Social Cognition and Adjustment in Children at Risk for Psychopathology

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This study tested two models of how social cognition affects the link between child adjustment and two family risk factors, maltreatment and parental psychopathology. The \textit{mediation} model proposed that social cognition mediates the link between the risk factors and maladjustment. The \textit{compensation} model proposed that social cognition compensates for the risk factors. Social cognitive measures were social problem-solving competency and hostile attributional and response biases. In 83 Ss (7 to 14 years of age), maltreatment, but not parental psychopathology, predicted aggression and peer rejection. The adjustment of Ss with a disturbed parent depended on maltreatment status. Risk status did not predict social cognition, so the mediation model was not supported. Consistent with the compensation model, Ss with high social cognitive skills were better adjusted regardless of risk status. Implications for high-risk research are discussed.

Despite being at heightened risk for maladjustment most children with maladjusted parents do not develop serious psychopathology. This observation has led researchers to ask what distinguishes resilient from vulnerable children (Garrett, 1987; Rutter, 1979; Werner & Smith, 1982). Inspired by the cognitive direction of research on adult adjustment and the extension of cognitive-developmental inquiry to social domains, some have suggested that social cognition may modify risk for psychopathology (Beardslee, Schultz, & Selman, 1987; Garrett, 1987).

This suggestion is bolstered by the fact that several studies have demonstrated an association between social cognitive skills and child adjustment (Dodge, Pettit, McClaskey, Brown, 1986; Pelligrini, 1985; Rubin & Krasnor, 1986; Selman, 1980; Spivack, Platt, & Shure, 1976). In particular, poor social cognitive skills have been linked with aggression and peer rejection, two of the most consistent behavioral precursors of adult psychopathology (Cohen, Pederson, Babigian, Izzo, & Trost, 1973; Hartup, 1983; Kohlberg, LaCrosse, & Ricks, 1972; Robbins, 1966).

This study examines the association between social cognitive skills and behavioral adjustment in children with a psychologically disturbed or maltreating parent. Parental psychopathology is one of the most powerful predictors of maladjustment in children. The offspring of schizophrenic and depressed parents have been investigated most extensively. Studies have generally found that children of parents with either disorder are less popular with peers and more aggressive than comparison children (Rolf & Garrett, 1974; Watt, Grubb, & Elenmeyer-Kimling, 1982; Weintraub & Neale, 1984; Zahn-Waxler, Cummings, McKnew, & Radke-Yarrow, 1984). There is no evidence, however, that these parental disorders have distinct effects on child adjustment (Lewin, 1984). Although the pathway of risk transmission is commonly assumed to be genetic (Anthony, 1977; Heston, 1966; Reisby, 1967), researchers are beginning to demonstrate that the parenting competence of the disturbed parent also affects child adjustment (e.g., Baldwin, Cole, & Baldwin, 1982).

Maltreatment also places children at risk for aggression and peer rejection (Cicchetti & Rizley, 1981; Friedlich & Einbender, 1983). In this case, socialization is the presumed pathway of risk transmission. An association between child aggression and parental use of arbitrary or extreme discipline has been found consistently (Elder, Caspi, & Downey, 1986; Huesmann, Eron, Lefkowitz, & Walder, 1984; Parke & Duer, 1972; Patterson, 1982). In addition, observational studies have shown that maltreated children are less socially competent and more aggressive than other children (Bouma & Twentyman, 1984; Burgess & Conger, 1978; Friedlich & Einbender, 1983; George & Main, 1979).

The research we have summarized above suggests that children who are identified as being at developmental risk for different reasons (i.e., maltreatment or parental psychopathology) show similar adjustment problems (i.e., aggression and peer rejection). Yet little attention has been directed toward comparing the developmental consequences of different risk factors or to investigating the consequences of the cooccurrence of multiple risk factors. This study investigates the consequences of two risk factors, \textit{maltreatment} and \textit{parental psychopathology}, and their cooccurrence, for the social cognitive skills and adjustment of children.

The study focuses on two aspects of social cognition that are central to several influential theoretical perspectives (e.g., Bandura, 1986; Dodge et al., 1986; Mischel, 1973) and that previous research has shown to relate to aggression and peer rejection: \textit{interpersonal problem-solving competency} (IPSC; D'Zurilla & Goldfried, 1971; Spivack et al., 1976) and \textit{attributio
and aggressive response biases (e.g., Dodge, 1980; Dodge & Frame, 1982). IPS is refers to the ability to construct effective solutions to interpersonal problems. Spivack et al. (1976) argued that social adjustment is positively related to the number of solutions that a child can generate to an interpersonal problem. Attributional bias refers to a tendency to attribute hostile intent to the perpetrator of aversive experiences even when the underlying intent is ambiguous. Aggressive response bias refers to a tendency to respond aggressively following aversive experiences, regardless of the perpetrator's intent. Dodge and his colleagues (Dodge, 1980; Dodge & Frame, 1982; Dodge et al., 1986) have shown that such biases are common in aggressive and rejected children. Although the aspects of social cognition that we propose to examine have been distinguished theoretically, the extent to which they are distinct empirically is unclear because, to date, few studies have compared children on a variety of social cognitive measures (for an exception, see Dodge et al., 1986).

Linking Family Risk Factors, Social Cognition, and Maladjustment

Theories of social cognitive development assume a socialization component (e.g., Bandura, 1986; Dodge et al., 1986; Mischel, 1973). Consistent with this, researchers have found that family factors (e.g., exposure to incompetent parenting) predict maladjustment also predict deficits in social cognition (Barahal, Waterman, & Martin, 1981; Pettit, Dodge, & Brown, 1988; Smetana, Kelly, & Twentyman, 1984). This suggests the possibility that family risk factors, such as parental psychopathology or maltreatment, may influence adjustment through impeding the development of the type of social cognitive skills that underlie competent social behavior. That is, social cognitive skills may mediate the relation between family risk factors and child adjustment.

Even if families influence children's social cognitive development through socialization, it is important to remember that other individuals with whom children have contact (e.g., teachers) are also potential sources of influence. Thus, children from high-risk families who are exposed to competent role models may develop social cognitive skills that can compensate for the increased risk of maladjustment presumed to be associated with parental psychopathology and maltreatment.

Research Questions

This study examines these alternate models of the influence of social cognition on the link between family risk factors (i.e., maltreatment or parental psychopathology) and child maladjustment (i.e., aggression and peer rejection). The mediation model proposes that social cognitive skills mediate the link between family risk factors and maladjustment. Support for this model requires the demonstration that (a) family risk factors are associated with lower levels of social cognitive skills (i.e., low IPS and hostile/aggressive attributional and response biases), (b) lower levels of social cognitive skills are associated with higher levels of maladjustment, and (c) the association between family risk factors and maladjustment is substantially reduced when measures of social cognition are statistically controlled.

The compensation model proposes that social cognitive skills, however attained, can compensate for the increased risk of maladjustment associated with high-risk environments. Support for this model requires demonstrating that social cognitive skills have a significant, negative association with maladjustment and that this is true even when family risk factors are present.

Method

Subjects

The subjects in this study were a subgroup drawn from a total sample of 144 children from 83 families who participated in an investigation of risk factors in child development. In the present study, one child was chosen randomly from each participating family. This served to eliminate the problem of nonindependence of observations. The study sample included 45 boys and 38 girls with mean ages of 10.18 (SD = 2.74) and 9.13 (SD = 2.43), respectively. The breakdown of the sample by parental psychiatric status and maltreatment status is given in Table 1. There were no significant group differences in child age, $F(3, 79) = 1.13$, $p = .30$, or sex, $x^2(3, N = 83) = 3.0, p = .40$.

Procedures

Data were collected in the family home by graduate and advanced undergraduate students trained in the procedures. The child was administered an assessment battery by one examiner while another examiner obtained additional information about the child and the family in a structured interview with the mother or (in three families) the grandmother. The assessment battery and interview took 3 hours to complete, on average, and sometimes required more than one home visit. All families were assured of confidentiality, and written permission was obtained from the parent at the beginning of the first home visit. Parents were given $25 and provided with a report on their child's performance on the assessment battery.

Subject Recruitment

Families with a maltreating parent were recruited with the assistance of Child Protective Services (CPS) in upstate New York. An announcement describing the research project was sent to 93 families with currently active CPS files. These families constituted all active cases in the catchment area who had children between the ages of 7 and 14 years. Twenty-eight of these families agreed to participate in the research. This response rate is biased downward, however, because several of the families were ineligible because they did not currently have custody of their 7- to 14-year-old child. Although direct access to CPS case files was not possible, most families were classified as parental neglect cases, and 85% were being, or had been, investigated for suspected physical abuse. Abuse charges were legally substantiated for only 10% to 15% of the families, however. In most cases, more than one child in the family was suspected by CPS of being the direct target of abuse or neglect. This is consistent with past research showing that maltreatment is often generalized to all children in the family, even though it may be legally substantiated for only one child (Herrenkohl & Herrenkohl, 1981). Moreover, both experimental and correlational studies suggest that exposure to family violence may have the same effects on children as direct abuse (Cummings, 1987; Jaffe, Wolfe, Wilson, & Zak, 1986). Thus, the present study did not distinguish among children from maltreating families.

Children of psychiatrically disturbed parents were recruited from local state-operated inpatient and outpatient facilities in upstate New York. All currently active adult cases with a diagnosis of schizophrenia
or major affective disorder were screened to determine whether they had elementary-school or junior-high-school-age biological offspring. All patients with children who met the study criteria were rediagnosed using DSM-III criteria for research purposes through a review of medical records. Fifteen patients were also diagnosed using a standard psychiatric interview (The Schedule for Affective Disorders and Schizophrenia). The diagnostic agreement between the medical record and interview rediagnosis was 100%, lending validity to the medical record review (cf. McGlashan, 1984).

The comparison sample was recruited by asking target families to nominate other families of their acquaintance with children in the relevant age range. All families contacted in this way agreed to participate. The rationale underlying this approach to selecting a control sample was that it would ensure comparability with the target groups on factors such as socioeconomic status and neighborhood.

To ensure that parents recruited for inclusion in the maltreatment and comparison groups were not incorrectly classified as nonpsychiatric, their names were cross-referenced with psychiatric files in the local inpatient and outpatient psychiatric facilities. In addition, parents were asked about family health problems, either mental or physical, during the family background interview. Where a mental health problem in either parent was mentioned, a more detailed description of symptoms and treatment was obtained. Seven of the 28 families recruited through CPS were also found to include a psychiatrically disturbed parent.

In the course of family background interviews with the mother, we established that four families nominated for inclusion in the comparison group had a history of involvement with CPS; thus, they were included in the maltreatment group. Family background interviews and psychiatric case file reviews established that four families that were recruited because of parental psychopathology were being supervised by CPS.

Following these screening procedures, the sample consisted of 25 families with a maltreating parent, 19 families with a psychiatrically disturbed parent, 11 families with a psychiatrically disturbed and maltreating parent, and 28 comparison families.

### Sample Characteristics

Participating families were generally of low socioeconomic status (SES). This is to be expected given the demonstrated relation between social class and both psychiatric status (Kessler, Price, & Wortman, 1985) and maltreatment (Pelton, 1978). Single-parent families comprised 34% of the sample. The sample was predominantly White. Two families were Black, and one was Hispanic. Household composition and maternal education (by group) are given in Table 1. There was no significant relation between parental psychiatric status and household composition or maternal education. However, maltreated children were more likely to be in single-parent households (56% vs. 17%), \( \chi^2(1, N = 83) = 25, p < .001 \), and their mothers were less likely than other mothers to have graduated from high school (28% vs. 47%), \( \chi^2(1, N = 83) = 3, p = .08 \).

### Measures

**Child adjustment.** Measures of peer rejection and aggression were derived from mother's ratings of the Child Behavior Checklist (CBCL; Achenbach, 1979). Institutional Human Subjects Guidelines did not allow for the collection of peer or teacher ratings. Although reliance on maternal ratings of adjustment may constitute a weakness in the study, given the nature of the samples, the ratings showed adequate internal consistency and test–retest reliability over a 1-year period on a subsample of subjects (see below). The CBCL provides descriptions of 118 problem behaviors likely to occur in children who are 4 to 16 years of age. Each behavior item is scored 0 (not true in past year), 1 (somewhat or sometimes true), or 2 (very true or often true). The CBCL was used because of its demonstrated validity and reliability and because it is easily understood by parents. The aggression scale indexes aggressive, disruptive, and attention-seeking types of behavior. The alpha coefficient of reliability for this 20-item scale was .90 and the test–retest correlation over a 1-year period was .77. Items include "gives in many fights," "temper tantrums," and "disobedient". Our aggression scale differed from the Achenbach scale in that it did not include Items 25 and 48, which we included in our peer rejection scale. The peer rejection scale consists of the three items "doesn't get along with peers," "is disliked," and "is teased." The alpha coefficient of reliability for this scale was .79, and the test–retest correlation was .76 over a 1-year period. Children's average scores on the items comprising the aggression and peer rejection scales were used in all analyses.

**Interpersonal problem-solving competency.** A modified version of the measure developed by Marsh, Serafica, and Barenboim (1980) was administered to the children to assess IPS. The measure, which reflects the conceptual framework proposed by D'Zurilla and Goldfried (1971), assesses alternative thinking, consequential thinking, and solution adequacy. Subjects were asked to imagine themselves confronting two interpersonal problems. One situation involved deciding what to do when asked for help with a school test with which no help was to be given. In the second situation, the child had to decide what to do with two friends who wanted to accompany him or her to a movie for which he or she had only two tickets. For each problem, subjects were asked "What are all the possible ways to solve this problem?" and "What might happen with each solution?".

Scores generated by each problem consisted of (a) the total number of alternative solutions (Alternatives), (b) the total number of adequate solutions (Adequate Alternatives), (c) the total number of separate consequences (Consequences), and (d) the total number of relevant consequences (Relevant Consequences). Our distinction between total num-

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<td>39</td>
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<td>% in female-headed families</td>
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Table 1: Demographic Characteristics of the Sample
ber of solutions and adequate solutions and between total number of consequences and relevant consequences was motivated by suggestions that the quality of the solutions that a child generates may have more important implications for adjustment than the quantity of the solutions (Rubin & Krasnor, 1986). A solution was rated as adequate if it was not deceptive, benefited at least some of the parties involved in the situation, and went beyond the information presented in the story. Following Marsh et al. (1980), each of the four IPSC measures was based on the average of the child’s responses to the two stories. The alpha coefficients for Alternatives, Adequate Alternatives, Consequences, and Relevant Consequences were .65, .50, .69, and .68, respectively. None of these measures were significantly associated with intelligence, measured using the Wechsler’s Intelligence Scale for Children—Revised.

Attributional and response biases. Children were presented with three hypothetical situations involving an aversive outcome that was linked to ambiguous behavior on the part of a peer (Dodge, 1980; Dodge & Frame, 1982). The stories involved (a) suddenly getting milk spilt over one’s back by a peer, (b) finding one’s lunch missing from a locker shared with one other student, and (c) seeing a peer holding one’s pen just when it had been assumed to be lost forever.

Subjects were read each story and asked to imagine themselves in the situation that the story depicted. They were then asked the following two questions: “Why do you think (the event) happened?” and “What would you do if (the event) really happened to you?” Questions were intended to assess (a) the extent to which the child attributed hostile intent to the peer involved in the aversive event (attribitional bias) and (b) the aggressiveness of the child’s proposed response (aggressive response bias). Children’s responses were coded in a nonleading way to elicit scoreable responses. Responses to the attributional-bias question were coded 2 if hostile intent was attributed to the peer, 1 if the peer was thought to have acted with benign intent or accidentally, or 0 if the event was considered the result of benevolent efforts by the peer. However, so few responses were scored as benevolent that this was essentially a dichotomous variable. Forty-two percent of the children received concordant scores for all three stories. Responses to the aggressive-response-bias question were coded 3 if subjects stated they would retaliate aggressively (e.g., hit or kill the other child), 2 if they would complain to an authority figure in order to have the peer punished (e.g., tell teacher so that the child would get into trouble), and 1 if the subject would do nothing negative to peer (e.g., call mother for a new set of clothes; borrow lunch money; ask child to return the pencil). A benevolent response was scored 0 (e.g., say thank you for finding my pencil). The alpha coefficient for aggressive response bias was .65. For each measure of bias, the responses were averaged over the three stories. Neither measure was significantly related to intelligence.

Results

Bivariate Relations

Table 2 presents the means and bivariate relations for the measures in the three domains (family risk factors, social cognition, and maladjustment) as well as child age and sex. In terms of intradomain relations, the most noteworthy feature of this table is the absence of significant relations between the IPSC measures and either of the bias measures.1 As expected, the IPSC measures were highly interrelated. The relation between the attributional- and aggressive-response-bias measures was more modest, although significant. The fact that the relation was not higher may be due to the skewed nature of the attributional-bias measure. A mean score of 1.7 out of a possible 2 indicates that attributions of hostile intent are the norm in this sample (cf. Dodge, 1980).

Table 2 shows that sex was not significantly associated with any of the measures of maladjustment, social cognition, or family risk factors. Further analyses (not reported) showed no sex differences in the relations among family risk factors, social cognition, and maladjustment. This pattern of results justifies our combination of boys and girls in these analyses.

Table 2 also shows that age was not significantly associated with maladjustment, risk factors, or the attributional- or response-bias measures. However, age was significantly associated with all the IPSC measures: IPSC increased with age. We examined whether the associations among family risk factors, social cognition, and maladjustment differed in older (i.e., 9 years or older) and younger (i.e., less than 9 years) children. There was no evidence that the association between family risk factors and any of the measures of maladjustment or social cognition depended on age. There were, however, significant age differences in the association between the bias measures and maladjustment, and these are discussed below.

Testing the Mediation and Compensation Models

Support for the mediation model requires showing that family risk factors and social cognition are associated with child maladjustment, that family risk factors are associated with social cognition, and that the association between family risk factors and maladjustment is substantially reduced when social cognition is statistically controlled. Support for the compensation model requires showing that social cognition is associated with maladjustment, even when family risk factors are statistically controlled, and that this is true even when family risk factors are present. The mediation and compensation models were tested using multiple regression analyses. In analyses that involved family risk factors, parental psychopathology and maltreatment were each entered as dummy variables, with 1 denoting presence and 0 denoting absence of the risk factor.2 Following Cohen and Cohen (1983), the effects of interactions between the two risk factors were tested in analyses in which the main effects were entered first and the interaction term (scored 1 if the child experienced both maltreatment and parental psychopathology; and 0 if otherwise) was entered last. Finding a significant interaction term, when main effect terms for both risk factors are included in a model, implies that maltreatment and psychopathology combine in a nonadditive way to predict the dependent variable. Age was included as a control variable in all regression analyses. This procedure gives results that are equivalent to analysis of covariance with age as the covariate.

The first step in testing the alternate models involved examining the associations between each of the three domains of variables. Tables 2 to 4 present the relevant results. The second step involved examining the impact of statistically controlling for social cognition on the association between family risk factors and maladjustment. Tables 5 and 6 present the results of these analyses.

1 Bias measures were not available on 19 children.
2 Children of schizophrenic and depressed parents did not differ significantly from one another on any of the measures of social cognition or maladjustment.
Table 2
Means and Intercorrelations Among Measures

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Note: IPSC = interpersonal problem-solving competency. For correlations involving Bias measures, n = 62-64; for other correlations n = 78-83. *range = 0-2; *range = 0-3; 0 = male, 1 = female. 
*p < .10. **p < .05. ***p < .01. ****p < .001.

Social Cognition and Maternal Ratings of Maladjustment

Table 2 shows that all the measures of IPSC were significantly negatively correlated with peer rejection. Adequate alternatives and relevant consequences were also significantly correlated with aggression. Similar results were obtained when age was controlled in regression analyses. Attributional and response biases were not significantly associated with either measure of maladjustment for the sample as a whole. There was, however, a significant Age X Bias interaction for both bias measures in the case of peer rejection: for Age X Attribution Bias, F(1, 58) = 10.05, p < .01, and for Age X Response Bias, F(1, 58) = 7.51, p < .01. High scores on both these measures are associated with peer rejection only in older children, that is, for 9- to 14-year-olds. This was confirmed by examining the correlations between these measures and peer rejection in this age group (for attribution bias, r = .37, p < .05 and for response bias, r = .35, p < .05). The mean and variance of both bias measures were similar in the older and younger age groups. Thus, age differ-

Table 3
Regression Maladjustment and Social Cognition on Family Risk Factors: Unstandardized Regression Coefficients

<table>
<thead>
<tr>
<th>Predictor variables</th>
<th>Regressing maladjustment on family risk factors</th>
<th>Regressing social cognitive measures on family risk factors</th>
<th>Bias measures</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Maladjustment</td>
<td></td>
<td>IPSC measures</td>
</tr>
<tr>
<td></td>
<td>Aggression Peer rejection</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Family risk factors</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maltreatment</td>
<td>.314***</td>
<td>.27**</td>
<td>.27*</td>
</tr>
<tr>
<td>Parental psychopathology</td>
<td>.02</td>
<td>.04</td>
<td>.09</td>
</tr>
<tr>
<td>Maltreatment X Parental psychopathology</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>

Note: IPSC = interpersonal problem-solving competency. Unstandardized regression coefficient are based on the main effects model unless the Maltreatment X Psychiatric Status term is significant. Age is included as a control variable in all regression analyses. For IPSC and maladjustment models, n = 79; for bias models, n = 63. 
*p < .10. **p < .05. ***p < .01. ****p < .001.
eniences in these parameters cannot account for age differences in the relation between the bias measures and the adjustment measures.

**Family Risk Factors and Maternal Ratings of Maladjustment**

Consistent with expectations, the results of regression analyses showed that maltreatment was positively associated with both peer rejection and aggression, controlling for age and psychiatric status (see Table 3). Contrary to expectations, parental psychopathology was not associated with either peer rejection or aggression. The absence of a significant Maltreatment x Psychiatric Status interaction for peer rejection and aggression showed that the association between maltreatment and maladjustment did not depend on parental psychiatric status. Children in the double-risk group resembled other maltreated children on both measures of maladjustment (see Table 4). Thus, the crucial risk factor for maladjustment in this sample appears to be maltreatment.

**Family Risk Factors and Social Cognition**

The regression analyses reported in Table 3 show that none of the IPSC measures were predicted by either parental psychopathology or maltreatment. In addition, the absence of significant Maltreatment x Psychiatric Status interactions indicated that the IPSC of children in the double-risk category did not differ from that of other children. It should be noted, however, that maltreated children gave marginally more alternative solutions than other children, but that this association was not found in the case of adequate alternatives (see Table 4). Children with a psychiatrically disturbed parent showed a marginally more hostile attributional bias than other children. Although neither maltreatment nor parental psychopathology was itself significantly associated with an aggressive response bias, such a bias was associated with being in the double-risk category, as indicated by the significant interaction term for Maltreatment x Psychiatric Status. Table 4 reports the means for the social cognitive measures by risk status and the F ratios for the effects of maltreatment (as compared with no maltreatment), parental psychopathology (as compared with no psychopathology), and their interaction on the dependent measures.

**Summary**

Overall, these results show that maltreated children were more poorly adjusted than other children. They also show that children with high levels of IPSC and older children without a hostile attributional or an aggressive response bias were better adjusted. With one exception, however, children's social cognitive abilities were not significantly predicted by family risk factors. This finding is not consistent with the mediation model.

**Linking Family Risk Factors, Social Cognition, and Maladjustment**

Tables 5 and 6 present the results of a series of stepwise regression analyses exploring the ability of the various measures of social cognition to account for the increased levels of aggression (Table 5) and peer rejection (Table 6) associated with maltreatment. In each table, Column 1 displays the previously noted finding that maltreated children show higher levels of maladjustment. (The number given in Tables 5 and 6, note 8, refers to the coefficient obtained when the regression was carried out on the smaller sample for which bias measures were available.) Columns 2 through 7 show the effects of controlling for the different measures of social cognition on the maltreatment-maladjustment relation.

As can be seen by examining Row 1, the net effect of maltreatment on maladjustment was not affected to any significant extent by statistically controlling for any of the social cognition measures...
Table 5
Regression of Maternal Ratings of Aggression on Maltreatment and Social Cognitive Measures: Unstandardized Regression Coefficients

<table>
<thead>
<tr>
<th>Predictor variables</th>
<th>Mal. and IPSC</th>
<th>Mal. and Bias</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Maltreatment</td>
<td>.33***</td>
<td>.34***</td>
</tr>
<tr>
<td>IPSC measures</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Alternatives</td>
<td>-.11*</td>
<td></td>
</tr>
<tr>
<td>3. Adequate alternatives</td>
<td></td>
<td>-.18***</td>
</tr>
<tr>
<td>4. Consequences</td>
<td></td>
<td>-.10</td>
</tr>
<tr>
<td>5. Relevant consequences</td>
<td></td>
<td>-.13**</td>
</tr>
<tr>
<td>Bias measures</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Attributional bias</td>
<td></td>
<td>.12</td>
</tr>
<tr>
<td>7. Aggressive response bias</td>
<td></td>
<td>-.1</td>
</tr>
</tbody>
</table>

Note. IPSC = interpersonal problem-solving competency; Mal. = maltreatment. * In the case of the IPSC measures, n = 78–83; for the bias measures, n = 62. The regression coefficient for maltreatment based on this n is .24 (p < .05). Parental psychiatric status and age were included in regression analyses.

*p < .10. ** p < .05. *** p < .01. **** p < .001.

measures. This is not surprising given the nonsignificant relations between these measures and maltreatment.

As can be seen in Columns 2 through 5, all four IPSC measures were significantly associated with peer rejection, and both adequate alternatives and relevant consequences were significantly associated with aggression. Columns 6 and 7 show that neither the attributional- nor the aggressive-response-bias measures was significantly associated with either measure of maladjustment. However, when a Bias X Age interaction term was added to the bias models, it was found to be significant for peer rejection: for Age X Attribution Bias, F(1, 56) = 7.61, p < .01, and for Age X Response Bias, F(1, 56) = 8.18, p < .01. As previously noted, high scores on both bias measures were associated with peer rejection in older children.

In sum, these results show that none of the social cognitive measures that we examined mediate the relation between maltreatment and maladjustment. The positive associations between the IPSC measures and maladjustment, however, are consistent with the compensation model. The possibility that the effect of any of the social cognitive measures on adjustment depended on whether the child had a maltreating or disturbed parent was tested by introducing terms for the Social Cognitive Measure X Maltreatment and Social Cognitive Measure X Psychiatric Status interactions into each of the models estimated. This procedure was repeated for the bias measures on the sample of older children (i.e., the 9- to 14-year-olds). None of the interactions were significant. Thus, a high level of IPSC skills is associated with lower levels of both peer rejection and aggression regardless of risk status. Similarly, the absence of a hostile attributional bias and an aggressive response bias in older children appears to lessen the risk of peer rejection regardless of risk status. In summary, our results are consistent with the social cognitive compensation model but not with the mediator model.

Discussion

This study examined the influence of social cognition on the link between family risk factors and child adjustment. In this sample, maltreatment, but not parental psychopathology, increased the risk of child maladjustment, specifically, aggression and peer rejection. Particularly noteworthy is the fact that the adjustment of children with a psychiatrically disturbed parent depended on whether they also experienced maltreatment.

The social cognitive mediation hypothesis was not supported. The association between maltreatment and maladjustment did not decrease when any of the specific measures of social cognition were statistically controlled. This is not surprising given that, with one exception, risk status was not associated with deficits in any of the measures of social cognition.

Consistent with the social cognitive compensation hypothesis, children with a high level of IPSC were less aggressive and less likely to experience peer rejection. Older children without hostile attributional or aggressive response biases, independent of maltreatment status, were also less likely to experience peer rejection. These findings suggest that the specific social cognitive measures that we investigated in this study have the potential to modify risk for maladjustment in both high-risk and comparison children.

Behavioral Adjustment

The absence of a direct association between parental psychopathology and maladjustment appears inconsistent with previous studies that found children with a psychiatrically disturbed parent to be more aggressive and unpopular than their peers. Most of these studies, however, did not consider the possibility that the heightened level of maladjustment in children of disturbed parents may have been limited to a subgroup of children whose disturbed parents’ parenting skills were also seriously impaired. Our finding that the crucial risk factor for maladjust-

3 Because of the finding that both bias measures are associated with peer rejection only in older children, we examined whether the magnitude of the association between peer rejection and maltreatment declined in older children when either of these measures was statistically controlled. This was not the case.
Behavioral maladjustment. The fact that the two dimensions of social cognition that we investigated were uncorrelated suggests, however, that intervention programs should identify the specific areas of social cognition that are most in need of improvement in each target child (cf. Dodge et al., 1986).

In the case of the IPS measures, all the measures were associated with peer rejection, whereas only the measures that also took account of the quality of the solutions (i.e., adequate alternatives and relevant consequences) were significantly associated with aggression. This finding supports arguments that it is not enough to measure the quantity of solutions that a child can generate for interpersonal problems; the quality of the child's solutions should also be considered (e.g., Rubin & Krasnor, 1986).

We found that the impact of attributional and response biases on peer rejection was significant only in children 9 years of age and older. This suggests that the protective function of different aspects of social cognition may come into play at different stages of development, as Spivack et al. (1976) have argued. Thus, intervention programs and theories about the social cognition-adjustment relation in children must pay careful attention to developmental influences on this relation.

On the surface, the lack of a significant association between either attributional or aggressive response bias and aggression is inconsistent with prior research. For example, Dodge and his colleagues (Dodge, 1980; Dodge et al., 1986) found that aggressive children showed more hostile attributional and response biases than nonaggressive children. However, the aggressive children in his studies were identified using peer ratings, not mothers' ratings. In this study, mothers' ratings of peer rejection, rather than mothers' ratings of aggression, may more closely approximate Dodge's method of assessing aggression. Moreover, the vignettes that we used to assess both hostile attributional and response biases and IPS were limited to situations involving peers. We do not know whether children would respond similarly to hypothetical situations involving parents.
It is interesting to note, however, that a recent meta-analysis of studies of children's problem behavior found little agreement between school- and home-based assessments (Achenbach, McConaughy, & Howell, 1987). This suggests that parents and teachers/peers are exposed to different aspects of the child's behavior. Perhaps the social cognitive processes that are activated in situations that lead parents to label children as aggressive differ from those activated in situations that cause peer rejection. To test this possibility, it is necessary to investigate the cross-situational consistency of children's social cognitive skills by assessing their responses to hypothetical situations involving a variety of different people, including parents, teachers, peers, and siblings.

Implications for Studying the Social Cognition-Adjustment Relation

The dominant approach to studying the social cognition-adjustment relation has been to focus intensively on one specific dimension of social cognition under the assumption that it plays a crucial role in mediating social behavior. In this article, we investigated two dimensions of social cognition to test the assumption that these theoretically distinct dimensions are empirically distinct. The following three aspects of our findings support this assumption: First, the two social cognitive domains that we investigated were uncorrelated. Second, they were differentially associated with maladjustment. Third, IPSC showed a strong developmental component, whereas the hostility of children's attributional and response biases did not. This pattern of results clearly argues for moving beyond a focus on the relation between adjustment and one specific domain of social cognitive functioning. It supports, instead, the conceptualization of social cognition as a multidimensional process, as some have recently advocated (e.g., Dodge et al., 1986), and suggests the importance of including measures that are designed to tap different dimensions of social cognition in studies investigating the link between social cognition and adjustment.

Limitations of the Study

Several caveats should be considered when evaluating our results. First, the study relies on mother's ratings of adjustment. Clearly, ratings from other sources (e.g., peers and teachers) would have been desirable. This is particularly true given concerns about potential biases in psychiatrically disturbed parent's ratings of child behavior. However, several factors allay concerns about the validity of our adjustment measures. As already noted, they show adequate internal consistency and test-retest reliability. Moreover, interviews with mothers who described their child as having particular adjustment problems indicated that their assessments were based partly on information provided by the school and the child. Furthermore, the results of other studies that used child behavioral ratings provided by disturbed parents support the validity of such data (e.g., McNeil & Kaij, 1984; Rolf, Crowther, Teri, & Bond, 1984; Sameroff, Barocas, & Seifer, 1984; Yu et al., 1984). For example, parental ratings of child adjustment show a higher correlation with ratings that are based on extensive clinical evaluations than do peer or teacher ratings (Yu et al., 1984). Developmental ratings provided by disturbed parents have also been found to correlate highly with standardized test results (Sameroff et al., 1984).

Second, the cross-sectional nature of our data do not permit drawing firm conclusions about the causal nature of the relations that were observed between maltreatment and maladjustment or between social cognition and maladjustment. It is likely that interactional processes operate in maltreatment so that difficult children are more likely to be maltreated (Belsky, 1980). Similarly, interactional processes may operate in the case of the social cognition-adjustment relation. Longitudinal studies are required to disentangle this relation.

Finally, the sample is characterized by socioeconomic disadvantage and all its attendant stressors, of which we considered only two. As we have noted elsewhere, even the comparison group was characterized by a high level of aggression compared with normative data (Walker, Downey, & Bergman, 1989). Thus, our conclusions about the relations among family risk factors, social cognition, and adjustment may not generalize to children from more economically advantaged backgrounds.

Concluding Comments

The results of this study suggest that maltreatment, but not parental psychopathology, places children at risk for maladjustment. Thus, the study illustrates the importance of investigating multiple dimensions of risk in research on the intergenerational transmission of psychopathology. Our findings also suggest that social cognitive skills have the potential to compensate for the effect of maltreatment on peer rejection and aggression. The fact that the two aspects of social cognition that we examined were uncorrelated argues for including a wide range of social cognitive measures in studies of the social cognition-adjustment relation and for designing person-centered rather than skills-centered intervention programs. The study did not succeed in identifying the social origins of social cognition. However, the accumulating evidence that social cognition plays a role in mediating competent social behavior underscores the need for continued research on the determinants of social cognition.

References


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