

Peer Victimization, Cue Interpretation, and Internalizing Symptoms: Preliminary Concurrent and Longitudinal Findings for Children and Adolescents

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This study examined hostile intent and causal, critical self-referent attributions for ambiguous peer cues to examine the hypothesis that these latter interpretations would be uniquely associated with symptoms of depression, social anxiety, and loneliness. Critical self-referent attributions were assessed in 116 kindergarteners (Study 1) and 159 adolescents (Study 2) using a hypothetical vignette procedure, replicating past work on social information processing. In both samples, critical self-referent attributions were concurrently associated with depressive symptoms as reported by teacher (Study 1), peer, and self-report (Study 2). Critical self-referent attributions also were concurrently associated with loneliness and with actual peer experiences, including peer rejection in both studies. Results from both studies support a cognitive vulnerability–stress model, suggesting that the tendency to derive critical self-referent attributions from ambiguous peer experiences is most closely associated with depressive symptoms when accompanied by high levels of peer victimization. Longitudinal findings (Study 2) offers preliminary evidence for this cognitive vulnerability–stress model as a predictor of adolescents’ depressive symptoms over a 17-month interval.

Social–cognitive models are especially useful in developmental psychopathology research because they help elucidate how transactions between social–environmental experiences and individual factors may contribute to psychological symptoms. In the literature on children’s externalizing behavior, a social information processing model has been utilized to identify cue interpretations of ambiguous peer experiences that are uniquely associated with maladjustment (e.g., Cirino & Beck, 1991; Dodge, Bates, & Pettit, 1990; Feldman & Dodge, 1987; Schwartz et al., 1998). Specifically, children who attribute hostile intent onto others in ambiguous peer interactions are more likely to generate aggressive solutions to hypothetical provocation dilemmas (Dodge et al., 1990) and behave aggressively toward peers (Dodge et al., 1990); these children are also at greater risk for persistent aggressive behavior across de-

velopment (Dodge, Pettit, Bates, & Valente, 1995). A particularly important contribution of this prior literature on children’s social information processing—and hostile intent attributions specifically—has been the synthesis of social–cognitive variables with actual, developmentally salient peer experiences that are particularly relevant for understanding youths’ risk for externalizing psychopathology (Dodge et al., 2003).

A social information processing model may also provide a useful framework for understanding the conjoint effects of social cognitions and peer experiences on youths’ internalizing symptoms. Although rarely examined, both Crick and Dodge’s (1994) reformulated model of social information processing and Rubin and Rose-Krasnor’s (1992) model suggests that children may derive numerous causal and intent attributions from encoded social cues among peers. One of these cue interpretations may pertain to the presence or absence of hostile intent among peer provocateurs (e.g., “The <event> happened because that child was being mean”). In addition to these *intent* attributions, children may also derive *causal* attributions, such as self-referent attributions, that may have particular implications for internalizing symptoms (Crick & Dodge,

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1994; Rubin & Rose-Krasnor, 1992). For instance, children may draw conclusions about themselves when considering the causes of a social event (e.g., “The <event> happened because I am not a fun child”; “The <event> happened because I am not as good as other children”), and it has been proposed that a consistent tendency for children to derive pejorative self-evaluations from social experiences may influence children’s self-schemas and overall perceptions of self-competence (Crick & Dodge, 1994; Haines, Metalsky, Cardamone, & Joiner, 1999; Sacco, 1999). These ideas have clear potential implications for internalizing symptoms, including depression, loneliness, or anxiety, not only because children’s critical self-referent attributions may have an immediate influence on self-perceptions and mood (Graham & Juvonen, 1998; Haines et al., 1999), but also because these cue interpretations of ambiguous peer experiences might affect children’s social goals, their subsequent behavior among peers, and ultimately children’s potential for socially rewarding interactions (Rubin & Rose-Krasnor, 1992). Rubin and Rose-Krasnor suggests that children who attribute social goal failures to internal, personal causes are more likely to exhibit passive, withdrawn behavior (Goetz & Dweck, 1980; Quiggle, Garber, Panak, & Dodge, 1992).

A primary goal of these studies was to examine youths’ critical self-referent interpretations of peer experiences as a unique concurrent and longitudinal correlate of internalizing symptoms. Hypotheses regarding correlates of children’s critical self-referent attributions were generated from prior work on global attribution theory. Like social information processing models, several cognitive theories suggest that interpretations of life events may have significant implications for internalizing symptoms (Abramson, Metalsky, & Alloy, 1989; Beck, 1967, 1987). For example, the learned helplessness/hopelessness model (Abramson et al., 1989) specifically suggests that individuals who attribute negative life events to internal, global, and stable causes and positive events to external, specific, and unstable causes are vulnerable to the development or recurrence of depression, particularly when this global attributional style is combined with an actual life stressor (i.e., a cognitive vulnerability–stress hypothesis; e.g., Hankin & Abramson, 2001; Nolen-Hoeksema, Girgus, & Seligman, 1992; Panak & Garber, 1992; Prinstein & Aikins, 2004).

Despite similarities with global attributional style theories, the social information processing model offers two specific advantages that may have particular utility for work in this area. The first pertains to ambiguity and the second to contextual specificity. Prior work on global attributional style almost exclusively has focused on children’s attributions for unambiguously positive or negative life events (e.g., failing a test, poor athletic performance). In contrast, social informa-

tion processing studies explore children’s tendency to derive potentially biased interpretations of neutral or ambiguous social events. Although the tendencies to interpret ambiguous and unambiguous events are likely correlated, the study of youths’ interpretations of ambiguous experiences has important, relatively unexplored potential consequences for understanding youth internalizing symptoms. Children’s self-concept and mood may be influenced not only by the way in which they perceive and interpret life stressors, but also by the manner in which they interpret everyday, neutral social exchanges (Suarez & Bell-Dolan, 2001).

A second critical difference between these theories concerns the contextual specificity of interpretations (Graham & Juvonen, 2001). Attribution style theories, and related instruments, are implicitly based on the potentially erroneous assumption that attributional errors will be applied globally and consistently across a variety of life stressors or environmental contexts (e.g., academic failures, family interactions, peer conflicts, and athletic accomplishments). In contrast, social information processing models are based on the theory that individuals’ responses may differ for each specific type of cue or stimulus, thus allowing for substantial intra-individual variability in one’s tendency to construct adaptive or maladaptive cue interpretations across a variety of environmental contexts (Hankin & Abramson, 2001). This study examined cue interpretations associated with several peer experiences as well as children’s actual environmental experiences (i.e., stressors) in this same domain. Due to their developmental salience and remarkably high frequency, aversive peer experiences are especially relevant to children and adolescents’ psychological functioning (Olweus, 1993; Perry, Kusel, & Perry, 1998) and may be particularly susceptible to information processing biases and errors in youth (Panak & Garber, 1992).

A focus on peer experiences also allowed for an extension of prior research primarily examining hostile intent attributions of peer cues. Like prior work on hostile intent attributions, these studies examined the applicability of this model for youth at various developmental stages. An initial goal of these investigations was to examine whether critical self-referent attributions for ambiguous peer experiences may be uniquely associated with internalizing symptoms. Both hostile and critical self-referent attributions share the interpretation of ambiguous social cues as negative in valence; however, hostile attributions pertain to the hostile intent of others and critical self-referent attributions ascribe the cause of the event to perceived self-deficits. To determine whether critical self-referent attributions is a distinct construct that may be uniquely associated with internalizing symptoms, it was important to control for the shared component between these two potential interpretations and measure discriminant associations among internalizing symptoms, hostile attributions, and criti-

cal self-referent attributions. In Study 1, it was assumed that children might exhibit both hostile and critical self-referent interpretations of peer cues (Quiggle et al., 1992); thus each of these constructs was examined separately. In Study 2, the initial attribution (hostile vs. critical self-referent) was examined. It was hypothesized that only critical self-referent attributions would be significantly associated with internalizing symptoms and withdrawn behavior.

Associations between cue interpretations of peer experiences and youth internalizing symptoms rarely have been examined in prior work. Graham and Juvonen (1998) presented sixth- and seventh-grade students with a set of hypothetical peer victimization scenarios and asked children to report their explanations for each stressful event using a checklist of possible attributions. Findings revealed that children who attributed negative peer stressors to internal and stable causes (referred to as “characterological self-blame”; e.g., “If I were a cooler kid, I wouldn’t get picked on”) also reported high scores on measures of loneliness and social anxiety. Quiggle et al. (1992) examined children’s depressogenic cue interpretations (i.e., internal, global, and stable) as well as hostile intent attributions for hypothesized, ambiguous social experiences among third- and sixth-grade children who were depressed, aggressive, or without significant levels of symptoms. Findings suggested that depressed children exhibited both hostile intent attributions and depressogenic attributions, whereas aggressive children exhibited only hostile attributions. Interestingly, depressed children were also more likely than others to suggest withdrawal as a behavioral response to ambiguous social cues (Quiggle et al., 1992). Research conducted by Bell-Dolan (1995; Suarez & Bell-Dolan, 2001) and Crick, Grotpeter, and Rockhill (1999) has suggested that hostile interpretations of peer cues might be associated with children’s anxiety or loneliness symptoms, respectively. Associations between critical self-referent attributions and these internalizing symptoms have not previously been explored.

A second goal of this research was to examine the interaction between children’s cue interpretations and actual peer experiences as a predictor of internalizing symptoms. This goal was derived from cognitive vulnerability–stress models posited within the clinical literature. Specifically, it was hypothesized that a tendency to derive critical self-referent attributions for peer cues would be especially associated with internalizing symptoms when combined with high levels of youths’ actual experience of peer victimization than when combined with low levels of peer victimization. In other words, this study examined a moderator hypothesis based on the prediction that the conjoint effects of a critical self-referent attributional style and negative peer experiences would be more relevant to internalizing symptoms than either predictor alone.

This moderator hypothesis also has significant implications for research on peer victimization. Although numerous studies have indicated that peer victimization is a significant predictor of internalizing distress (e.g., Graham & Juvonen, 1998; Kochenderfer-Ladd & Wardrop, 2001), there is substantial variability in the psychological consequences of victimization among youth. An emerging theme in this area has been the identification of theoretically informed moderators of the association between peer victimization and internalizing symptoms (Hanish & Guerra, 2002; Kochenderfer-Ladd & Skinner, 2002). The cognitive vulnerability–stress models examined in this study suggest that peer victimization may be especially associated with internalizing symptoms when combined with a pronounced tendency to derive critical self-referent attributions of peer cues, but not when combined with the absence of these interpretations.

The first study discussed in this article presents research on cue interpretations of peer cues and youth internalizing symptoms by examining both hostile intent attributions and critical self-referent attributions for ambiguous social cues in a sample of kindergarten children. Although the relevance and measurement validity of critical self-referent attributions among kindergarten children are unknown, it was desirable to initially examine hypotheses in a sample that was developmentally comparable to prior work on hostile attributions (e.g., Nix et al., 1999). This also allowed for an examination of children’s symptoms and behaviors during a period associated with significant increases in peer interaction and the formation of consistent, organized peer contact. It was anticipated that when considering both types of attributions, critical self-referent attributions would be uniquely associated with children’s withdrawn behavior and with symptoms of depression, social anxiety, and loneliness. The cognitive vulnerability–stress hypothesis predicted that children’s tendency to derive critical self-referent attributions from ambiguous peer experiences would be most closely associated with internalizing symptoms in the context of an actual peer stressor (i.e., peer victimization).

Study 1

Methods

Participants

Participants included 116 children (47% boys, 53% girls) from eight kindergarten classes in a predominantly middle-class, suburban community. Approximately 94% of students were White, 3.1% Asian American, 1.5% African American, and 1.0% Hispanic. According to school records, 2.2% of students were eligible for free or reduced-price lunch; per capita

income in this community was \$35,264/year. All children were between the ages of 5 and 6 years old. All kindergarten students ($n = 160$) were recruited for participation. Of parents who returned their consent forms ($n = 151$; 94%), 116 (77%, or 73% of the total possible sample) gave permission for their child to participate.

Measures and Procedures

Children's social-information processing was assessed in a manner similar to past research (Cirino & Beck, 1991; Dodge, McClaskey, & Feldman, 1985; Feldman & Dodge, 1987). A total of seven hypothetical scenarios with illustrations were presented to children during individually administered interviews. For all scenarios and illustrations, the gender of each character was left ambiguous, and facial expressions were kept neutral. Each scenario was followed by a series of questions that assessed children's attributions.

Hostile intent attributions. The first four scenarios were adapted directly from past research to replicate prior work on hostile intent attributions (Dodge, 1980). Each depicted a peer provocation in which the intent of one or more of the characters in the story is ambiguous (e.g., a peer spills paint on the participant's art project while the participant is not looking). Following the presentation of each story, children were asked to indicate their attribution of the provocateur's intent from a set of choices. For these items, children could select between hostile intent (e.g., "That child was being mean") or benign intent (e.g., "The child dropped the paint by accident"). Children's responses across the four stories ($\alpha = .64$) were summed to produce a total score ranging between 0 and 4 with higher scores indicating children's greater tendency to attribute hostile intent to ambiguous scenarios.

Critical self-referent attributions. The next three scenarios were adapted from past research to examine children's critical self-referent attributions. Each of these stories also depicted ambiguous scenarios (e.g., peers are playing hide-and-go-seek, and no one has come to find the participant; peers are playing a turn-taking game, and the participant's turn has been skipped). For each story, children were asked to report their causal attribution for each event. Specifically, they could select a critical self-referent attribution, reflecting internal, negative attributions (e.g., "I am not fun to play with"; "I did something stupid") or a neutral attribution, referring to situational or external factors (e.g., "The other kids are looking for someone else first"; "The other kids did not mean to skip my turn"). Total scores across the three vignettes ($\alpha = .54$) were computed to indicate children's tendency to derive critical self-referent attributions for ambiguous peer inter-

actions, with higher scores representing a greater tendency to make critical self-referent attributions.

Peer nominations. Sociometric interviews were conducted individually with each child to examine children's reputations and status among peers. For this age group, Polaroid photographs of children's classmates were used to assist in the sociometric assessment (Asher, Singleton, Tinsley, & Hymel, 1979). As an orienting task, children were first presented with individual photos of their classmates and asked to name each child. Next, these photos were assembled in random order, and children responded to a series of introductory questions (e.g., "Who sits next to you in class?") to familiarize children with the photos and procedure. Children then selected up to three peers for each item in a series of peer-nomination items relevant to the study goals. Children's nominations of peers whom they "liked the most" and "liked the least" were each standardized within class. A difference score was computed and restandardized to form a measure of *social preference* with higher scores reflecting higher levels of acceptance from peers (Coie & Dodge, 1983). A mean score for nomination items "Who cries a lot?" and "Who looks sad and seems unhappy?" ($r = .44, p < .001$) was computed and standardized as a measure of peer-rated *depressive affect*. Two items were averaged and standardized for a measure of *peer victimization* ("Who gets teased or picked on by other kids?" and "Who gets hit, kicked, or pinched by other kids?" $r = .24, p < .05$). A measure of *peer withdrawal* was computed as the standardized mean of two nomination items ("Who stays by themselves and away from other kids?" and "Who is really shy?" $r = .33, p < .001$).

Teacher-reported measures of social-psychological functioning. Subscales from several existing teacher-rated instruments with well-established psychometric properties, including the Behavior Assessment System for Children (Reynolds & Kamphaus, 1992), the Child Behavior Scale (Ladd & Profile, 1996), and the Preschool Play Behavior Scale (Coplan & Rubin, 1998), were used to examine children's internalizing symptoms. Although subscales from these measures purported to measure distinct constructs, item overlap was apparent across these measures. Thus, factor analyses were conducted using all teacher-rated items to yield distinct subscales. Factor analysis yielded five factors with eigenvalues greater than 1.0. Items with factor loadings greater than .40 and no significant cross-loadings were combined to form the following subscales: depressive affect (e.g., "looks sad"; four items; $\alpha = .69$), depressive emotional dysregulation (e.g., "cries easily"; "stays disappointed for a long time"; three items; $\alpha = .70$), anxiety (e.g., "fearful or afraid"; five items; $\alpha = .69$), withdrawal/reticence (e.g., "watches or listens to other children without trying to join in"; four items; $\alpha =$

.87), withdrawal/passive solitude (e.g., “plays alone”; four items; $\alpha = .84$). Means were computed for each subscale with higher scores indicating greater levels of internalizing symptoms.

Self-reported measures of social-psychological functioning. Children’s loneliness, social anxiety, and peer victimization were assessed using self-report instruments previously utilized in investigations with kindergarteners (e.g., Ladd, Kochenderfer, & Coleman, 1997). Children were first trained to respond to practice questions using a 3-point response scale (i.e., *yes, sometimes, no*) and subsequently answered a series of questions during individual interviews. Items that assessed *loneliness* in the school context originally came from Cassidy and Asher’s (1992) Loneliness and Social Dissatisfaction Questionnaire and were adapted by Ladd et al. (1997; five items; 1-year test–retest = .41; $\alpha = .81$). Items that assessed *social anxiety* came from La Greca and Stone’s (1993) Social Anxiety Scale–Children (six items; $\alpha = .74$). Items that assessed *peer victimization* were developed by Kochenderfer and Ladd (1997; four items; 1-year test–retest = .21; $\alpha = .70$).

Results

Descriptive Statistics

Table 1 includes descriptive statistics for all primary variables. Before examining potential associations between critical self-referent attributions and internalizing symptoms, correlation coefficients were computed to examine associations among the social information processing constructs assessed. Results suggested that children’s hostile attributions were significantly associated with critical self-referent attribu-

tions, $r = .33$, $p < .01$; however, the magnitude of these associations did not suggest substantial overlap in these constructs.

Associations between attributions, peer experiences, and internalizing symptoms. A primary goal of this study was to examine critical self-referent attributions as a concurrent predictor of children’s peer experiences and internalizing symptoms. Multiple regression analyses were conducted to examine the shared and unique associations between children’s hostile attributions and critical self-referent attributions with peer-, teacher-, and self-reported internalizing symptoms; results are presented in Table 2. For each analysis, hostile attributions were entered on an initial step, followed by critical self-referent attributions on a second step. Gender main effects and interactions were initially examined in all multiple regression analyses; however, no significant gender effects were revealed, and therefore gender main effects and interactions were omitted from all analyses.

A significant model was revealed for the concurrent prediction of peer-reported social preference, teacher-rated symptoms of depressive emotional dysregulation and passive withdrawal, and self-reported loneliness and peer victimization (see Table 2). Beta weights suggest that after considering shared variability between both types of attributions, higher levels of critical self-referent attributions were uniquely associated with greater levels of symptoms (i.e., depressive emotional dysregulation and loneliness) and poorer peer experiences (i.e., peer rejection, withdrawal, peer victimization). To ensure that associations between critical self-referent attributions and these peer experiences were not accounted for by children’s depressive symptoms, additional analyses were conducted controlling for teacher-reported depressive affect and depressive emotional dysregulation on an initial step, followed by hostile and critical self-referent attributions on second and third steps, respectively. The significant association between critical self-referent attributions and each remaining criterion variable (peer-reported peer rejection, teacher-reported withdrawal/passive solitude, self-reported loneliness and victimization) was retained (see note in Table 2).

Cognitive Vulnerability–Stress Model

A final goal of this study was to examine a cognitive vulnerability–stress model, in which it was hypothesized that children’s tendency to make critical self-referent attributions for peer interactions would be associated most closely with internalizing symptoms when combined with an actual peer stressor, specifically peer victimization. Hierarchical multiple regression analyses were conducted to examine this hypothesis, using

Table 1. Descriptive Statistics for Primary Study 1 Variables

	<i>M</i>	<i>SD</i>
Social information processing variables		
Hostile attributions	1.57	1.31
Critical self-referent attributions	.70	.77
Peer report (standardized variables)		
Depressive affect	.00	.84
Social preference	.00	1.00
Peer victimization	.00	.76
Peer withdrawal	.00	.97
Teacher report		
Depressive affect	1.23	.43
Depressive emotional dysregulation	1.25	.45
Anxiety	1.31	.44
Withdrawal/reticence	1.22	.47
Withdrawal/passive solitude	1.33	.46
Self-report		
Loneliness	1.21	.37
Social anxiety	1.47	.46
Peer victimization	1.53	.53

Table 2. Multiple Regressions Examining Hostile and Critical Self-Referent Attributions as Concurrent Predictors of Children's Internalizing Symptoms and Peer Experiences

Dependent Variable	Step 1 Hostile Attributions		Step 2 Critical Self-Referent Attributions		Total R ²
	R ²	β	ΔR ²	β	
Peer report					
Depressive affect	.00	-.01	.01	.08	.01
Social preference	.00	.11	.07*	-.28***a	.07*
Peer victimization	.04	.17	.01	.10	.05†
Peer withdrawal	.00	.02	.00	-.05	.00
Teacher report					
Depressive affect	.03	-.19	.00	.06	.03
Depressive emotional dysregulation	.01	-.02	.04*	.22**	.06*
Anxiety	.02	.07	.03	.17	.05
Withdrawal/reticence	.00	-.05	.02	.13	.02
Withdrawal/passive solitude	.00	-.05	.10**	.33***a	.10**
Self-report					
Loneliness	.00	-.07	.08*	.30***a	.08*
Social anxiety	.05	.16	.03	.19	.08*
Peer victimization	.03	.09	.05*	.24*a	.08*

^aAfter controlling for teacher-rated depressive symptoms on an initial step, hostile intent attributions remained a nonsignificant predictor, ΔR^2 between .00 and .02, and critical self-referent attributions remained significantly associated with social preference, $\Delta R^2 = .04$, $\beta = -.20$, $p < .05$, peer withdrawal/passive solitude, $\Delta R^2 = .04$, $\beta = .21$, $p < .05$, self-reported loneliness, $\Delta R^2 = .09$, $\beta = .33$, $p < .01$, and peer victimization, $\Delta R^2 = .04$, $\beta = .22$, $p < .05$.

* $p < .05$. ** $p < .01$. † $p = .06$.

each measure of internalizing symptoms as dependent variables. To reduce the possible effects of method variance, peer-reported victimization scores were used as an index of a peer stressor in these analyses. Continuous peer victimization and critical self-referent attribution scores were entered as a set on an initial step of each regression model, and a product term between these two variables was subsequently entered on a second step to test for moderation. Significant effects for the overall cognitive vulnerability–stress model, total $R^2 = .13$, $p < .01$, and the interaction term, $\Delta R^2 = .06$, $\beta = .34$, $p < .05$, were revealed only for the concurrent prediction of teacher-rated symptoms of depressive emotional dysregulation.

Post hoc probing of this moderator effect was examined using Holmbeck's (2002) most recent guidelines. This included the computation of slope estimates using centered variables as a means for reducing multicollinearity and examining the significance of the slopes at high (+1 *SD*) and low (–1 *SD*) levels of peer-reported victimization (see Holmbeck, 2002). Under conditions of low peer victimization, the predicted standardized slope was not statistically different from zero, $\beta = .04$, *ns*, suggesting no significant association between children's critical self-referent attributions and depressive emotional dysregulation. However, under conditions of high levels of peer victimization, results revealed a significant standardized slope, $\beta = .53$, $p < .01$, indicating that higher levels of critical self-referent attributions were associated with higher levels of depressive emotional dysregulation.

Discussion

The results provide promising, albeit preliminary, evidence for the application of social information processing theory to models of internalizing symptoms. This study focused specifically on children's interpretation of social cues in peer interactions. Prior studies on social information processing have demonstrated that some children interpret cues from benign, ambiguous social experiences as negative events and attribute others' behavior to hostile intent; these children are at greater risk for externalizing difficulties (Dodge, 1980). The results from this study suggest that when interpreting ambiguous social cues as negative in valence, children may also derive critical self-referent causal attributions, and this may be related to internalizing symptoms, including depression and loneliness. Moreover, children's tendency to derive critical self-referent attributions from ambiguous experiences was associated with actual peer experiences, including rejection and victimization by peers, and teacher-reported passive withdrawal, even after accounting for shared associations with depressive symptoms. Overall, results suggest that children's interpretations of ambiguous cues in the peer context may be associated with engagement in maladaptive social behaviors and may have important implications for the development of depressive symptoms, particularly when this attributional style is combined with negative peer experiences (i.e., peer victimization).

An important goal of this study was to examine unique correlates of critical self-referent attributions

apart from the effects of hostile intent attributions that have been examined at this same developmental stage (e.g., Nix et al., 1999). However, several limitations of this study of kindergarteners should be noted. As compared to depressive symptoms, aggressive behavior may be more easily defined and more reliably measured than internalizing symptoms among kindergarten-age children. Indeed, the reliability and stability of young children's internalizing symptoms across development has not yet been determined adequately, in part because the measurement of these symptoms among kindergarten-age children requires overreliance on external reporters who may not have complete access to children's internal feelings of distress (Younger, Gentile, & Burgess, 1993).

A similar developmental issue has to do with children's ability to derive and report self-relevant attributions at such an early age. Although this study provides an important extension of work on kindergarten children's hostile intent attributions, it should be noted that the ability to construct a critical self-evaluation from social experiences may depend, in part, on children's cognitive abilities (e.g., perspective-taking, social comparisons) and understanding of hypothetical scenarios. These skills increase as children mature (Higgins, 1991); thus, this is a limitation of work on both hostile and critical self-referent attributions.

A second issue regarding the results from this study pertains to the potential co-occurrence of information-processing interpretations. Both intent and causal attributions may be associated with social-psychological maladjustment (Crick & Dodge, 1994), and the results from this study suggest some association between both attributional styles. Examination of the type of attribution children are most likely to make (i.e., hostile intent or causal, critical self-referent) may be especially important for understanding internalizing symptoms.

To provide an opportunity to address these potential limitations, and to address the urgent need for further examination of cognitive-interpersonal models of adolescent depression, a second study was conducted. Study 2 specifically addressed the developmental psychopathology of depressive symptoms in adolescence. Research has revealed dramatic increases in the prevalence of depressive symptoms during the developmental transition to adolescence; this transition also is associated with notable changes in both cognitive and interpersonal experiences, particularly among peers (Hankin & Abramson, 2001; Hankin et al., 1998; Nolen-Hoeksema et al., 1992; Prinstein & Aikins, 2004). However, few investigations have examined cognitive models of adolescent depression with a specific focus on interpretations of peer experiences, and prior work has not examined critical self-referent attributions in particular.

Study 2, therefore, was designed to examine concurrent and longitudinal associations among critical

self-referent attributions, peer experiences, and internalizing symptoms in an ethnically and economically diverse sample of adolescents. As in Study 1, a primary goal of Study 2 was to examine critical self-referent attributions as a unique correlate of internalizing symptoms (i.e., depressive symptoms, social anxiety, loneliness, and low self-esteem). A second goal was to examine a cognitive vulnerability-stress hypothesis, suggesting that the tendency to derive critical self-referent attributions from ambiguous scenarios would be most closely associated with internalizing symptoms in the presence of an actual peer stressor (i.e., peer victimization). However, in Study 2, respondents were allowed to choose from either a hostile attribution or a critical self-referent attribution, in addition to a neutral attribution, when interpreting ambiguous cues. Thus, it was possible to examine whether respondents interpreted ambiguity negatively and, if so, whether the initial interpretation was related to the hostile intent of others or to perceived self-deficits.

Study 2

Methods

Participants

Participants included 159 (62 boys [39%] and 97 girls [61%]) adolescents in the 10th grade, ages 15 to 17 years ($M = 16.31$, $SD = .50$) at the outset of the study. The ethnic distribution of the sample was 83.1% White, 8.1% African American, 2.2% Hispanic, and 6.6% other/mixed ethnicity within a city of fairly homogeneous socioeconomic status (per capita income = \$25,175). According to school records, approximately 22.3% of students were eligible for free or reduced-cost lunch.

All 10th-grade students were recruited for participation, with the exception of students in self-contained special education classes. Consent forms were returned by 70% of families ($n = 255$); of these, 92% of parents gave consent for their child's participation ($n = 235$; 65% of the total sample). Students with incomplete data ($n = 20$) and one student with extreme outlier scores (more than 5 SD above the sample mean on measures of peer victimization and depression) were excluded from analyses. Seventeen months later (i.e., Time 2), 209 of these participants were still enrolled in school and eligible to be recruited for further participation. In accordance with school policy, consent forms again were mailed to all families with students eligible for continued participation. Forms were returned by 70% of these families; 92% agreed to participate in the study. Thus, consent was obtained for 159 (67.7%) of Time 1 participants. No significant differences were revealed in analyses comparing students with and without available Time 2 data.

A total of 22 students who provided incomplete data at Time 2 were initially excluded from longitudinal analyses, yielding a final sample of 137 participants. Chi square analyses revealed no significant differences for gender or ethnicity between students who participated in both time points as compared to those who participated at Time 1 only, or as compared to those with missing or incomplete data. Analyses also revealed no differences on any of the measures of cue interpretation, peer functioning, or internalizing symptoms between these groups. Thus, missing data for these 22 consented participants were imputed with an expectation-maximization procedure, which utilized available self- and peer-reported data at Time 2, as well as all data available at Time 1. Data were missing completely at random according to Little's test, $\chi^2(456) = 465.97, ns$, which justified the use of imputation procedures to increase power. As expected, analysis of unimputed data revealed a similar pattern of results; however, less power was available to detect statistically significant effects.

Measures and Procedures

Social information processing. Adolescents' attributions were assessed at Time 1 using scenarios initially developed in past research on hostile intent attributions (Dodge, 1980). Specifically, each of four scenarios depicted an ambiguous peer interaction. Minor modifications were made to each story to make them more appropriate for this age group (e.g., "A kid bumps you from behind and your books fall into a puddle"). For each story, teens were asked to report their initial interpretation of this event (i.e., "Why did this happen? The first thing you think is that..."). Respondents could select from three attributions presented in counterbalanced order: a benign interpretation (i.e., "The kid was running down the street and didn't see you"), a hostile intent attribution (i.e., "The kid was trying to push you down because that kid pushes almost everyone around"), or a critical self-referent attribution (i.e., "The kid was trying to push you down because you are not as good as the other kids"). Thus, for the latter two choices presented, the negative interpretation of the social cue was held constant and the initial attribution for this negative event was varied to reflect an external, hostile intent attribution or an internal, critical causal attribution. Children's responses across the four stories were summed to produce two scores representing the proportion of hostile intent ($\alpha = .55; M = .32, SD = .28$) or critical self-referent ($\alpha = .53; M = .06, SD = .16$) attribution responses.

Peer nominations. A sociometric assessment was conducted at Time 1 using an alphabetized roster of all grade-mates. The presentation of alphabetized names was counterbalanced on this roster to control for

possible effects of alphabetization on nominee selection. Adolescents nominated an unlimited number of peers whom they "liked to spend time with the most" and "liked to spend time with the least." These scores were standardized, and a difference score was calculated and restandardized for a measure of *social preference*, with higher scores indicating greater peer acceptance (Coie & Dodge, 1983). Adolescents were also asked to nominate those peers who were "sad and depressed most of the time," "anxious and tense most of the time," and "shy and quiet most of the time." Standardized scores were computed for responses to each of these items as measures of peer-rated *depressive affect*, *anxiety*, and *withdrawal*, respectively. *Peer victimization* was examined using adolescents' standardized nominations for one item ("Who gets threatened, physically hurt by others, or has mean things said about them?"). Peer nomination measures are widely considered the most valid indexes of peer status, peer victimization, and peer reputations. Research has demonstrated that by using an unlimited nomination procedure, valid peer nomination data may be obtained from subsamples that contain less than 70% of the peer group (Angold et al., 1990; Terry, Coie, Lochman, & Cillessen, 1998).

Depression. The Children's Depression Inventory (Kovacs, 1982) is a 27-item measure designed to assess cognitive and behavioral depressive symptoms. For each item, children choose from one of three statements, scored 0 through 2, that best describes their level of depressive symptoms in the previous two weeks. One item on suicidal ideation was omitted in response to concerns from the Institutional Review Board, and a summed score was computed across the remaining 26 items, with higher scores reflecting more depressive symptoms. Good psychometric properties have been reported for the Children's Depression Inventory as a reliable and valid index of depressive symptoms (Saylor, Finch, Spirito, & Bennett, 1984); it can be used with youth between the ages of 7 and 18 years of age (Kazdin, 1990). In this sample, internal consistency was high, $\alpha = .87$, at both Time 1, $M = .840, SD = 6.26$, and Time 2, $M = 8.18, SD = 6.22$.

Social anxiety. The Social Anxiety Scale for Adolescents (La Greca & Lopez, 1998) contains 18 descriptive self-statements and 4 filler items. Each item is rated on a 5-point scale according to how much the item "is true for you," ranging from 1 (*not at all*) to 5 (*all the time*). Items reflect three types of social anxiety symptoms, including fear of negative evaluation (e.g., "I worry about what other kids think of me"), social avoidance of and distress in new situations or with unfamiliar peers (e.g., "I get nervous when I meet new kids"), and generalized or pervasive social avoidance and distress (e.g., "I feel shy even with peers I know

well”). For this study, a total score was computed, ranging from 18 to 90. Psychometric support for the Social Anxiety Scale for Adolescents has been very satisfactory (see La Greca, 1999). Construct validity has been supported by patterns of relations between the Social Anxiety Scale for Adolescents and youngsters’ self-appraisals of perceived sociometric status (see La Greca, 1999, for details). Prior studies have demonstrated good test–retest reliability ($r_s = .70$) over a 4-month period (La Greca, 1999). Internal consistency in this sample exceeded .90 at Time 1, $M = 43.39$, $SD = 12.90$, and Time 2, $M = 40.08$, $SD = 13.93$.

Self-esteem. The Self-Perception Profile for Adolescents (Harter, 1988) examines adolescents’ judgments of competence or adequacy in different areas of self-concept. The Self-Perception Profile for Adolescents includes eight subscales of self-concept (social acceptance, physical appearance, scholastic competence, behavioral conduct, athletic competence, romantic appeal, friendship competence, and global self-worth). Results for the global self-worth subscale at Time 1 and Time 2 are presented in this study. Harter reported considerable support for the validity of this measure. In this sample, internal consistency for the global self-worth subscale was .87 at Time 1, $M = 15.59$, $SD = 3.95$, and Time 2, $M = 15.13$, $SD = 3.76$.

Loneliness. To assess feelings of loneliness, the Loneliness Scale (Asher, Hymel, & Renshaw, 1984; Asher & Wheeler, 1985) was administered at both time points. This scale is a measure of loneliness and social dissatisfaction comprised of 16 primary items (e.g., “I have nobody to talk to”) and eight filler items, each rated on a 5-point scale ranging from 1 (*not true at all*)

to 5 (*always true*). The score for the scale is the sum of the 16 primary items (Time 1: $M = 29.36$, $SD = 9.45$; Time 2: $M = 30.15$, $SD = 10.35$; $\alpha = .75$ at both time points), with some items reverse coded. Scores can range from 16 to 70, with higher scores reflecting greater loneliness.

Results

Concurrent Associations Among Attributions, Internalizing Symptoms, and Peer Experiences

Regression analyses were initially conducted to examine concurrent associations between hostile and critical self-referent attributions, entered on an initial and second step, respectively, and each domain of self- and peer-reported internalizing symptoms used as dependent variables. A similar set of analyses was also conducted to examine associations between attributions and adolescents’ peer experiences (i.e., peer acceptance or rejection and victimization). All results are listed in Table 3. With one exception reported below, no gender interactions were revealed.

As seen in Table 3, the results offered significant support for predictions regarding critical self-referent attributions. After controlling for hostile attributions, critical self-referent attributions were uniquely associated with self-reported measures of depressive symptoms, loneliness, and self-esteem, as well as peer-reported depressive affect. Significant models were also observed for peer-reported measures of peer experiences. High levels of critical self-referent attributions were uniquely associated with high levels of peer rejection (i.e., low social preference). A significant gender interaction was revealed for the association be-

Table 3. Multiple Regressions Examining Hostile and Critical Self-Referent Attributions as Concurrent Predictors of Adolescents’ Internalizing Symptoms and Peer Experiences

Dependent Variable	Step 1 Hostile Attributions		Step 2 Critical Self-Referent Attributions		Total R ²
	R ²	β	ΔR ²	β	
Self-report					
Depression	.01	-.07	.03*	.17**	.03*
Social anxiety	.00	.00	.03*	.17*	.03†
Loneliness	.00	-.05	.11***	.34***2	.12***
Self-esteem	.01	.10	.07**	-.26**	.08**
Peer report					
Depressive affect	.00	-.03	.05**	.23**	.05**
Anxiety	.00	-.03	.02	.13	.01
Shy/withdrawal	.00	.00	.00	.07	.00
Social preference	.00	-.01	.06***	-.25***b	.07***
Peer victimization	.00	.06	.04* ^a	.20* ^b	.04*

^aThis effect was qualified by a significant gender interaction (see text). ^bAfter controlling for self-reported depressive symptoms on an initial step, hostile intent attributions remained a nonsignificant predictor of social preference, peer victimization, and loneliness, ΔR²s = .00, and critical self-referent attributions remained significantly associated with social preference, ΔR² = .06, β = -.26, $p < .05$, peer victimization, ΔR² = .03, β = .18, $p < .05$, and loneliness, ΔR² = .06, β = .25, $p < .001$. * $p < .05$. ** $p < .01$. *** $p < .0001$. † $p = .06$.

tween critical self-referent attributions and peer victimization, $\Delta R^2 = .04$, $\beta = .27$; $p < .01$, suggesting that the association between critical self-referent attributions and victimization was observable for boys, $R^2 = .11$, $\beta = .33$; $p < .01$, but not for girls, $R^2 = .02$, $\beta = -.06$, *ns*. As in Study 1, critical self-referent attributions remained significantly associated with peer experiences (i.e., rejection, victimization) and loneliness (although not self-esteem) even after controlling for shared variance with self-reported depressive symptoms (see note in Table 3).

Prospective Test of the Cognitive Vulnerability–Stress Model

Hierarchical linear regression analyses were conducted to examine the prospective effects of the cognitive vulnerability–stress model. For each hierarchical regression analysis, internalizing symptoms at Time 2 were used as a dependent variable. Corresponding internalizing scores at Time 1 were controlled on an initial step, followed by critical self-referent attributions, peer-reported victimization, and gender entered on a second step, all possible two-way interactions on a third step, and a three-way interaction term examining gender differences in the cognitive vulnerability–stress (Attributions \times Victimization) model on a final step.

A significant three-way interaction was revealed in models predicting depression, $\Delta R^2 = .02$, $\beta = -.16$, $p < .05$, and loneliness symptoms, $\Delta R^2 = .02$, $\beta = -.14$, $p < .05$, suggesting gender differences in the magnitude of cognitive vulnerability–stress effects. Separate analyses were therefore conducted for boys and girls using the same regression model previously mentioned, with the exception of gender main and interaction effects. Results revealed significant prospective support for the cognitive vulnerability–stress model for boys’ depres-

sion and loneliness symptoms (presented in Table 4); no significant results emerged for girls. As can be seen in Table 4, the product term between critical self-referent attributions and peer victimization was statistically significant in each model. Computations of standardized slopes revealed a pattern of findings consistent with hypotheses for depressive symptoms. Specifically, higher levels of critical self-referent attributions were associated with prospective increases in depressive symptoms only under conditions of high levels of boys’ peer victimization (see Table 4).

General Discussion

These studies of youth interpretations of ambiguous peer experiences offer an important contribution to the literature on child and adolescent social development, as well as an important preliminary validation of conceptual theories in the clinical literature that rarely have been applied to youth, and rarely have given adequate attention to the important potential impact of peer experiences in the development of internalizing symptoms. Implications of these findings for each area of research are discussed below.

Integrated cognitive and interpersonal models of internalizing symptoms generally suggest cyclical associations among individuals’ social experiences, cognitive interpretations, social behaviors, and resulting interpersonal reactions from others that can have potentially deleterious adjustment consequences (Crick & Dodge, 1994). Based on past social experiences, individuals develop interpretative styles for future social cues. Negative past experiences are more likely to yield negative, or even biased, interpretative styles (Crick & Dodge, 1994; Gibb, 2002). These cue inter-

Table 4. Hierarchical Multiple Regression Results for the Prospective Test of the Cognitive Vulnerability–Stress Model for Four Domains of Internalizing Symptoms Among Boys

	Dependent Variables							
	Depression		Social Anxiety		Loneliness		Self-Esteem	
	ΔR^2	Final β	ΔR^2	Final β	ΔR^2	Final β	ΔR^2	Final β
Step 1	.29***		.44***		.29***		.12**	
Corresponding Time 1 symptoms		.44***		.58***		.62***		.26**
Step 2	.05		.03		.07		.07	
Critical self-referent attributions		.04		-.11		-.15		-.10
Peer victimization		-.24		-.05		-.43		.24
Step 3	.07*		.04*		.05*		.26**	
Victimization \times Attributions		.43*		.33*		.34*		-.40*
Total R^2	.42***		.46***		.41***		.26**	
Standardized slopes ^a								
At high levels of peer victimization (+1 SD)		.22*		.08		.04		-.33**
At low levels of peer victimization (-1 SD)		-.05		-.18		-.22		-.03

^aSlopes are computed for the association between critical self-referent attributions and each domain of internalizing symptoms, see Holmbeck (2002).

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

pretations may lead to the engagement in inappropriate social behaviors that can elicit negative reactions from others. Unfortunately, yet ironically, these negative reactions from others ultimately reify the individual's initial (perhaps erroneous) interpretations, thus producing a reciprocally reinforcing cycle that contributes to and is fueled by internalizing symptoms (e.g., Abramson et al., 1989; Coyne, 1976).

These studies offer preliminary and promising empirical support for several of the assumptions posited by this conceptual model as applied specifically to child and adolescent peer experiences. For example, one component of this model suggests that cue interpretations may contribute to the engagement in maladaptive social behaviors. These studies yielded some support for this hypothesis: Children's tendency to derive pejorative self-relevant attributions from even ambiguous social experiences was associated with children's engagement in passive withdrawal, as reported by teachers. The association between critical self-referent attributions and withdrawal remained significant even after controlling for shared variability with depressive symptoms. By extricating themselves from social events, children are denied the opportunity to accrue evidence that might contradict their negative interpretation. Moreover, by engaging in withdrawn and submissive behavior, children may increase the likelihood that they will be targeted as victims in future peer exchanges (Olweus, 1993). Indeed, a second assumption posited by cognitive-interpersonal models suggests that potentially biased cue interpretations, and subsequent inappropriate behavior, may contribute to negative reactions from others. Although this mediated pathway was not specifically examined in these studies, results generally suggested that children's and adolescents' critical self-referent attributions were significantly associated with peer-reported rejection (for children and adolescents) and peer-reported victimization (for adolescent boys only). Again, these associations were not accounted for by shared variability with depressive symptoms. Lastly, the results supported the prediction that the combination of critical self-referent cue interpretations and negative peer experiences (i.e., peer victimization) was concurrently (i.e., Study 1 and 2) and longitudinally (i.e., Study 2) associated with depressive symptoms, consistent with a cognitive vulnerability–stress predictor model.

Not all findings were consistent with our hypotheses, however. Among kindergarten children, critical self-referent attributions were associated with teacher-reported depressive emotional dysregulation but not teacher- and peer-reported measures of sad affect. It may be that external reporters are better at identifying symptoms of depression that manifest as overt signs of distress (i.e., dysregulation), as compared to affective states in children of this age. In addition, although some findings were similar across domains of internal-

izing symptoms, the results were not generally as strong for the prediction of social anxiety or loneliness. This highlights the notion that although cognitions may be an important component of internalizing symptoms generally, each symptom domain may involve a unique cognitive style. For instance, some evidence has suggested that anxious symptoms in youth may be associated with hypervigilance to threat-based peer cues (Bell-Dolan, Last, & Strauss, 1990), whereas depression may be more relevant to attributions regarding perceived self and social deficits. Some inconsistencies across studies were also observed in the examination of peer withdrawal. Indeed, hypotheses regarding the associations between critical self-referent attributions and peer experiences were more consistently supported when examining peer rejection.

The results of these studies also contribute to the social development literature, specifically pertaining to the psychological consequences of peer victimization. Although substantial work has demonstrated deleterious consequences of exposure to peer victimization among children and adolescents, notably wide variability in adjustment among victims has prompted recent efforts to identify theoretically informed moderators (Hanish & Guerra, 2002; Kochenderfer-Ladd & Skinner, 2002). Although numerous demographic (e.g., gender, ethnicity) and behavioral factors (e.g., coping styles) have been examined as potential moderators, youths' attributional style rarely has been explored as a factor that might change the magnitude of the association between peer victimization and maladjustment, and prior work regarding social cognition and peer victimization experiences has rarely employed a social information processing framework. Indeed, a social–cognitive approach has previously proven fruitful in the study of peer relations experiences more generally (Boivin, Hymel, & Bukowski, 1995; Crick & Ladd, 1993; Graham & Juvonen, 2001; Panak & Garber, 1992), although moderator models have not previously been examined. Results from this study suggest that youth with tendencies to interpret ambiguous cues in a critical self-referent manner may evidence increased vulnerability to depressive symptoms when this attributional style is combined with high levels of peer victimization experiences.

Notably, the results from this study indicated that critical self-referent attributions, combined with the actual experience of victimization, were concurrently associated with both boys' and girls' internalizing symptoms, but prospectively associated only with boys' depression. This is likely related to the exclusive focus on overt and physical forms of peer-reported victimization examined in this study. Although social–cognitive research on relational victimization has not previously been conducted, findings regarding the cue interpretative styles of relational aggressors has identified unique associations with girls' adjustment (e.g., Crick,

Grotpeter, & Bigbee, 2002). Youth interpretations of relational victimization experiences remains a critical direction for future research.

Overall, although findings from these studies offer important initial evidence to support an integrated cognitive–interpersonal model of depressive symptoms, replication of these results is certainly needed, as is the examination of additional components of this model that were not addressed. For example, longitudinal results offered somewhat compelling albeit preliminary evidence that cue interpretations and peer victimization may be associated with subsequent increases in depressive symptoms; however, an interesting and important direction for future research will be to examine reciprocal effects. Specifically, more research is needed to examine whether internalizing symptoms might contribute to increases in peer victimization (Egan & Perry, 1998; Sacco, 1999) or exacerbated cognitive distortions (Garber, Keiley, & Martin, 2002).

Of course, this study of peer victimization focused on only one proximal predictor of internalized symptoms; thus, future studies may wish to explore peer victimization and cue interpretations in the context of additional influences within the microsystem or exosystem (Cicchetti & Toth, 1998). For instance, children's interpretations of peer experiences could be influenced by prior exposure to violence, attitudes regarding aggression within the community, a history of maltreatment by family members, or parents' own cognitive distortions; each of these factors has been associated with children's internalizing symptoms and cognitive distortions in past research (e.g., Cicchetti & Lynch, 1995; Dodge et al., 1995; Downey & Coyne, 1990; Gibb, 2002). Prior work also has demonstrated that children who experience each of these factors are more likely to experience peer difficulties (e.g., Rogosch, Cicchetti, & Aber, 1995; Zahn-Waxler, Denham, Iannotti, & Cummings, 1992). Thus, the results from these studies on peer victimization should not be necessarily interpreted as indicators of causal pathways to depressive symptoms.

Methodological limitations of these studies also deserve additional attention in subsequent work on peer experiences, cue interpretations, and internalizing symptoms. Perhaps the most important issue highlights a limitation that is endemic to most investigations of social cognition, specifically the use of hypothetical scenarios and self-report instruments for the assessment of children's cue interpretation. Unfortunately, such instruments depend too heavily on children's explicit recognition and reporting of processes that are hypothesized to occur outside of children's awareness. This may be one reason why many self-report instruments of children's social cognitions have somewhat low internal consistency, as was the case in these studies; many factors potentially interfere with the accurate assessment of implicit cognitive processes

(Orobio de Castro, Veerman, Koops, Bosch, & Monshouwer, 2002; Vasey, Dalgleish, & Silverman, 2003). This issue is potentially compounded by the inclusion of several types of peer experiences (e.g., peer entry, peer provocation) that are often combined in studies of attributions but may yield different interpretations. The use of closed-ended responses on attribution measures also can limit response validity. As an initial study of critical self-referent attributions designed to extend past work on social information processing, we replicated a procedure used in past studies on hostile intent attributions and revealed that, despite this potential methodological noise, children's reports of their cue interpretations were significantly associated with depressive symptoms based on the report of external informants. Nevertheless, the need for more accurate methodological approaches to examine children's social information processing is an important limitation for many studies of this type and offers an important direction for future research.

Additional limitations of this study include the exclusive reliance on community-based samples of children and adolescents. It is not possible to determine from these results whether cognitive and interpersonal processes might contribute to clinical levels of internalizing symptoms. Perhaps as a result of this restricted range of distress, effect sizes in this study were somewhat low. More work is needed to determine the potency of critical self-referent attributions as predictors of clinically significant depressive symptoms.

Overall, these studies offer preliminary yet promising evidence for social information processing models that are specifically relevant to depressive symptoms in youth and to experiences with peers. The role of peer experiences as predictors of depressive symptoms has been relatively neglected in both social development and clinical literatures, although this important domain of interpersonal functioning may affect children's self-relevant attributions and overall adjustment significantly. This is especially true during adolescence, when associations with peers become especially important and the prevalence of depressive symptoms increases notably.

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