Journal of Abnormal Psychology
2002, Vol. 111, No. 1, 77–87

0021-843X/02/$5.00 DOI: 10.1037//0021-843X.111.1.77

A Longitudinal Study of Children's Depressive Symptoms, Self-Perceptions, and Cognitive Distortions About the Self

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This longitudinal study examined how depressive symptoms relate to children's self-perceptions and to estimates of children's cognitive distortions about the self in a nonclinical sample of children who were followed from 4th grade ($n = 248$) through 6th grade ($n = 227$). Report card grades measured children's academic competence, and teachers' ratings of children's level of peer acceptance at school indicated social acceptance. Self-reported depressive symptoms predicted a change in children's negative views of the self. Moreover, the self-perceptions of children who exhibited more symptoms of depression appeared to reflect an underestimation of their actual competence. Children's negative self-perceptions and underestimations about the self were not associated with a subsequent change in depressive symptoms. The implications of the findings for cognitive theories of depression and future research with this population are discussed.

Cognitive theory suggests that cognitions, particularly negative beliefs about the self, are related to the etiology of depression (Beck, 1967, 1976). Two of the most basic assumptions of the theory, (a) that cognition has causal priority over emotions and (b) that depressed children's negative beliefs about the self reflect distortions of reality, have rarely been tested in the childhood depression literature (for reviews, see Garber, Quiggle, & Shanley, 1990; Hammen, 1990). The current study used a prospective longitudinal design to test associations between depressive symptoms and two dimensions of children's self-perceptions: the overall evaluation of the self and the accuracy of that judgment. First, we tested whether negative self-perceptions are associated with subsequent increases in signs of depressive symptoms or whether the reverse is true (i.e., depressed mood predicts a more negative view of the self). Second, estimating negative biases in children's judgments about the self, we examined whether underestimations of competence are a risk factor for future depressive symptomatology. The reverse causal model was also tested.

Negative Self-Perceptions

Both children with nonclinical levels of depressive symptoms as well as clinically depressed children view themselves negatively. Evidence suggests that depressed children are unhappy with themselves and hold negative expectations about the future (e.g., Asarnow & Bates, 1988; McCauley, Mitchell, Burke, & Moss, 1988), do not believe they can solve their problems (Weisz, Sweeney, Proffitt, & Carr, 1993), and are critical of their academic and social competence (see Hammen, 1990; Hammen & Rudolph, 1996, for reviews). However, there is disagreement in the childhood depression literature as to whether negative self-perceptions may lead to depression or whether depression causes a negative view of the self (Garber et al., 1990). Three longitudinal studies of middle childhood and early adolescence (DuBois, Felner, Bartels, & Silverman, 1995; Hammen, 1988; Robinson, Garber, & Hilsman, 1995) found that lower self-esteem predicted a change in depressive symptoms over 6–12 months. However, none of these studies tested the reverse causal model to determine whether depressive symptoms predicted a change in self-esteem over time. Findings such as these (based on both clinical and nonclinical samples of depressed children) indicate that reports of low self-esteem may temporally precede changes in depressive symptoms and are consistent with the cognitive theory of depression. In an attempt to replicate these research findings, we tested the hypothesis that children's negative self-perceptions predict a change in depressive symptomatology over time (Hypothesis 1). Three different components of children's self-perceptions were examined: global self-worth, self-perceived academic competence, and self-perceived social acceptance. Previous research with this age group has demonstrated the importance of assessing domain-specific judgments of competence, as well as overall perceptions of one's value as a person (Harter, 1985).

Negative self-perceptions are believed to make one vulnerable to depression, but it is also possible that depressive symptoms influence one's negative self-perceptions (Teasdale, 1983). Proponents of this viewpoint have argued that negative self-perceptions are symptoms of, rather than contributors to, depression. At least four studies have found that clinically depressed children's and adolescents' self-perceptions improve as their depressive symptoms remit (Asarnow & Bates, 1988; Gotlib, Lewinsohn, Seeley, Rohde, & Redner, 1993; McCauley et al., 1988; Tems, Stewart,

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The present study is part of the doctoral dissertation of Emily P. McGrath. We are very grateful to the children, teachers, and parents who participated in the study. The study was supported by Grant R29-48593 from the National Institute of Mental Health awarded to Rena L. Repetti. We thank Joan Asarnow, Connie Hammen, Marian Sigman, and John Weisz for their comments on an earlier version of this article.

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Skinner, Hughes, & Emslie, 1993). These findings suggest that a negative self-perception may be a state-dependent symptom of depression rather than a stable characteristic of depressed children.

Even if negative self-perceptions remit with depression, it remains unclear whether they play any role in the onset, maintenance, or exacerbation of depression. In addition, whether the level of depressive symptoms typically observed in a nonclinical sample of children would influence the children's self-perceptions over time has rarely been examined in the literature. This study tested the hypothesis that depressive symptoms predict a change in children's negative self-perceptions over time (Hypothesis 2). It is important to note that Hypothesis 1 and Hypothesis 2 are not mutually exclusive. That is, negative self-perceptions may make children more vulnerable to other symptoms of depression, and depressive symptoms, in turn, may diminish feelings of self-worth.

Cognitive Distortions

Beck's (1967, 1976) cognitive theory of depression suggests that depressed children's negative self-perceptions reflect cognitive distortions about the self. Beck's theory has prompted research for testing whether children with depressive symptomatology engage in distorted patterns of thinking. Some of these studies have used measures that ask children about hypothetical situations to determine if their thinking reflects distorted processing of information (e.g., Children's Negative Cognitive Error Questionnaire [CNCEQ], Leitenberg, Yost, & Carroll-Wilson, 1986; Cognitive Bias Questionnaire for Children [CBQC], Haley, Fine, Marriage, Moretti, & Freeman, 1985). Other studies have used more objective indicators of children's circumstances, in addition to subjective reports, to demonstrate that depressed children distort information about themselves (e.g., Asarnow, Carlson, & Guthrie, 1987; Kendall, Stark, & Adam, 1990; McGee, Anderson, Williams, & Silva, 1986; Meyer, Dyck, & Petrinack, 1989). For example, Asarnow et al. (1987) found that although depressed children saw themselves as less academically competent, they did not differ from nondepressed children in terms of IQ or actual achievement. These studies support the cognitive model in showing that depressed children's negative self-appraisals may, at least in part, reflect cognitive distortions. In particular, the evidence suggests that children with depressive symptomatology negatively distort information about their academic competence.

Longitudinal studies are needed to determine whether cognitive distortions precede or follow the appearance of depressive symptoms. Cognitive theories maintain that cognitive distortions place one at risk for depression and not the reverse (Beck, 1967). However, three recent analyses of data from a nonclinical sample of children addressed this question and reported conflicting results. Cole and his colleagues (Cole, Martin, Peeke, Seroczynski, & Fier, 1999; Cole, Martin, Peeke, Seroczynski, & Hoffman, 1998) examined third through eighth graders' perceptions of their competence in several areas in relation to ratings provided by others, such as teachers, peers, and parents. There was very little support for the hypothesis that cognitive errors of underestimation are associated with a change in depressive symptoms (for the single exception, see Hoffman, Cole, Martin, Tram, & Seroczynski, 2000). However, in all but one of the analyses reported by Cole and his colleagues, depression scores at the beginning of the school year predicted children's underestimation of their own academic and social competence at the end of the school year.

The present study also tested the theoretical position that cognitive distortions play an etiologic role in depression among children. The accuracy of children's self-judgments were assessed in two life domains that are critical for this age group: academic performance and social acceptance at school. Hypothesis 3 states that children's underestimation of their actual social and/or academic competence predicts a change in depressive symptomatology over time. We measured cognitive distortions by creating variables that reflect the accuracy of children's self-perceptions, relative to independent indicators of children's competence. Report card grades and teacher-reported peer problems served as more objective indicators of children's academic and social performance. Of course, teacher evaluations are not purely objective nor completely accurate indicators of children's academic and social performance. Other factors, such as additional information children have about their academic and social performance (e.g., feedback from parents, friendships outside of the classroom), may also contribute to children's self-evaluations (McGrath & Repetti, 2000; Repetti, McGrath, & Ishikawa, 1999). Hence, we attempted only to estimate children's cognitive distortions about the self, with the understanding that discrepancies between self- and teacher ratings do not always necessarily reflect distortions.

Whereas cognitive theories suggest that negative cognitive errors make one vulnerable to depression, some of the findings reported by Cole and his colleagues (Cole et al., 1998, 1999; Hoffman et al., 2000) suggest the reverse. That is, in a nonclinical sample of children, depressive symptoms predicted more negative perceptual biases over time. This study also tested the hypothesis that symptoms of depression predict a change in children's underestimation of their academic or social competence over time (Hypothesis 4). A replication of this pattern in a different sample, using different measures of children's cognitive distortions about the self would question a basic assumption of cognitive theories of depression as applied to nonclinical samples of depressed youth.

The current study differs from most previous work in several important ways. First, official report card grades are used as the more objective indicator of academic performance, as opposed to questionnaire data collected from teachers within the context of a research study. As noted by Cole and his colleagues (Cole et al., 1999), in order for a negative self-perception to be considered erroneous, children must receive and misinterpret positive feedback related to their competence. By using report card grades, the current approach allowed for a more direct assessment of the extent to which a child distorts information contained in feedback that was actually received about his or her academic performance. Second, the present study used multiple reporters of children's symptoms of depression to gain a more comprehensive picture of children's emotional functioning. Depressive symptoms are measured by (a) children's self-reports and (b) the average of mothers' and teachers' reports of depressive symptomatology (Hoffman et al., 2000, also obtained parents' reports). Third, this study extends the current literature by controlling for children's externalizing symptoms in tests of all the hypotheses to assess the unique association between depression and self-evaluations. Externalizing symptoms have been linked to children's depressive symptoms (Cole & Carpentieri, 1990), negative self-perceptions (Compas, Phares, Banez, & Howell, 1991), academic underachievement

(Hinshaw, 1992), and problematic peer relationships (Parker, Rubin, Price, & DeRosier, 1995). Findings such as these raise important questions about the specificity of risk factors associated with depressive symptoms (Compas & Hammen, 1994; Hammen, 1990). It is therefore important to rule out the possibility that externalizing behavior problems account for some or all of the observed links between depressive symptoms, children's self-perceptions, and cognitive distortions about the self.

Method

Procedures

The data for this study were collected as part of a larger longitudinal investigation of stress and family development, involving annual collections of interview data from elementary-school-age children and questionnaire data from their parents and teachers over a period of 3 years (fourth through sixth grade). Parents of 4th-grade children from three schools, one parochial and two public schools in a large metropolitan area, were sent letters describing the study. Children who agreed to participate, and whose parents returned signed consent forms, completed annual interviews, and their parents and teachers were asked to complete questionnaires. In exchange for their participation each year, children received $5–$10 and parents received $10–$20, with the honorarium increasing over the 3 years of the family's participation. Teachers received $5 for each completed child questionnaire.

Participants

Cohorts of 4th-grade children were recruited for the study in each of 3 consecutive years. A total of 677 families with 4th-grade children were invited to participate, and parental consent was obtained from 248 (37%) of the families. Time 1 interviews were completed by 248 children (116 girls and 132 boys; children's average age was 9.5 years), and 218 mothers returned questionnaires, reflecting an overall maternal response rate of 88%. The study maintained high retention rates over 3 years (230 child interviews and 195 parent questionnaires when the children were in fifth grade at Time 2, 227 child interviews and 186 parent questionnaires when the children were in sixth grade, at Time 3). Teacher questionnaires were completed for approximately 86% of the children at each time point. To analyze the effects of attrition, children who were retained from Time 1 to Time 3 were compared with children who withdrew from the study after Time 1 participation. The *t* tests indicated there were no significant differences between the two groups of children on Time 1 scores on depressive symptoms, externalizing symptoms, self-perceptions, or cognitive distortions. The sample consisted primarily of high income, highly educated Caucasian parents and their children. Approximately 81% of the parents who participated identified themselves as Caucasian (8% as Asian or Pacific Islander, 4% as Latino, 1% as African American, 1% as Native American, and 5% as other). More than half the families (54%) reported earning more than $80,000 per year, and over 80% of the parents were college graduates.

Measures

Emotional–Behavioral Functioning

Depressive symptoms: Children's self-reports. The first indicator of children's depressive symptoms was their self-reports on the Children's Depression Inventory (CDI; Kovacs, 1992), a 27-item questionnaire that assesses affective, behavioral, somatic, and cognitive aspects of depressive symptomatology. Evidence suggests that this widely used scale has good internal consistency (Cronbach's $\alpha = .85$ in the current study), test–retest reliability, concurrent validity, and validity as a screening measure for depressive symptomatology in nonclinical samples (Carey, Faulstich, Gresham, Ruggiero, & Enyart, 1987; Kovacs, 1992).

For each item on the CDI, children were asked to indicate which of three sentences best described how they had been feeling during the past 2 weeks. Each sentence was assigned a value from 0 to 2, with higher scores reflecting greater symptom severity. Responses to the 27 items were summed. Children's scores (see Table 1) were lower but fell within one standard deviation of the national norms (Kovacs, 1992). Approximately 80% of children scored below 9 at each time point, a cutoff score used to signify mild depressive symptomatology (e.g., Rudolph, Hammen, & Burge, 1997). Ranges of children's scores were 0–38 at Time 1, 0–29 at Time 2, and 0–35 at Time 3. The *t* tests indicated there were no differences between girls' and boys' self-reports at any of the three time points. There were high rates of stability in the depression variable over 3 years (from $r = .55$ to $r = .67$, $p < .001$).

Depressive symptoms: Parents' reports. Mothers' reports on the 14-item Anxious–Depressed Syndrome scale of the Child Behavior Checklist (CBCL) served as the second indicator of children's depressive symptoms. The CBCL consists of 118 items that assess children's internalizing and externalizing behavior problems. This widely used measure has been shown to be reliable (Cronbach's $\alpha = .81$ for the Anxious–Depressed

Table 1
Means and Standard Deviations for Study Measures by Grade Level

	Grade 4 (Time 1)			Grade 5 (Time 2)			Grade 6 (Time 3)		
Measure	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*
Depressive symptoms									
Children's reports	5.48	5.52	247	4.68	5.25	231	5.24	5.85	226
Mothers' reports	3.71	3.53	218	3.25	3.45	195	2.88	3.18	186
Teachers' reports	3.69	4.34	245	1.90	2.99	207	2.25	3.52	156
Externalizing symptoms									
Children's reports	1.78	0.56	247	1.67	0.56	231	1.69	0.59	226
Mothers' reports	7.13	6.22	218	6.29	5.75	195	5.91	5.45	186
Teachers' reports	6.07	9.23	245	3.66	6.06	207	3.06	4.61	156
Children's self-perceptions									
Global self-worth	3.53	0.45	244	3.59	0.44	229	3.55	0.49	224
Academic	3.18	0.60	246	3.39	0.51	228	3.40	0.56	225
Social	3.24	0.62	244	3.33	0.59	229	3.33	0.58	223
Peer problems									
Teachers' ratings	2.29	0.91	245	2.27	0.86	207	2.15	0.72	154

Syndrome scale in the current study), stable, and valid (Achenbach, 1978; Achenbach & Edelbrock, 1979). By using principal-components analyses, Achenbach found that depressive and anxious symptoms on the CBCL are closely intertwined and difficult to distinguish. (Achenbach, 1991a), which is consistent with research indicating high rates of comorbidity between depression and anxiety in children (Compas & Hammen, 1994). Mothers were asked to circle (0) if the item was not true of the child, (1) if the item was sometimes true of the child, and (2) if the item was often true of the child during the previous 6 months. On average, mothers reported low levels of depressive symptoms in their children (see Table 1). These ratings were comparable to norms on the Anxious–Depressed subscale from a national sample of nonreferred 4- to 11-year-old children. *T* tests indicated that there were no differences between mothers' reports of depressive symptoms for girls and boys at any of the three time points.

Depressive symptoms: Teachers' reports. Teachers' ratings on the Anxious–Depressed Syndrome scale of the Teacher Report Form (TRF) served as the third indicator of children's depressive symptoms. The TRF is comparable to the CBCL and has also been shown to be reliable, stable, and valid (Edelbrock & Achenbach, 1984; Edelbrock, Greenbaum, & Conover, 1985). The Anxious–Depressed Syndrome scale on the TRF is composed of 18 items that are rated in the same manner as the CBCL. The scale had good internal consistency in the current study (Cronbach's α = .86). Teachers' ratings in this study (see Table 1) were slightly lower than the norms on the Anxious–Depressed subscale from a national sample of teachers of nonreferred, 5–11-year-old children. *T* tests indicated that there were no differences between teachers' reports of depressive symptoms for girls and boys at any of the three time points.

There were moderate, significant cross-sectional correlations (ranging from .20 to .30) between mothers' and teachers' reports of depressive symptoms at all three time points (all significant at $p < .01$). Mothers' and teachers' scores were averaged to create a composite depression variable. Before averaging, mothers' and teachers' scores were each standardized to a mean of 0 and standard deviation of 1. The *t* tests revealed no gender differences between girls' and boys' composite scores, which were highly stable over 3 years (ranges of *r*s = .48 to = .55, $p < .001$).

Externalizing behavior problems: Children's reports. The first indicator of externalizing behavior problems was children's self-reports on the six-item Behavioral Conduct subscale of the valid and reliable Self-Perception Profile for Children (SPPC; Harter, 1985). The scale measures a child's perceptions of his or her behavior, and had good internal consistency in the current study (Cronbach's α = .81). The scale items tapped into children's perceptions of how they act, whether they do the right thing, and if they are happy with their behavior. Each item was scored from 1 to 4, and the mean of the six items was calculated. The items were reverse scored in this study so that higher scores reflected perceptions of more problematic behavioral conduct. Boys perceived their behavior to be more problematic than girls.[1] The means on the Behavioral Conduct subscale of the SPPC (see Table 1) were similar to the norms (Harter, 1985).

Externalizing behavior problems: Parents' reports. Mothers' reports on the Externalizing Syndrome scale of the CBCL served as the second indicator of children's externalizing behavior problems. This widely used measure has been shown to be reliable, stable, and valid (Achenbach, 1978, 1991a; Achenbach & Edelbrock, 1979). The Externalizing Syndrome scale describes 33 delinquent and aggressive child behaviors, and had good internal consistency in the current study (Cronbach's α = .87). The sum of mothers' ratings was computed with the CBCL response scale described above, with higher scores indicating more externalizing behavior problems. Mothers' ratings on the Externalizing Syndrome scale (see Table 1) were slightly lower than the national norms for children ages 4–11. A marginally significant *t* test, $t(216) = 1.66$, $p < .10$), indicated that mothers reported more externalizing symptoms in 4th-grade boys than in 4th-grade girls. The differences were not significant for 5th- and 6th-grade children.

Externalizing behavior problems: Teachers' reports. Teachers' reports on the Externalizing Syndrome scale of the TRF served as the third indicator of children's externalizing behavior problems. The TRF is comparable to the CBCL, and has also been shown to be reliable, stable, and valid (Achenbach, 1991b; Edelbrock & Achenbach, 1984; Edelbrock, Greenbaum, & Conover, 1985). The Externalizing Syndrome scale on the TRF is composed of 34 items that describe delinquent and aggressive child behaviors, and are rated in the same manner as the CBCL. The scale had high internal consistency in the current study (Cronbach's α = .95). Teachers' reports (see Table 1) were also slightly lower than the national norms for nonreferred children ages 5–11. Teachers reported more externalizing symptoms in boys than in girls.[2]

There were moderate, significant cross-sectional correlations (ranges of *r*s = .29 to = .39) between mothers' and teachers' reports of externalizing behavior problems at all three time points (all significant at $p < .001$). Mothers' and teachers' reports of externalizing symptoms were averaged to create a composite measure of children's externalizing symptoms. Before taking the average of the two scales, mothers' and teachers' scores were each standardized to a mean of 0 and a standard deviation of 1. *T* tests revealed gender differences on the composite externalizing variable at Time 1, $t(243) = 2.11$, $p < .05$, and Time 2, $t(227) = 2.03$, $p < .05$; and a marginally significant difference at Time 3, $t(210) = 1.75$, $p < .10$. At each time point, the composite scores were higher for boys than for girls. There were high rates of stability over 3 years (ranges of *r*s = .63 to = .68, $p < .001$).[3]

Children's Self-Perceptions

Perceptions of global self-worth. We obtained three indicators of children's self-perceptions with the SPPC (Harter, 1985). The first indicator was the six-item Global Self-Worth subscale of the SPPC. The items on this scale measure a child's global judgment of his or her worth as a person. Each item was scored from 1 to 4, and the mean of the six items was calculated. On all of the self-perception subscales, higher scores reflect more positive evaluations of the self. *T* tests indicated there were no differences between girls' and boys' perceptions of global self-worth at any of the three time points.

Perceptions of scholastic competence. The second indicator of children's self-perceptions was the six-item Scholastic Competence subscale of the SPPC. The six items on this scale measure a child's perceptions of his or her academic abilities. A marginally significant *t* test, $t(223) = 1.73$, $p < .10$) indicated that 6th-grade boys tended to see themselves as more academically competent than did 6th-grade girls.

Perceptions of social acceptance. The six items on this SPPC subscale measure the degree to which a child feels accepted or popular with his or

[1] A marginally significant *t* test, $t(245) = 1.67$, $p < 10$, indicated that 4th-grade boys perceived their behavior to be more problematic than did 4th-grade girls. There were significant differences in the fifth grade, $t(229) = 2.73$, $p < .01$, and in the sixth grade, $t(224) = 2.58$, $p < .05$, between boys' and girls' reports of behavior problems.

[2] Significant *t* tests in fourth, $t(243) = 1.93$, $p < .05$, and fifth grade, $t(205) = 2.17$, $p < .05$, indicated that teachers reported more externalizing symptoms in boys than in girls. This trend continued in the sixth grade, as indicated by a marginally significant *t* test, $t(154) = 1.68$, $p < .10$.

[3] The mother–teacher composite measure of externalizing symptoms correlated significantly with children's reports of depressive symptoms in fourth grade ($p = .14$, $p < .05$), but not in fifth or sixth grade (Time 2: r = .08, *ns*; Time 3: r = .01, *ns*). The low correlations may be due to the use of different informants because the mother–teacher composite measure of externalizing symptoms correlated significantly with the composite measure of depressive symptoms (ranges of *r*s = .46 to = .61, $p < .001$). Additionally, children's self-reported behavior problems correlated significantly with their self-reported depressive symptoms (ranges of *r*s = .44 to = .49, $p < .001$).

her peers. A significant t test, $t(242) = 2.61$, $p < .01$, indicated that 4th-grade girls' scores were lower than 4th-grade boys' scores on the Perceived Social Acceptance scale. The means on all three of the self-perception subscales (Global Self-Worth, Scholastic Competence, and Social Acceptance; see Table 1) fell within one standard deviation of norms (Harter, 1985), and Cronbach's alphas ranged from .75 to .81. There were high rates of stability for each variable assessed over 3 years: global self-worth (ranges of rs = .43 to = .49, $p < .001$), scholastic competence (ranges of rs = .45 to .59, $p < .001$), and social acceptance (ranges of rs = .49 to = .57, $p < .001$).

Academic Performance

Grades in reading and math. Children's academic competence was indicated by their achievement in two subjects, reading and math, as recorded on their report cards. We used reading and math grades in the analyses from the quarter in which children completed their interviews. We used different scales to assign grades for the different cohorts of children in the study. For example, fourth graders at one school were graded on a 3-point scale 1 year, and fourth graders at the same school over the next 2 years were graded on a 100-point scale. Therefore, before testing hypotheses, children's scores were standardized within each school and cohort to a mean of 0 and a standard deviation of 1. Overall, girls' and boys' reading and math grades were similar. One exception was that 5th-grade girls received significantly higher grades in reading than did 5th-grade boys, $t(217) = -2.18$, $p < .05$.

Social Acceptance

Teachers' ratings of peer problems. Children's social acceptance at school was assessed by an eight-item teacher-report measure of social functioning developed for use in this study. On a 5-point Likert-type scale, teachers rated children according to (a) how well liked they are, (b) the extent to which they are disliked, (c) the number of good friends they have, (d) popularity among their peers, (e) exclusion from play and activities organized by other children, and (f) the extent to which the child would or would not be chosen to participate in different group activities (i.e., social, athletic, academic). The scale has high internal consistency (Cronbach's $\alpha = .94$) and correlates with other measures of social adjustment.[4] We computed the mean of teachers' responses to the eight items, with higher scores indicating increased levels of social problems at school (see Table 1). T tests indicated that there were no significant differences between teachers' ratings of girls' and boys' problems with peers at any of the three time points.

Cognitive Distortions

To estimate the accuracy of judgments about the self, we conducted multiple regression analyses in which children's self-perceptions were regressed onto independent indicators of children's competence. The standardized residuals, saved as new variables, represented the components of self-perceptions that were not explained in the regression equations by the more objective indicators of children's competence. The same statistical approach was used by Cole and his colleagues (e.g., see Cole et al., 1998) to estimate children's cognitive distortions. By definition, standardized residuals have positive and negative valences, with a mean of 0 and a standard deviation of 1. In this study, positive residual scores reflect overestimation of one's competence. Negative residual scores indicated underestimation, or cognitive distortion in a negative direction.

Distortion in the academic domain. At each time point, we obtained residuals reflecting distortion in the academic domain by simultaneously regressing perceptions of academic competence onto grades in reading and math. In fourth, fifth, and sixth grade, higher grades in reading and math were associated with perceptions of more academic competence. A significant portion of the variance in perceived academic competence was explained by grades in reading and math at all three time points (14–23%). Children's distortion scores ranged from −2.93 to 2.40 at Time 1, −3.08 to 2.05 at Time 2, and −3.04 to 2.16 at Time 3. There was a marginally significant gender difference in fifth grade, $t(213) = 1.78$, $p < .10$, and a significant gender difference in sixth grade, $t(195) = 2.51$, $p < .05$, indicating boys were more likely to overestimate and girls were more likely to underestimate their academic competence. The academic distortion variable was stable over 3 years (ranges of rs = .36 to .48, $p < .001$).

Distortion in the social domain. We obtained three residuals reflecting distortion in the social domain by regressing perceptions of social competence onto teachers' ratings of peer problems at each of the three time points. A small but significant portion of the variance in perceived social acceptance was explained by teachers' ratings of peer problems across the 3 years of the study (3–15%). Higher levels of teacher-reported peer problems were associated with perceptions of less social acceptance at all three time points. Children's scores ranged from −1.70 to 1.08 at Time 1, −1.82 to 1.16 at Time 2, and −1.77 to .80 at Time 3. T tests revealed significant gender differences at Time 1 and Time 2, Time 1: $t(240) = 2.78$, $p < .01$; Time 2: $t(203) = 2.61$, $p < .01$. At both time points, boys tended to overestimate and girls tended to underestimate their social acceptance relative to their teachers' reports. Similar to distortion in the academic domain, the social distortion variable was very stable over 3 years (ranges of rs = .40 to .48, $p < .001$). The cross-sectional correlations between the academic and social distortion variables ranged from .32 to .52 (all were significant at $p < .001$).

Results

Overview

All of the variables were measured each year in fourth, fifth, and sixth grade. This allowed for three different tests (T1, T2, T3) of the temporal sequencing of changes in the primary variables changes from (a) fourth to fifth grade (T1–T2), (b) fifth to sixth grade (T2–T3), and (c) fourth to sixth grade (T1–T3). We tested the longitudinal hypotheses with hierarchical multiple regression analyses, controlling for children's level of functioning at the first time point in each analysis. All of the analyses controlled for the main effect of externalizing symptoms, measured by the average of mothers' and teachers' ratings, before examining the relationship between the predictor and outcome variable.[5] Each hypothesis was tested by using children's self-reports as the indicator of depressive symptoms, followed by additional analyses using others'

[4] Cross-sectional correlations between teacher-rated peer problems and additional indicators of children's social adjustment were computed to examine the validity of the eight-item scale. The cross-sectional correlations between teachers' ratings of peer problems and teachers' reports on the Social Problems scale of the TRF (ranges of rs .62 to .66) were statistically significant at $p < .001$. Similarly, teachers' ratings correlated significantly with mothers' reports on the CBCL Social Problems scale (ranges of rs .38 to .46, $p < .001$). The cross-sectional correlations between teachers' ratings and children's reports on the six-item Social Acceptance subscale of the SPPC ranged from $r = -.23$ to $r -.41$ (all were significant at $p < .01$). Taken together, these findings offer support for the validity of the teacher-report measure of peer problems developed for use in this study.

[5] The multiple regression analyses controlling for the main effect of externalizing symptoms were also computed by using children's self-reports of externalizing symptoms, in place of the mother–teacher composite measure. The pattern of results remained the same.

reports of children's depressive symptoms (mothers' and teachers' reports of anxious–depressed symptoms). The effects of gender and cohort were examined throughout tests of the hypotheses by controlling for the main effects of child gender and cohort and by testing the interactions between child gender and the predictor variable, and between cohort and the predictor variable. None of the interactions were significant.

Negative Self-Perceptions and Depressive Symptoms

Hypothesis 1

The first hypothesis stated that children's negative self-evaluations would predict a change in depressive symptomatology over time. Hierarchical multiple regression analyses tested Hypothesis 1 separately for children's perceptions of their global self-worth, scholastic competence, and social competence. Three longitudinal tests (T1–T2, T2–T3, and T1–T3) were conducted with each of the three indicators of children's negative self-perceptions (the predictor variable), resulting in a total of (3×3) nine tests of Hypothesis 1.

Of the nine tests, only two were significant (see Tables 2 and 3). Perceptions of academic competence in fourth grade predicted a significant change in children's self-reported depressive symptoms from fourth to fifth grade. In addition, children's perceptions of social competence in fourth grade were associated with a significant change in self-reported depressive symptoms from fourth to sixth grade. The negative betas suggested that children with perceptions of less competence experienced higher levels of depressive symptoms over time. The other seven tests of Hypothesis 1 were not significant (see Tables 2 and 3). In addition, comparable analyses using other-reported depressive symptoms instead of the CDI provided no evidence of a significant effect of global, academic, or social self-perceptions on depressive symptoms. The betas for the self-perception variables were nonsignificant in all nine analyses. In summary, little evidence emerged to support the notion that children's negative self-perceptions predict a change in depressive symptomatology 1 or 2 years later.

Table 2
Results of Hierarchical Multiple Regression Analyses Predicting Changes in Self-Reported Depressive Symptoms From Prior Levels of Children's Global Self-Worth

Predictor variable	*r*	*B*	*SEB*	β	R^2
Dependent variable = Grade 5 CDI[a]					
Fourth grade					
Externalizing symptoms	.03	−.48	.32	−.08	
Depressive symptoms	.67***	.60***	.06	.60	
Global self-worth	−.46***	−1.06	.73	−.09	.44***
Dependent variable = Grade 6 CDI[b]					
Fifth grade					
Externalizing symptoms	−.002	−.45	.38	−.07	
Depressive symptoms	.55***	.66***	.08	.54	
Global self-worth	−.37***	−.93	.86	−.08	.33***
Dependent variable = Grade 6 CDI[c]					
Fourth grade					
Externalizing symptoms	−.001	−.53	.38	−.08	
Depressive symptoms	.60***	.54***	.08	.52	
Global self-worth	−.41***	−1.10	.87	−.09	.33***

Note. Gender and cohort served as control variables in all analyses. In addition, interactions with gender and with cohort were tested, but were nonsignificant. CDI = Children's Depression Inventory.
[a] $F(3, 223) = 57.17$. [b] $F(3, 218) = 36.52$. [c] $F(3, 218) = 35.03$.
*** $p < .001$.

Table 3
Results of Hierarchical Multiple Regression Analyses Predicting Changes in Self-Reported Depressive Symptoms From Prior Levels of Children's Self-Perceptions

Predictor variable	*r*	*B*	*SEB*	β	R^2
Dependent variable = Grade 5 CDI[a]					
Fourth grade					
Externalizing symptoms	.03	.44*	.32	.07	
Depressive symptoms	.67***	.59***	.05	.63	
Academic self-perception	−.41***	−.96*	.48	−.11	.47***
Dependent variable = Grade 6 CDI[b]					
Fifth grade					
Externalizing symptoms	−.002	−.43	.38	−.06	
Depressive symptoms	.55***	.75***	.08	.64	
Academic self-perception	−.31***	.34	.74	.03	.38***
Dependent variable = Grade 6 CDI[c]					
Fourth grade					
Externalizing symptoms	−.001	−.61	.40	−.08	
Depressive symptoms	.60***	.62***	.06	.59	
Academic self-perception	−.31***	−.25	.59	−.03	.36***
Dependent variable = Grade 5 CDI[d]					
Fourth grade					
Externalizing symptoms	.03	−.36	.32	−.05	
Depressive symptoms	.67***	.65***	.05	.67	
Social self-perception	−.34***	−.58	.46	−.07	.48***
Dependent variable = Grade 6 CDI[e]					
Fifth grade					
Externalizing symptoms	−.002	−.38	.38	−.05	
Depressive symptoms	.55***	.75***	.08	.63	
Social self-perception	−.29***	.26	.61	.03	.38***
Dependent variable = Grade 6 CDI[f]					
Fourth grade					
Externalizing symptoms	−.001	−.54	.39	−.07	
Depressive symptoms	.60	.59***	.06	.54	
Social self-perception	−.39***	−1.40*	.57	−.15	.38***

Note. Gender and cohort served as control variables in all analyses. In addition, interactions with gender and with cohort were tested, but were nonsignificant. CDI = Children's Depression Inventory.
[a] $F(3, 225) = 66.35$. [b] $F(3, 217) = 44.45$. [c] $F(3, 221) = 41.25$. [d] $F(3, 223) = 70.10$. [e] $F(3, 218) = 44.22$. [f] $F(3, 218) = 44.51$.
* $p < .05$. *** $p < .001$.

Hypothesis 2

The second hypothesis was based on the reverse causal model. It stated that depressive symptoms would predict a change in children's negative self-perceptions over time. As in Hypothesis 1,

hierarchical multiple regression analyses were conducted separately for children's perceptions of their global self-worth, scholastic competence, and social competence. Three longitudinal tests (T1–T2, T2–T3, and T1–T3) were conducted for each indicator of children's negative self-perceptions (the outcome variable), resulting in a total of (3 × 3) nine tests of Hypothesis 2. Of the nine tests, all were statistically significant. Children's self-reported depressive symptoms predicted a change in perceptions of global self-worth, academic competence, and social competence from fourth to fifth grade, fifth to sixth grade, and fourth to sixth grade (see Tables 4 and 5). The significant negative beta weights indicated that higher levels of depressive symptoms were associated with more negative self-perceptions over time. Self-reported depressive symptoms emerged as a strong predictor of children's evaluations of their competence and worth, despite the fact that the control variable, self-perception ratings obtained from 1 or 2 years earlier, removed 19–34% of the variance (see Tables 4 and 5). Moreover, the pattern of results was not attenuated by controlling for the main effect of externalizing symptoms.

Additional analyses tested Hypothesis 2 by using mother- and teacher-reported depressive symptoms instead of the CDI, and three out of nine tests were statistically significant. Other-rated depressive symptoms in fourth grade predicted a significant change in children's perceptions of academic competence from fourth to sixth grade ($\beta = -.13$, $p < .05$). In addition, other-rated depressive symptoms predicted a significant change in children's perceptions of social competence from fifth to sixth grade ($\beta = -.11$, $p < .05$), and from fourth to sixth grade ($\beta = -.12$, $p < .05$). The negative betas suggested that mothers' and teachers' reports of more depressive symptoms predicted more negative self-perceptions over time. In summary, clear and convincing evidence emerged to support the hypothesis that self-reported depressive symptoms predict a change in children's negative self-evaluations over time. Less evidence emerged when using other-rated depressive symptoms as the predictor variable.

Table 4
Results of Hierarchical Multiple Regression Analyses Predicting Changes in Children's Global Self-Worth From Prior Levels of Self-Reported Depressive Symptoms

Predictor variable	*r*	*B*	*SEB*	β	R^2
Dependent variable = Grade 5 global self-worth[a]					
Fourth grade					
Externalizing symptoms	−.18**	−.06*	.03	−.12	
Global self-worth	.43***	.23***	.07	.24	
Depressive symptoms	−.50***	−.02***	.01	−.28	.25***
Dependent variable = Grade 6 global self-worth[b]					
Fifth grade					
Externalizing symptoms	−.14*	−.03	.03	−.05	
Global self-worth	.49***	.33***	.08	.30	
Depressive symptoms	−.50***	−.04***	.01	−.35	.33***
Dependent variable = Grade 6 global self-worth[c]					
Fourth grade					
Externalizing symptoms	−.05	.01	.04	.02	
Global self-worth	.47***	.27***	.08	.24	
Depressive symptoms	−.52***	−.03***	.01	−.36	.30***

Note. Gender and cohort served as control variables in all analyses. In addition, interactions with gender and with cohort were tested, but were nonsignificant.
[a] $F(3, 221) = 24.92$. [b] $F(3, 216) = 35.63$. [c] $F(3, 218) = 30.55$.
* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 5
Results of Hierarchical Multiple Regression Analyses Predicting Changes in Children's Self-Perceptions From Prior Levels of Self-Reported Depressive Symptoms

Predictor variable	*r*	*B*	*SEB*	β	R^2
Dependent variable = Grade 5 academic self-perception[a]					
Fourth grade					
Externalizing symptoms	−.11	−.04	.04	−.06	
Academic self-perception	.56***	.40***	.05	.46	
Depressive symptoms	−.44***	−.02***	.01	−.22	.36***
Dependent variable = Grade 6 academic self-perception[b]					
Fifth grade					
Externalizing symptoms	−.15*	−.05	.04	−.07	
Academic self-perception	.59***	.50***	.07	.46	
Depressive symptoms	−.48***	−.03***	.01	−.22	.39***
Dependent variable = Grade 6 academic self-perception[c]					
Fourth grade					
Externalizing symptoms	−.07	−.01	.04	−.01	
Academic self-perception	.45***	.32***	.06	.35	
Depressive symptoms	−.38***	−.02**	.01	−.20	.23***
Dependent variable = Grade 5 social self-perception[d]					
Fourth grade					
Externalizing symptoms	−.12	−.06	.04	−.08	
Social self-perception	.49***	.37***	.06	.38	
Depressive symptoms	−.43***	−.02***	.01	−.23	.28***
Dependent variable = Grade 6 social self-perception[e]					
Fifth grade					
Externalizing symptoms	−.14*	−.04	.04	−.05	
Social self-perception	.57***	.45***	.06	.45	
Depressive symptoms	−.46***	−.03***	.01	−.21	.35***
Dependent variable = Grade 6 social self-perception[f]					
Fourth grade					
Externalizing symptoms	−.08	−.01	.04	−.01	
Social self-perception	.54***	.40***	.06	.43	
Depressive symptoms	−.47***	−.03***	.01	−.25	.34***

Note. Gender and cohort served as control variables in all analyses. In addition, interactions with gender and with cohort were tested, but were nonsignificant.
[a] $F(3, 222) = 41.76$. [b] $F(3, 216) = 46.56$. [c] $F(3, 220) = 22.39$. [d] $F(3, 221) = 29.36$. [e] $F(3, 216) = 40.11$. [f] $F(3, 215) = 37.00$.
* $p < .05$. ** $p < .01$. *** $p < .001$.

Cognitive Distortions and Depressive Symptoms

Hypothesis 3

The third hypothesis stated that children's underestimations of their competence would predict a change in depressive symptomatology over time. A total of three longitudinal tests of Hypothesis 3 (T1–T2, T2–T3, and T1–T3) were conducted in which the

predictor variable was distortion in the academic domain. Distortion in the academic domain did not predict a change in self-reported depressive symptoms in any of the analyses (see Table 6). Three longitudinal tests (T1–T2, T2–T3, and T1–T3) were also conducted in which the predictor variable was distortion in the social domain, and only one test was statistically significant (see Table 6). Distortion in the social domain in fourth grade predicted a change in self-reported depressive symptoms from fourth to sixth grade. The negative beta indicated that greater underestimation of social competence was associated with higher levels of depressive symptoms 2 years later. When Hypothesis 3 was tested using others' ratings of children's depressive symptoms rather than the CDI, none of the six tests were statistically significant. To summarize, the findings did not support the notion that negative distortions predict a change in depressive symptomatology over time.

Table 6
Results of Hierarchical Multiple Regression Analyses Predicting Changes in Self-Reported Depressive Symptoms From Prior Levels of Cognitive Distortions

Predictor variable	*r*	*B*	*SEB*	β	R^2
Dependent variable = Grade 5 CDI[a]					
Fourth grade					
Externalizing symptoms	.03	.01	.35	.0001	
Depressive symptoms	.67***	.61***	.05	.64	
Academic distortion	−.37***	−.48	.29	−.09	.48***
Dependent variable = Grade 6 CDI[b]					
Fifth grade					
Externalizing symptoms	−.002	−.43	.40	−.06	
Depressive symptoms	.55***	.79***	.08	.67	
Academic distortion	−.25***	.44	.37	.08	.39***
Dependent variable = Grade 6 CDI[c]					
Fourth grade					
Externalizing symptoms	−.001	−.19	.43	−.02	
Depressive symptoms	.60***	.60***	.07	.58	
Academic distortion	−.31***	−.33	.36	−.06	.36***
Dependent variable = Grade 5 CDI[d]					
Fourth grade					
Externalizing symptoms	.03	−.33	.33	−.05	
Depressive symptoms	.67***	.67***	.05	.69	
Social distortion	−.29***	−.32	.48	−.04	.48***
Dependent variable = Grade 6 CDI[e]					
Fifth grade					
Externalizing symptoms	−.002	−.38	.40	−.05	
Depressive symptoms	.55***	.77***	.08	.65	
Social distortion	−.27***	.45	.68	.04	.39***
Dependent variable = Grade 6 CDI[f]					
Fourth grade					
Externalizing symptoms	−.001	−.41	.40	−.06	
Depressive symptoms	.60***	.60***	.06	.56	
Social distortion	−.33***	−1.23*	.59	−.12	.37***

Note. Gender and cohort served as control variables in all analyses. In addition, interactions with gender and with cohort were tested, but were nonsignificant. CDI = Children's Depression Inventory.
[a] $F(3, 211) = 63.39$. [b] $F(3, 206) = 45.18$. [c] $F(3, 207) = 38.80$. [d] $F(3, 223) = 69.35$. [e] $F(3, 197) = 41.44$. [f] $F(3, 218) = 43.63$.
* $p < .05$. *** $p < .001$.

Hypothesis 4

The final hypothesis was based on the reverse causal model. It stated that more symptoms of depression would predict a change in negative cognitive distortions over time. Three longitudinal tests (T1–T2, T2–T3, and T1–T3) were conducted using distortion in the academic domain as the outcome variable. As can be seen in Table 7, between 13–23% of the variance in children's distortions in the academic domain were accounted for by distortion scores from 1 or 2 years earlier, reflecting high rates of stability over time. Nonetheless, self-reported depressive symptoms predicted a change in negative distortions in the academic domain in all three of the longitudinal tests (see Table 7). The significant negative betas indicated that children with higher levels of depressive symptoms tended to underestimate their academic competence from fourth to fifth grade, fifth to sixth grade, and fourth to sixth grade.

We conducted similar analyses to test whether self-reported depressive symptomatology would predict a change in negative distortions in the social domain. As can be seen in Table 7, between 16–23% of the variance in children's distortions in the social domain were accounted for by estimates of their distortions 1 or 2 years earlier, reflecting high rates of stability over time. Despite the high rates of stability in children's cognitive distortions, self-reported depressive symptoms predicted a change in negative distortions in the social domain in all three of the longitudinal tests (see Table 7). The significant negative betas indicated that children with higher levels of depressive symptoms tended to underestimate their social acceptance. Controls for the main effect of externalizing symptoms when testing the association between depression and cognitive distortions did not change the findings.

In contrast, only one out of six tests was statistically significant when using mother- and teacher-reported depressive symptoms rather than the CDI to test Hypothesis 4. Other-rated depressive symptoms predicted a change in negative distortions in the social domain from fifth to sixth grade ($\beta = -.15$, $p < .01$). The significant negative beta indicated that children with higher levels of depressive symptoms tended to underestimate their social acceptance. To summarize, very strong evidence supported the notion that self-reported depressive symptomatology predicts a change in negative cognitive distortions over time, as evidenced in both the academic and social domains. Almost no support for Hypothesis 4 was found when using other-rated depressive symptoms as the predictor variable.

Discussion

This study tested certain tenants of cognitive theory of depression in a nonclinical sample of children who were followed from fourth through sixth grade. There were four major results derived from the investigation. Self-reported depressive symptoms predicted a change in children's negative self-perceptions, and they also predicted children's greater underestimation of their competence. Thus, the findings suggested that depressive symptomatol-

Table 7
Results of Hierarchical Multiple Regression Analyses Predicting Changes in Cognitive Distortions From Prior Levels of Self-Reported Depressive Symptoms

Predictor variable	*r*	*B*	*SEB*	β	R^2
Dependent variable = Grade 5 academic distortion[a]					
Fourth grade					
Externalizing symptoms	−.01	.01	.08	.01	
Academic distortion	.47***	.38***	.07	.38	
Depressive symptoms	−.38***	−.04**	.01	−.22	.26***
Dependent variable = Grade 6 academic distortion[b]					
Fifth grade					
Externalizing symptoms	.06	.12	.08	.09	
Academic distortion	.48***	.37***	.07	.37	
Depressive symptoms	−.39***	−.05**	.02	−.24	.28***
Dependent variable = Grade 6 academic distortion[c]					
Fourth grade					
Externalizing symptoms	.13	.17	.09	.12	
Academic distortion	.36***	.27***	.07	.27	
Depressive symptoms	−.29***	−.04**	.01	−.21	.17***
Dependent variable = Grade 5 social distortion[d]					
Fourth grade					
Externalizing symptoms	.004	−.01	.05	−.02	
Social distortion	.40***	.32***	.07	.32	
Depressive symptoms	−.36***	−.02***	.01	−.23	.21***
Dependent variable = Grade 6 social distortion[e]					
Fifth grade					
Externalizing symptoms	−.03	−.01	.05	−.01	
Social distortion	.40***	.28**	.09	.26	
Depressive symptoms	−.45***	−.03***	.01	−.30	.23***
Dependent variable = Grade 6 social distortion[f]					
Fourth grade					
Externalizing symptoms	.11	.05	.05	.07	
Social distortion	.48***	.40***	.08	.39	
Depressive symptoms	−.38***	−.02**	.01	−.24	.28***

Note. Gender and cohort served as control variables in all analyses. In addition, interactions with gender and with cohort were tested, but were nonsignificant.
[a] $F(3, 203) = 23.71$. [b] $F(3, 183) = 24.42$. [c] $F(3, 182) = 12.81$. [d] $F(3, 197) = 17.27$. [e] $F(3, 131) = 13.08$. [f] $F(3, 146) = 19.09$.
** $p < .01$. *** $p < .001$.

ogy may lead to a negative view of the self that is not entirely based in reality. In contrast, and perhaps striking in light of cognitive theory, neither children's negative self-perceptions nor their underestimations of their competence predicted an increase in depressive symptoms over time. The study hypotheses were also tested using a composite measure of mothers' and teachers' reports of depressive symptoms, and the analyses produced much weaker results.

Negative Self-Perceptions

Consistent with early research, children who experienced higher levels of depressive symptoms were more likely to view themselves negatively in the areas of global self-worth, scholastic competence, and social acceptance. In addition, despite high rates of stability in the self-perception variables over the 3 years, self-reported depressive symptoms predicted changes in children's evaluations of themselves over 1–2 years. These longitudinal findings extend previous work with clinical samples of depressed children (e.g., Tems et al., 1993) by controlling for earlier levels of self-esteem and examining whether depression is associated with a change in self-esteem over time. Indeed, the findings were consistent with the proposition that even mild levels of depressive symptoms may impede the development of a healthy self-concept among school-age children.

Interestingly, there was much weaker evidence for the hypothesis that children's negative self-evaluations would be associated with a change in self-reported depressive symptomatology over time. This was surprising, and was inconsistent with previous reports in the childhood depression literature. For example, in a slightly older group, Robinson et al. (1995) found that feelings of less self-worth in the spring of sixth grade were associated with higher levels of depressive symptoms in the seventh grade. Additional studies (e.g., DuBois et al., 1995; Hammen, 1988) tended to combine both preadolescent and adolescent children in their sample, whereas our sample focused solely on preadolescent youth. Perhaps negative self-perceptions are more reliably associated with a change in depression symptoms among older children.

Cognitive Distortions

We assessed both subjective and independent indicators of children's competence to estimate the accuracy of children's judgments about the self. This approach has rarely been used in the childhood depression literature (for an exception, see Cole et al., 1999), and it was uncertain whether the previous findings would replicate in a new sample with different measures of children's competence. Grades children received in school and teacher-reported peer problems served as independent indicators of children's academic and social performance. Despite high rates of stability in the measures of cognitive distortions, higher levels of self-reported depressive symptomatology predicted a tendency for children to underestimate their academic and social functioning in six out of six longitudinal tests. It is remarkable that this particular pattern of findings, which has been reported by Cole and his colleagues (Cole et al., 1998, 1999; Hoffman et al., 2000), replicated here in a different sample with different indicators of children's academic and social competence. In contrast, neither negative cognitive distortions in the academic nor in the social domains were associated with a subsequent change in self-reported depressive symptoms in five out of six longitudinal tests. This is similar to some findings reported by Cole and colleagues (Cole et al., 1998, 1999), but conflicts with the most recent set of results from the same sample of children (Hoffman et al., 2000).

In summary, a pattern emerged in which self-reported depressive symptoms predicted an increase in children's negative self-perceptions and in their tendency to underestimate their competence levels. The similarity between these two findings was not surprising given that both the self-perception and cognitive distortion variables appeared to reflect a view of the self that was not entirely based on the more objective indicators of children's performance. Teachers' evaluations accounted for a significant, but

relatively small portion of the variance in children's self-perceptions of competence. That is, children's self-perceptions appeared to be largely independent of teachers' evaluations of their performance.

In addition to replicating in a different sample of children, the current findings strengthen and extend previous work in two important ways. First, assessment of distortion in the academic domain was unique in this study. Children's academic self-perceptions were compared with their report card grades, as opposed to relying on confidential questionnaire data collected from teachers specifically for the purpose of a research study. This allowed for a more direct test of the extent to which children may have ignored or distorted feedback they are known to have received when constructing their academic self-perceptions. A second advance over previous research was the explicit examination of externalizing behavior problems to determine whether these problems could account for any of the observed relationships between depressive symptoms, self-evaluations, and cognitive distortions. The findings were not attenuated when controlling for the main effect of externalizing symptoms, whether those symptoms were reported by mothers and teachers or by the children themselves. Although the specific mechanisms are unknown, it appears that mild depressive symptoms may affect how children attend to, process, and use information in their social environment to evaluate their own functioning.

Limitations

Several limitations of the current study warrant discussion. First, some evidence suggests that self-report measures of depression may assess negative affectivity rather than symptoms that are specific to depression (for review, see Hammen & Compas, 1994). Similar problems relate to parent- and teacher-report measures of children's depressive symptoms (Achenbach, 1991a, 1991b). Hence, the extent to which the present findings are specific to depressive symptomatology or apply more generally to internalizing difficulties is uncertain. We note, however, that children's self-reported depressive symptoms produced more reliable findings than mothers' and teachers' ratings of children's symptoms of depression and anxiety. In addition, none of the results reported here changed when externalizing symptoms, whether self- or other-reported, were controlled in the analyses. This pattern of findings should also help to allay concerns that the results based on self-reported depressive symptoms might simply reflect the effects of a negative response bias.

Our assessment of children's cognitive distortions about the self presents other limitations. Rather than relying on questionnaires that ask children about hypothetical situations (e.g., see Haley et al., 1985; Leitenberg et al., 1986), both children's and teachers' ratings of competence were obtained to estimate the accuracy of children's judgments about the self. Although not subject to children's own reporting biases, teacher evaluations are not perfect indicators of children's academic and social performance. Discrepancies between self- and teacher ratings do not necessarily reflect distortions and should be viewed only as estimates of children's cognitive distortions about the self.

In addition to these assessment limitations, there are several alternative explanations for the study's results that require discussion. First, although the findings in this nonclinical sample were inconsistent with one of the most basic assumptions of cognitive theory—that cognition has causal priority over emotions—more complex cognitive models were not tested. In particular, cognitive-diathesis-stress models suggest cognitive distortions are a risk factor for depression if activated by stressful life events (e.g., Abramson, Seligman, & Teasdale, 1978). More evidence for cognitive theories of depression may have emerged in the current study if stressful events in the academic and social domains were examined. Second, in this study depression scores were more stable than were children's self-perceptions and cognitive distortions about the self, which may have contributed to the failure to predict changes in depression over 1 or 2 years. Finally, this was a homogenous sample, composed primarily of children from a White, upper-middle-class population. However, it is noteworthy that this study replicated many of the findings reported by Cole and his colleagues, which were based on a more ethnically and economically diverse sample (Cole et al., 1998, 1999). Of course, the generalizability of these findings to children with clinical levels of depressive symptoms is an important question for future research. Despite these limitations, the data described here indicate that even mild symptoms of depression may precipitate a process by which preadolescents come to underestimate their competence and construct a negative view of the self.

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Received May 15, 2000
Revision received June 5, 2001
Accepted June 8, 2001 ■