

³Duke University, Durham, North Carolina 27706.

⁴University of Delaware, Newark, Delaware 19716.

⁵University of Connecticut, Storrs, Connecticut 06268.

⁶Western Kentucky University, Bowling Green, Kentucky 42101.

⁷Address all correspondence regarding this article to D. Schwartz, Psychology Department, University of Southern California, SGM 501, Los Angeles, California 90089.

Subtypes of Aggressive Behavior

In examining the social-cognitive and behavioral correlates of aggression, we made a distinction between the two subtypes of aggressive behavior posited by Dodge and Coie (1987): reactive aggression and proactive aggression. According to these researchers, reactive aggression is a "hot-blooded" angry retaliatory response to a perceived provocation or frustration. Proactive aggression, on the other hand, is a goal-directed behavior that is maintained by positive environmental contingencies and is generally not associated with underlying states of anger or frustration. Proactive aggression includes unprovoked behaviors that are oriented toward specific social goals as well as behaviors directed toward position or object acquisition (Dodge, 1991).

Investigation of the social and psychological mechanisms underlying these subtypes of aggression is an important task, given evidence that reactive and proactive aggression are associated with distinct developmental outcomes. Dodge et al. (1997) found that reactively aggressive boys display higher rates of other behavior problems than proactively aggressive boys, and tend to be characterized by an earlier onset of such difficulties. These researchers also reported that, among chronically assaultive youth, reactively aggressive boys experience psychiatric disturbance more frequently than do proactively aggressive boys. Other investigators have found that reactive aggression is more strongly associated with peer rejection than is proactive aggression (e.g., Price & Dodge, 1989).

These findings notwithstanding, a potential limitation of past investigations in this domain is that teachers and parents have served as the most common sources of information regarding the subtypes of aggression (e.g., Dodge & Coie, 1987). The resulting assessments of reactive and proactive aggression are often highly correlated. In the current investigation, we relied on direct observations of reactive and proactive aggression, which yield more distinct estimates (Schwartz, Dodge, & Coie, 1993).

Relations Between Victimization and the Subtypes of Aggression

Because aggression and victimization are aspects of a reciprocal dyadic behavioral exchange system (Dodge, Price, Coie, & Christopoulos, 1990), one objective of this study was to examine the relation be-

tween aggression and victimization by peers. Relevant analyses conducted by previous investigators have produced an inconsistent pattern of findings. In their influential report on victimization in an elementary school peer group, Perry, Kusel, and Perry (1988) concluded that aggression and victimization are orthogonal aspects of a child's social experience. More recently, however, evidence has emerged suggesting positive correlations between victimization and aggression, as well as other subtypes of externalizing behavior (e.g., Schwartz et al., 1998). A possible explanation for these apparent disparities might be that there are qualitative differences in the nature of the relation between victimization and distinct subclasses of aggressive behavior. Analyses in which aggression is conceptualized as a unidimensional construct might produce ambiguous or inconsistent results. In the present study, we examined relations between victimization and distinct subtypes of aggression.

We hypothesized that reactive aggression would be strongly associated with peer group victimization, but we did not expect an association between proactive aggression and victimization. Peers tend to evaluate reactive aggression more negatively than proactive aggression (Price & Dodge, 1989), so that reactively aggressive children may be at especially high risk for maltreatment by peers (Schwartz, Dodge, Pettit, & Bates, 1997). Likewise, maltreatment by peers may incite reactive aggression. Proactive aggression, in contrast, is a behavior that can occur in the absence of a peer provocation.

Social Cognitive Correlates of Victimization and Reactive and Proactive Aggression

A second objective of this study was to investigate the social cognitive correlates of peer group victimization. Associations between victimization by peers and individual differences in social cognitive styles have not been extensively examined in the existing research. However, an understanding of the social cognitive mechanisms underlying the maladaptive social behaviors displayed by victimized children may be an important step toward the design of appropriate interventions (see Perry et al., 1988).

Our focus was on two specific dimensions of social cognition, attributional tendencies (i.e., tendencies to interpret peer intent as either hostile or benign) and outcome expectations (i.e., beliefs regarding the probable outcomes of particular behav-

ioral strategies), both of which have been linked to children's adjustment in the peer group by previous investigators (Crick & Dodge, 1994; Dodge & Schwartz, 1997). We hypothesized that there would be a positive association between victimization and tendencies toward attribution of hostile peer intent, because children who are the persistent victims of bullying could come to view their peers with some wariness. Moreover, hostile attributional bias (Nasby, Hayden, & DePaulo, 1979) may lead to maladaptive displays of inappropriate angry behavior, which are predictive of rebuff and maltreatment by peers (Coie, Dodge, Terry, & Wright 1991). In addition, we predicted that victimization would be associated with negative expectancies for the outcomes of assertive and aggressive behavior. Children who hold negative outcome beliefs for aggressive and assertive strategies tend to display low rates of such behaviors (Perry, Perry, & Rasmussen, 1986) and, as a result, may be vulnerable to victimization by peers (Schwartz et al., 1993).

We also examined the social cognitive correlates of proactive aggression and reactive aggression. Related analyses have been conducted by previous investigators. Crick and Dodge (1996), for example, examined the social cognitive attributes of extreme subgroups of children, rated by teachers as predominantly reactively or proactively aggressive. Dodge and Coie (1987) examined associations between hostile attributional biases (but not outcome expectancies) and aggression subtypes in contrived groups of unfamiliar peers. However, the present investigation will be the first to examine relations between multiple dimensions of children's social cognition and directly observed displays of each of the aggression subtypes.

Because proactive aggression is conceptualized as a behavioral process that is maintained by positive environmental contingencies, we hypothesized that this subtype of aggression would be associated with positive outcome expectations for aggressive behavior. We further expected that there would be no relation between interpretation of social cues and rates of proactive aggression, because proactive aggression is a nonangry behavior. In contrast, we hypothesized that reactive aggression is contingent on perceptions of hostile peer intent. Thus, we predicted that hostile attributional tendencies would be associated with high rates of this subtype of aggression, but we did not expect an association between reactive aggression and outcome beliefs.

Behavioral Correlates of Reactive Aggression, Proactive Aggression, and Victimization

Further understanding of the processes underlying aggression and victimization also could come from examination of the behavioral contexts of these behaviors. Thus, a third area of inquiry was the behavioral correlates of victimization, proactive aggression, and reactive aggression. The behavioral correlates of victimization have been examined in a number of previous investigations (e.g., Olweus, 1978), although relatively little research has been conducted in this domain using observational methods (Schwartz et al., 1993). The behavioral patterns that are associated with each of two aggression subtypes, in contrast, have not been extensively examined in any existing study and analyses addressing this issue were of particular interest.

Because proactive aggression is hypothesized to be associated with positive outcome expectancies for both aggressive and assertive behavior (Crick & Dodge, 1996), we predicted that high rates of proactive aggression would be associated with assertive social behavior. In contrast, reactive aggression was expected to be negatively associated with such behavior. Price and Dodge (1989) reported that rates of reactive aggression were negatively correlated with leadership ratings.

We examined relations between the aggression subtypes and submissive behavior in three specific social contexts: rough-and-tumble play bouts, aggressive exchanges, and persuasion episodes. Previous research has demonstrated that behavior in these contexts can be an important predictor of social outcomes, particular in regard to aggression and victimization (Schwartz et al., 1993). Rates of nonaggressive dominance attempts were also examined as indicators of assertive social behavior.

METHOD

Participants

Participants were identified as part of a larger study of aggression in dyadic peer relationships. All boys in 11 third-grade classrooms (mean age of 8 years old), in 11 separate Southeastern elementary schools, were invited to participate. These schools served predominately African-American populations of lower-socioeconomic-class background. Approxi-

mately 79% of the boys returned positive parental permission.

For purposes of analyses not directly relevant to the current study, consenting boys were asked to rate the mutual aggressiveness of dyads of boys in their classrooms (i.e., the frequency with which the two boys display aggression toward each other) on a 5-point scale (never to always). The ratings were utilized to select the most mutually aggressive dyad in each classroom, and parental permission was requested for those two boys to participate in playgroups the following summer. In the event that either member of that dyad was unavailable, the next most aggressive dyad was selected. Four other boys from each classroom were also randomly selected to participate. In total, 11 playgroups consisting of six third-grade African-American boys were formed (total N of boys = 66).

Playgroup Administration

The playgroups met for five consecutive days in the summer following the boys' third-grade year. Playgroup attendance was consistent, with only six absences occurring out of a possible 330 instances (6 boys \times 11 playgroups \times 5 sessions). Boys were driven from their home to a laboratory room on a university campus, where they participated in 45-min free-play sessions. The laboratory was equipped with age-appropriate toys and games. All interactions were recorded with a video camera that was hidden behind a one-way mirror positioned at one end of the room. No adults were present in the playroom but the children were closely monitored via the camera.

Social-Cognitive Interviews

Following the second and fourth sessions, the boys participated in individual social-cognitive interviews conducted by their drivers. Interview questions assessed attribution styles, and outcome expectancies for aggressive or assertive behavior.

For assessment of attribution style, each boy was read six vignettes (three following Session 2, three following Session 4), which described ambiguous provocation by a peer. Following each vignette (see Appendix), the boys were asked to imagine that the provoking peer was a specific member of their playgroup. They were then asked to rate the hostility of the peer's intent in the situation, on a 1 to 3 scale (accident to being mean). Next, the boys were asked

to imagine that the vignette involved a different member of their playgroup and were administered the item again. This procedure was repeated until the boys had responded with an attribution for each of their playgroup peers, for each vignette. For later analysis, the mean of each subject's attributions across play group peers, and across vignettes, was calculated. The consistency of this score over the six vignettes was $\alpha = .61$.

Expectations for aggressive and assertive behavior were assessed in a similar manner. The boys were read six vignettes (three following Session 2, three following Session 4), each of which described a conflict situation with a peer. They were then asked to imagine that the peer in each vignette was a specific member of their playgroup, and to imagine making an aggressive response and an assertive response to that peer. Next, the boys completed a rating of the expected instrumental effectiveness of the assertive strategy and the aggressive strategy, using a 1 to 4 scale (definitely not effective to definitely effective). Aggressive and assertive strategies were presented in counterbalanced order across vignettes. The boys were then asked to imagine that the peer in the vignette was a different member of their playgroup, and then to complete the item once again. This procedure was repeated until the subject had responded with an evaluation for each of his playgroup peers for each of the vignettes. For later analysis, the means for each subject's assertive and aggressive outcome expectancies across play group peers, and across vignettes, were calculated. Across all six vignettes, the consistency of assertive outcome expectations was $\alpha = .73$, and the consistency of aggression outcome expectations was $\alpha = .72$.

Observations

Videotaped records of playgroup interactions were coded by trained observers according to two separate coding systems: an interval-based system designed to assess the frequency of aggression and dominance, and an event-based system that focused on boys' responses to peer overtures. Five observers, who were trained over a period of 6 to 8 weeks, coded the playgroup interactions. Two of the observers utilized the first coding scheme, and three utilized the second scheme. Observers met regularly during the training period, and periodically during the coding, to review progress and discuss disagreements. Observers were randomly assigned playgroups

to code. Approximately 15% of the sessions were randomly selected for unannounced agreement checks.

Aggression/Dominance Codes. Aggression and dominance were assessed with a focal-dyad coding system. Observers coded the interactions of one dyad of boys at a time. Each 45-min playgroup session was segmented into 270 ten-second intervals. At the end of each interval, observers recorded the occurrence/nonoccurrence of an initiation from one of the boys in the dyad toward the other. The following classes of initiation were coded:

1. *Proactive aggression* included nonangry goal-oriented aggressive behaviors. This category was coded when a boy teased, made fun of, physically abused his dyadic partner, or used aversive means to reach an external material goal (e.g., acquisition of an object).
2. *Reactive aggression* included angry aggressive behaviors. This category was coded when a boy responded to a peer overture with hostility and retaliatory counterattacking behaviors. Signs of overt hostility or anger were often readily observable.
3. *Dominance* included forceful dominance-oriented behaviors that were not aggressive in nature. This category was coded whenever a boy attempted to control or alter the ongoing behavior of a peer with assertive (but nonaggressive) social behavior.

For later analysis, the number of intervals in which each boy initiated dominance or one of the aggression subtypes toward his play group peers was calculated. Similarly, the number of intervals in which each boy was targeted for either subtype of aggression was calculated. These scores were corrected for instances in which boys were off camera.

Assessment of interobserver agreement focused on occurrence/nonoccurrence of a behavioral initiation, initiation type, and initiator identity. Kappa (κ) statistics were utilized as the index of agreement (Cohen, 1960). Agreement was $\kappa = .76$ for proactive aggression, $\kappa = .71$ for reactive aggression, and $\kappa = .67$ for dominance.

Event/Response Codes

The second coding system was derived from the event-sampling system described by Schwartz et al. (1993). This focal-child system examined boys' be-

havior during specific classes of social exchange. Each boy was observed for the middle 20-min period in each of the five sessions. Observers recorded an event whenever the focal boy initiated an overture toward a playgroup peer. Three mutually exclusive classes of overture were coded:

1. *Proactive aggression* included person-oriented and object-oriented aggressive overtures that were goal driven and nonangry. Behaviors coded included unprovoked physical bullying, verbal teasing, and position or object struggles.
2. *Rough-and-tumble play* included nonaggressive physical or verbal attempts to involve peers in quasi-agonistic play activities (e.g., play boxing, "kung fu" fighting, play wrestling). These overtures were often accompanied by signs of positive emotional states (e.g., laughter, smiles) or signs of prosocial intent (e.g., positive vocal tone).
3. *Persuasion attempt* included forceful, but nonaggressive, attempts to alter or control the behavior of a peer. Behaviors coded included verbal demands, assertive requests, low-intensity threats, or other dominance-oriented persuasion attempts.

For each of these three types of events, observers recorded the names of the initiator and target, overture type, and time of start and termination. An interaction was considered terminated when either the participants did not interact for a 10-s interval, or the participants stopped interacting with each other and began interacting with other boys.

Coders also recorded the response(s) of the targets to each overture, using an exhaustive coding scheme that assessed a number of different dimensions of response behavior. Submissive responses, which were of primary interest in the current study, were coded whenever a target boy allowed himself to be dominated or rewarded a peer's coercive overture. Behaviors in this category included showing pain, requesting cessation, and relinquishing objects or position. For later analysis, a submission score was generated for each boy by dividing the frequency of submission to an overture from a peer by the total frequency of received overtures.

Assessment of interobserver agreement focused on time of overture initiation (within a 5-s period) and identities of initiating and target boys. Agreement on initiations was calculated by dividing the total number of agreements on event occurrence by the average

number of events recorded across observers (Coie et al., 1991), yielding a statistic of .70. Agreement on the occurrence/nonoccurrence of submissive responses to overtures, indexed with a κ statistic calculated contingent on observer concordance on the occurrence of an overture, was moderate with $\kappa = .57$.

RESULTS

Overview

In order to control the influence of intragroup dependencies on analysis results,⁸ mean-centered scores were created for each of the variables of interest (i.e., the difference between each boy's score on a variable and the mean for that variable within the boy's play group). Means and standard deviations for the variables are presented in Table I.

Logarithmic and square-root transformations were utilized to reduce skewness in the variable distributions (Neter, Wasserman, & Kutner, 1989), but analyses conducted with and without transformation yielded identical patterns of results. For ease of presentation, the analyses conducted without transformation will be described. Type I error rates for all analyses were controlled using Holm's (1979) correction procedure. Separate corrections were applied within each series of hypothesized relations.

⁸Relations among the variables were also examined with a series of multilevel models that included both random and fixed effects (Bock, 1989; Goldstein, 1987). For each of these models, predictor/outcome relations (i.e., relations between the aggression subtypes, victimization, and behavioral or social-cognitive correlates) were specified as fixed effects and group was specified as a random effect. Because such multilevel models incorporate simultaneous estimation of both fixed and random effects (see Bryk & Raudenbush, 1992), this approach allowed us to examine directly the influence of intergroup differences on the correlates of the aggression subtypes.

This series of analyses failed to yield any marginal or significant random effects. Thus, the slopes of the individual predictor/outcome relations do not appear to have varied systematically as a function of group (see Burnstein, 1980). Moreover, the pattern of fixed effects yielded by these analyses was consistent with the pattern of results yielded by correlational analyses of the mean-centered scores.

We complemented these multilevel models with an additional series of analyses in which separate correlation coefficients were generated within each group. Mean correlation coefficients across groups were then tested to determine whether they were significantly different from zero ($df = 10$). This highly conservative analytic strategy also produced a pattern of findings that was identical to pattern yielded by the mean-centered correlational analyses

Table I. Descriptive Statistics for Social-Cognition, Aggression, Victimization, and Social Behavior^a

Variable	Mean	Standard deviation
Social cognition		
Outcome Expectancy Aggression (1- to 4-point rating)	2.50	.59
Outcome Expectancy Assertion (1- to 4-point rating)	2.83	.48
Hostile Attributional Tendency (1- to 3-point rating)	1.69	.32
Aggression and victimization		
Reactive Aggression (rate)	.03	.03
Proactive Aggression(rate)	.09	.06
Victimization (rate)	.12	.09
Social behavior		
Dominance (rate)	.02	.03
Submission (%)	.25	.14

^aOutcome expectancies are 1 to 4-point ratings with 4 being the most positive evaluation. Attribution is a 1 to 3-point rating with 3 being the most hostile attribution. Variables noted with "rate" are computed as the proportion of observed 10-s intervals during which the behavior occurred. Submission is a ratio calculated as the frequency of submissive responses to peer overtures divided by the frequency of peer overtures.

Correlations Among the Predictor Variables

A series of correlations was computed to examine relations among the predictor variables. As is depicted in Table II, associations among the predictor variables were generally moderate in magnitude. Because there was a strong positive correlation between aggressive and assertive outcome expectancies, a summary outcome expectancy variable was created from the mean of the two scores.

Correlations Among Victimization, Reactive Aggression, and Proactive Aggression

Correlations among victimization and the subtypes of aggression are summarized in Table III. As hypothesized, there was a significant positive correlation between victimization and reactive aggression, whereas the correlation between victimization and proactive aggression was not significant. Moreover, a t-test for dependent r s (Steiger, 1980) indicated that the correlation between victimization and reactive aggression was significantly different from the correlation between victimization and proactive aggression, $t(63) = -6.11, p \leq .0001$. As in previous

Table II. Correlations Among the Predictor Variables (*N* = 66)

Variable	Social cognitive variable			Social behavioral variable	
	Outcome Expectancy Aggression	Outcome Expectancy Assertion	Hostile Attributional Bias	Dominance	Submission
	Social cognition				
Outcome Expectancy for Aggression	—	.83 ^a	-.41 ^d	.20	-.38 ^d
Outcome Expectancy for Assertion	—	—	-.37 ^c	.10	-.28 ^{b,c}
Hostile Attribution Bias	—	—	—	-.30	.16
	Social behavior				
Dominance	—	—	—	—	-.38 ^d

^aAll correlations were conducted using scores centered on the play group mean. See Table I for a description of variable calculation.

^bIndicates an effect that failed the Type I error correction procedure.

^cIndicates a significant effect at the .05 level.

^dIndicates a significant effect at the .005 level.

^eIndicates a significant effect at the .0005 level.

Table III. Correlations Among Subtypes of Aggression and Victimization (*N* = 66)

Variable	Victimization/aggression variable		
	Victimization	Reactive Aggression	Proactive Aggression
Victimization	—	.53 ^a	-.07
Reactive Aggression	—	—	.48 ^a

^aIndicates a significant effect at the .0005 level.

investigations (e.g., Price & Dodge, 1989), there was a positive correlation between reactive aggression and proactive aggression, although the coefficient found in our analyses appeared to be considerably lower than has been reported in studies conducted using teacher or peer reports (for which *r*s are often greater than .70; see Dodge et al., 1997).

Social Cognitive Correlates of Victimization and Reactive and Proactive Aggression

The social cognitive correlates of victimization and the two aggression subtypes were examined with a series of Pearson correlation coefficients. In addition, t-tests for dependent *r*s (Steiger, 1980) were conducted, in order to determine whether the correlation coefficients found for reactive and proactive aggression were significantly different. As is depicted in Table IV, the overall pattern of correlations was consistent with our hypotheses. Hos-

tile attributional tendencies were positively correlated with victimization, and marginally positively correlated with reactive aggression, but not significantly correlated with proactive aggression. Outcome expectations for aggressive/assertive behavior were negatively correlated with victimization, and positively correlated with proactive aggression, but not significantly correlated with reactive aggression. For both classes of social cognition, the correlation coefficient for reactive aggression was significantly different from the correlation coefficient for proactive aggression.

Behavioral Correlates of Victimization, and Reactive and Proactive Aggression

A similar analytic strategy was adopted to examine the behavioral correlates of victimization and the two subtypes of aggression. As is depicted in Table IV, dominance was negatively correlated with victimization and positively correlated with proactive aggression, but was not significantly correlated with reactive aggression. Submission was positively correlated with victimization, and negatively correlated with both proactive and reactive aggression (the correlation for reactive aggression failed Type I error correction). For both classes of social behavior, the correlation coefficient for reactive aggression was significantly different than the correlation coefficient for proactive aggression.

Table IV^a

Predictor variable	Subtype of aggression		<i>t</i>	Victimization
	Reactive	Proactive		
Social cognition				
Outcome Expectancy	-.16	.26 ^d	3.60 ^d	-.42
Hostile Attribution	.18 ^b	-.12	-2.47 ^d	.26 ^d
Social behavior				
Dominance	.09	.54 ^f	4.34 ^e	-.32 ^e
Submission	-.26 ^{c,d}	-.71 ^f	-4.94 ^e	.36 ^e

^aAll correlations were conducted using scores centered on the play group mean. The *t*-statistic is generated from a test of differences in dependent *r*s (*df* = 63), as specified by Steiger (1980). Significance levels for the correlations are calculated as one-tailed effects, based on directional hypotheses presented in the text.

^bIndicates a marginally significant effect at the .075 level.

^cIndicates an effect that failed the Type I error correction procedure.

^dIndicates a significant effect at the .05 level.

^eIndicates a significant effect at the .005 level.

^fIndicates a significant effect at the .0005 level.

DISCUSSION

The results of this investigation extend current understanding of the correlates of victimization and aggression. In this study, objective observers made reliable distinctions between reactive aggression, proactive aggression, and victimization. Despite the moderate correlation between the two aggression subtypes, each was associated differentially with children's behavioral and social-cognitive attributes. The pattern of correlates that emerged for each of the aggression subtypes, and for victimization, provides important clues regarding the underlying psychological and social processes.

Relations Between Victimization and the Subtypes of Aggression

Our analyses indicated that there are theoretically consistent differences in the nature of the relation between victimization and each of the two subtypes of aggression. As hypothesized, high rates of reactively aggressive behavior were associated with frequent victimization by peers. In contrast, proactive aggression was not significantly correlated with victimization. Aggressive behavior that is goal-oriented and nonangry appears to have different implications for a child's social adjustment with peers than angry retaliatory behavior. Proactive aggression may have negative implications for long-term adjustment

(Dodge et al., 1997), but displays of this subtype of aggression do not appear to be associated with victimization by peers.

What underlies the relation between reactive aggression and victimization? It may be that reactively aggressive behavior leads to negative peer group attitudes (Coie et al., 1991) which are manifested in maltreatment by peers. Alternatively, children who are the frequent targets of aggressive overtures (i.e., victims) may simply have more opportunities to engage in retaliatory behavior than their peers (Patterson, Littman, & Bricker, 1967).

The Social Cognitive Correlates of Victimization and Subtypes of Aggression

Victimization was also positively correlated with hostile attributional tendencies. Boys who were the frequent targets of peer group aggression tended to view the behavior of their peers as provocative. Thus, hostile attributional bias appears to be associated with a victimized/submissive behavioral profile as well as angry reactive aggression. Persistent maltreatment by peers might lead a child to view his or her peers as hostilely motivated. That child might come to be characterized by hyper-vigilance and hostile attributions, and frequent displays of angry retaliatory behavior. Consistent with this suggestion, Dodge et al. (1997) reported that early rebuff by peers predicts later reactively aggressive behavior. In contrast, a child who has experienced repeated success with dominance-oriented behavior would be more likely to develop positive expectations for the outcomes of aggressive behavior, and might therefore be more inclined toward bullying and instrumentally aggressive behavior (Patterson et al., 1967).

Underlying the submissive social behavior associated with frequent receipt of peer aggression (Schwartz et al., 1993) may be a social-cognitive pattern of negative expectations for the outcomes of aggressive and assertive behavior. Negative outcome expectancies for aggression and assertion were strongly associated with victimization by peers. Boys who negatively evaluate aggressive and assertive behavioral strategies might tend to engage in high rates of submissive behavior. In turn, these boys might frequently emerge as persistent targets of peer victimization.

Analyses of the social-cognitive correlates of displayed reactive and proactive aggression revealed important differences in the social-information-processing (SIP) mechanisms underlying each subtype of

aggression. In these playgroups, rates of displayed reactive aggression were marginally associated with hostile attributions but were not related to outcome expectations. Conversely, rates of proactive aggression were not significantly correlated with attributional tendencies but were significantly linked to outcome expectations. This pattern of findings is consistent with past research (Crick & Dodge, 1996) and is supportive of our hypothesis that reactively aggressive behavior emerges from the representation and interpretation stages of SIP, whereas proactive aggression is more closely associated with processing at the response evaluation stage.

The Behavioral Correlates of Victimization, Reactive Aggression, and Proactive Aggression

Our findings also extend the work of previous investigators by demonstrating that there is a distinct pattern of behavioral correlates associated with each subtype of aggression. Proactive aggression was negatively correlated with submissiveness and positively correlated with assertiveness. Although proactively aggressive behavior is often linked to negative social outcomes in the peer group (Coie, Dodge, & Kupersmidt, 1990), it appears that this subtype of aggression is also associated with positive social attributes in some peer groups (e.g., leadership). Price and Dodge (1989) reached similar conclusions based on peer ratings of social behavior and observations of proactive aggression.

In contrast, our analyses did not yield a strong pattern of behavioral correlates for reactive aggression. This outcome may reflect limitations in the classes of behavior assessed. We suspect that reactive aggression is more closely associated with other impulsive or emotionally dysregulated behaviors than the assertive and submissive dimensions of behavior assessed in the current investigation (Hubbard & Coie, 1992).

Future Directions and Caveats

Although the findings of this study extend current understanding of the processes that may underlie distinct subtypes of aggression, additional investigation will be needed to address a number of unanswered questions. One important task for future researchers will be further identification of the social behaviors that are associated with reactive aggression. New observational coding schemes will need to

be developed that focus on provocative, irritating behaviors as well as relevant dimensions of emotionally dysregulated behaviors (Hubbard & Coie, 1992). Coding systems and observational methods that allow for sequential analysis of behavior would be particularly informative.

Future efforts should also focus on more naturalistic settings. Previous researchers have demonstrated the ecological validity of contrived play group approaches (e.g., Dodge, 1983). However, our understanding of the underlying processes and the outcomes associated with each subtype of aggression could be extended by research that focuses on naturally occurring group processes and relevant contextual influences.

A significant limitation of the current research is that our focus was on boys only. Thus, it is not clear whether the observed patterns of relations between the subtypes of aggression and social cognition/behavior will generalize to mixed-gender peer groups, or girls' peer groups. Further research, including both genders will be needed. This work may be complicated by the fact that girls often utilize forms of aggression that can be difficult to observe (Crick & Grotpeter, 1995).

Finally, we hope that the emerging body of findings on the correlates and predictors of distinct subtypes of aggression will serve as a useful foundation for future intervention efforts. For example, the correlational research presented here, as well as Crick and Dodge's (1996) focus on extreme subgroups of reactively and proactively aggressive children, could potentially assist in the design of interventions that target the specific social cognitive mechanisms underlying each subtype of aggression. This could prove to be an important task, given the evidence that reactive and proactive aggression are associated with dissimilar psychosocial outcomes (Dodge et al., 1997).

APPENDIX

Example of attribution vignette:

Pretend that you were lining up to take a shot in the basketball game and another boy in the group came up behind you and bumped into you just as you were about to shoot. You missed the shot and fell down because of him. Sometimes when this happens the person is trying to be mean and sometimes it is an accident. Suppose the other kid was _____. Do you think that _____ was being mean, or do you think that it was an accident, or is it hard to tell?

Example of outcome expectancy vignette:

Pretend one day that one of the adults came in with a plate of candy bars. There was just enough for each kid to have one candy bar and another kid in the group took two candy bars leaving none for you. Now, pretend that kid was _____. Suppose you asked nicely for the candy (assertive strategy)? Would ____ keep the candy bar or give it back to you? Now, supposed you shoved _____ aggressive strategy). Would ____ keep the candy bar or give it back to you?

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