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## Life Stress and the Accuracy of Cognitive Appraisals in Depressed Youth

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### Abstract

Despite the wealth of research examining the role of cognitive appraisals in depression, little is known about the accuracy with which depressed youth appraise naturally occurring stressful events. This study investigated exposure to life stress and the accuracy of cognitive appraisals of life events in youth (45 boys, 44 girls; *M* age = 12.44 years) with clinical diagnoses of depression (*n* = 24), subsyndromal symptoms of depression (*n* = 29), and without symptoms of psychopathology (*n* = 36). Youth and their female caregivers completed semi-structured interviews to assess psychopathology and stressful life events. Scores were calculated reflecting youths' estimations of the stressfulness of events and their contribution to events relative to objective indexes. As predicted, depressed youth experienced more independent and self-generated interpersonal stress than did nonsymptomatic youth. Consistent with a cognitive bias, clinically depressed youth overestimated the stressfulness of events and overestimated their contribution to events relative to nonsymptomatic youth. Overall, youth with subsyndromal symptoms demonstrated similar, although in some cases less severe, impairment than those with clinical depression. Results contribute to cognitive-interpersonal models of depression by illustrating the need to consider both realistic interpersonal difficulties and biased appraisals of experiences.

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Cognitive vulnerability-stress theories of depression propose that negative cognitive appraisals and environmental adversity jointly contribute to risk for depression (Cicchetti & Toth, 1998; Gotlib & Hammen, 1992; Hankin & Abramson, 2001; Young, Beck, & Weinberger, 1993). The assumption of these theories is that negative cognitive appraisals reflect biased perceptions of reality. Yet, it also has been argued that depressed individuals view themselves and their worlds in a realistic way, whereas nondepressed individuals demonstrate overly optimistic views (Abramson & Alloy, 1981; Alloy & Abramson, 1988; Taylor & Brown, 1994). Relatively little research directly examines the accuracy of negative cognitive appraisals in depressed youth, in part because empirical investigations rarely assess appraisals within the context of individuals' actual life experiences. The goal of the present study was twofold. First, we aimed to address limitations of prior empirical work by examining depressed youths' cognitive appraisals of naturally occurring stressful life events. Second, we aimed to contribute to cognitive vulnerability-stress theories of depression by clarifying whether depressed youths' appraisals of stressors reflect inaccurate or realistic perceptions of their experiences.

## Cognitive Vulnerability Models of Depression

Central to cognitive theories of depression is the idea that negative belief systems and maladaptive information processing heighten vulnerability to depression when individuals are faced with stressful life circumstances. Cognitive vulnerability is variously conceptualized as negative cognitive schemas about the self, world, and future (Beck, 1970; 1987), maladaptive inferences about the causes, consequences, and self-implications of negative events (Abramson, Metalsky, & Alloy, 1989), and maladaptive appraisals about the meaning of events (i.e., a tendency to appraise challenging events as threatening, harmful, or stressful rather than viewing them as an opportunity for learning, mastery, and growth; Lazarus & Folkman, 1984).

Consistent with these theories, research supports a link between depression and a variety of maladaptive cognitive processes in youth, including a negative attributional style, low perceived control and coping efficacy, and a diminished sense of competence (Abela, 2001; Cole, Jacquez, & Maschman, 2001; Rudolph, Kurlakowsky, & Conley, 2001; Sandler, Tein, Mehta, Wolchik, & Ayers, 2000; Weisz, Southam-Gerow, & McCarty, 2001; for reviews, see Garber & Hilsman, 1992; Hankin & Abramson, 2001). Less is known about how depressed youth appraise naturally occurring stressors (for an exception in college students, see Hankin, Fraley, & Abela, 2005). Some evidence does suggest, however, that a tendency to appraise specific events (e.g., parental cancer: Compas, Worsham, Ey, & Howell, 1996; parental divorce: Lengua, Sandler, West, Wolchik, & Curran, 1999; Sheets, Sandler, & West, 1996) as threatening or stressful is associated with emotional distress in youth. Moreover, depressed adults appraise daily stressful events as more threatening than do nondepressed adults (Folkman & Lazarus, 1986).

## Accuracy of Cognitive Appraisals in Depressed Youth

Cognitive theories of depression view cognitive vulnerability as a consequence of early adverse experiences that lead to persistent, pervasive, negatively biased ways of interpreting the social world (Alloy et al., 2001; Garber & Flynn, 2001; Young et al., 1993). However, research indicates that depressed youth experience significant competence deficits and are exposed to heightened levels of stress (for a review, see Rudolph, Hammen, & Daley, 2006). Thus, it is possible that the negative cognitions of depressed youth reflect realistic appraisals of personal incompetence and environmental adversity rather than biased evaluations of self and the world.

Although relatively few investigations directly examine the accuracy of cognitive appraisals in depressed youth, a small number of studies provide insight into this issue. In general, these studies suggest that youth depression is associated with negatively biased perceptions (i.e., underestimations) of competence relative to objective ratings (e.g., Bregden, Vitaro, Turgeon, & Poulin, 2002; Cole, Martin, Peeke, Seroczynski, & Fier, 1999; Kendall, Stark, & Adam, 1990; Kistner, Balthazor, Risi, & David, 2001; McGrath & Repetti, 2002; Pomerantz & Rudolph, 2003; Rudolph, & Clark, 2001). Overall, therefore, research is consistent with a cognitive distortion model wherein depressed youth possess more negative self-appraisals than is warranted by their actual competence. However, some research also indicates that depressed youth are sensitive to actual differences in their competence, suggesting that their negative appraisals might, in part, reflect realistic difficulties (Rudolph, & Clark, 2001).

Prior studies examining the accuracy of cognitive appraisals in depressed youth either rely on assessments of appraisals in a global context (e.g., estimations of peer popularity or academic competence) or in the context of very specific real-life stressors (e.g., parental divorce, Lengua et al., 1999); peer victimization, De Los Reyes & Prinstein, 2004). In contrast, the present study investigated whether depressed youth show accurate or inaccurate

appraisals of a range of naturally occurring stressful life events. In particular, we examined the accuracy with which youth estimated the stressfulness of events and their personal contribution to the occurrence of events.

### **Domain Specificity of Cognitive Appraisals and Stress**

Although many cognitive vulnerability-stress theories of depression hypothesize that risk for depression occurs across different domains of appraisals and stress, several models of depression focus on the salience of interpersonal difficulties (Gotlib & Hammen, 1992; Joiner, Coyne, & Blalock, 1999; Klerman, Weissman, Rounsaville, & Chevron, 1996). For example, Coyne's (1976) interpersonal model of depression describes a self-perpetuating cycle of interpersonal dysfunction and depression. Specifically, depressed individuals seek reassurance of their worth from their relationship partners but then deny the encouragement that they receive, thereby eliciting negative affect and rejection by their partners. This interpersonal disruption then perpetuates and exacerbates depression. Similarly, stress-generation theory (Hammen, 2006) holds that depressed individuals act in ways that generate stress and conflict in their relationships, which then heightens risk for subsequent depression. Consistent with these interpersonal models, youth depression is associated with a range of social-behavioral deficits and relationship disturbances (for a review, see Rudolph, Flynn, & Abaied, in press). Moreover, some evidence suggests that youth depression is linked more strongly to stress in interpersonal relationships than to stress in noninterpersonal domains, such as academics (e.g., Patterson & Stoolmiller, 1991; Renouf & Harter, 1990; Rudolph et al., 2000).

If depressed youth experience more stress in the interpersonal than the noninterpersonal domain, they might also demonstrate more negative appraisals of interpersonal than noninterpersonal events. For example, experiencing heightened interpersonal stress might sensitize youth, resulting in an overestimation of the stressfulness of interpersonal events. Moreover, experiencing heightened interpersonal stress might cause youth to overestimate their contribution to interpersonal events when they do occur—that is, youth might assume that they contribute to these events because of the frequency with which they experience them.

### **Overview of the Present Study**

The goal of this study was to examine depressed youths' experience of stressful life events and their subjective appraisals of these events, as reported in a detailed life stress interview. Consistent with prior theory and research, we distinguished between stress exposure (i.e., independent life events, or events that are beyond one's control) and stress generation (i.e., dependent life events, or events to which youth contribute) (Brown & Harris, 1978; Daley et al., 1997; Hammen, 1991; Rudolph & Hammen, 1999; Rudolph et al., 2000). We assessed the accuracy of youths' appraisals of events by comparing their subjective appraisals with objective ratings of event stressfulness (i.e., degree of negative impact or stress associated with the event) and event dependence (i.e., the extent to which the youth contributed to the occurrence of the event). We anticipated that depressed youth would experience more independent and dependent stress, particularly within an interpersonal context, than would nonsymptomatic youth. We also expected that depressed youth would demonstrate negatively biased appraisals of interpersonal events relative to nonsymptomatic youth, as reflected in overestimations of the stressfulness of events and their contribution to the occurrence of events.

We also were interested in whether the patterns of life stress and cognitive appraisals characteristic of clinically depressed youth would apply to youth with subsyndromal symptoms of depression. There has been significant debate about whether depression is best

viewed as a categorical or continuous disorder (Hankin, Fraley, Lahey, & Waldman, 2005). Research suggests that youth with subsyndromal symptoms of depression show similar, albeit less severe, patterns of impairment as those with clinical diagnoses (Gotlib, Lewinsohn, & Seeley, 1995; Lewinsohn, Solomon, Seeley, & Zeiss, 2000). Thus, we expected that youth with subsyndromal depressive symptoms also would experience more interpersonal stress and would demonstrate more biased appraisals of interpersonal stressors than would nonsymptomatic youth, although perhaps not at the same level as youth with clinical diagnoses.

## Method

### Participants

Participants were drawn from a sample of 167 youth (81 boys, 86 girls;  $M$  age = 12.41 years,  $SD = 1.19$ ) and their female caregivers who participated in the University of Illinois Youth Development Project, a study of the development of depression during adolescence. The original sample included youth from a variety of ethnic backgrounds: White (77.8%), African American (12.6%), biracial (4.2%), Asian American (2.4%), Native American (1.8%), Latino/a (.6%), and other (.6%). Families were from diverse economic backgrounds representing a range of income levels: \$0–14,999 (6.8%), \$15–29,999 (9.9%), \$30–44,999 (22.8%), \$45–59,999 (25.9%), \$60,000–74,999 (15.4%), \$75,000–89,999 (6.2%), and over \$90,000 (13%). Families resided in small urban and rural Midwestern towns. Of the 167 female caregivers in this study, 88.6% were biological mothers, 4.2% adoptive mothers, 2.4% grandmothers, 2.4% aunts, 1.8% stepmothers, and .6% other.

Participants were recruited based on school-wide screenings for depressive symptoms using the Children's Depression Inventory (CDI; Kovacs, 1981), a 27-item measure of depressive symptoms for youth ages 7–17. Youth endorsed one of three statements that best described their thoughts and feelings in the past two weeks. The CDI has adequate reliability (Kovacs, 1992; Smucker, Craighead, Craighead, & Green, 1986) and validity (Kovacs, 1992).

Eighty percent of eligible youth participated in the school-wide screenings. Youth with a range of CDI scores were recruited for the study, oversampling those with scores above 18, the recommended cutoff for severe depressive symptoms (Kovacs, 1992). Participants and nonparticipants in this study did not differ in sex,  $\chi^2(1) = .39$ ,  $ns$ , ethnicity/race (White vs. minority),  $\chi^2(1) = .02$ ,  $ns$ , or CDI scores at the time of the screening,  $t(251) = 1.23$ ,  $ns$ . Participants ( $M = 12.41$ ) were slightly, but not meaningfully, younger than nonparticipants ( $M = 12.65$ ),  $t(275) = 2.28$ ,  $p < .05$ .

A subgroup of 89 youth (45 boys, 44 girls;  $M$  age = 12.44,  $SD = 1.21$ , age range = 9.6–14.8 years) was selected for these analyses from the larger sample based on their psychiatric status as determined by the Schedule for Affective Disorders and Schizophrenia for School-Age Children- Epidemiologic Version 5 (Orvaschel, 1995). Specifically, youth were included if they (1) met the Diagnostic and Statistical Manual (DSM)-IV criteria (American Psychiatric Association, 1994) for a diagnosis of depression ( $n = 24$ ), (2) experienced subsyndromal levels of depression ( $n = 29$ ), or (3) had no symptoms of any Axis I psychiatric disorder ( $n = 36$ ). The 89 youth did not differ from the remaining 78 youth in age,  $t(165) = .25$ ,  $ns$ , sex,  $\chi^2(1) = .32$ ,  $ns$ , or ethnicity/race,  $\chi^2(1) = .01$ ,  $ns$ . Moreover, youth in the three diagnostic groups did not differ significantly from each other with respect to age,  $F(2, 86) = 1.54$ ,  $ns$  ( $M$  nonsymptomatic = 12.70;  $M$  subsyndromal = 12.29;  $M$  clinical depression = 12.21); sex,  $\chi^2(2) = 4.39$ ,  $ns$  (nonsymptomatic: 17 male, 19 female; subsyndromal: 19 male, 10 female; clinical depression: 9 male, 15 female); or ethnicity/race,  $\chi^2(2) = 3.96$ ,  $ns$  (nonsymptomatic: 31 white, 5 minority; subsyndromal: 19 white, 10 minority; clinical depression: 19 white, 5 minority).

## Procedures

All of the procedures for this study were approved by the University of Illinois Institutional Review Board. Primary female caregivers were telephoned to determine their interest in participating in the study. Families participated in a three- to four-hour assessment that included diagnostic interviews, a life stress interview, and a series of questionnaires. Prior to the assessment, interviewers reviewed an informed consent form with families; caregivers provided written consent and youth provided written assent. Diagnostic interviews were conducted by a faculty member in clinical psychology, a post-doctoral student in clinical psychology, several psychology graduate students, or a well-trained post BA-level research assistant. All diagnoses were made through consultation with a faculty member or post-doctoral student in clinical psychology. As reimbursement for their participation, families received a cash stipend, and youth received a gift certificate.

## Measures

**Psychopathology**—The Schedule for Affective Disorders and Schizophrenia for School-Age Children-Epidemiologic Version 5 (Orvaschel, 1995) was used to assess the psychiatric status of the youth. This semi-structured diagnostic interview was administered separately to youth and their female caregivers. Diagnostic status for the present study was based on reports of symptoms occurring during the year preceding the interview, including the present. A best-estimate approach (Klein, Ouimette, Kelly, Ferro, & Riso, 1994) was used to combine information from the parent and youth reports. Based on DSM-IV criteria (American Psychiatric Association, 1994), a determination was made as to whether reported symptoms reached criteria for a diagnosis (Clinical Depression group) or reflected subsyndromal symptoms (Subsyndromal Depression group). The subsyndromal group included youth who experienced some symptoms of depression but did not meet the severity, frequency, number of symptoms, duration, or impairment criteria for a diagnosis. Depressive diagnoses included Major Depressive Disorder and Dysthymic Disorder (additionally, one child was diagnosed with Recurrent Brief Depressive Disorder). In addition to symptoms of these diagnoses, a few of the youth with subsyndromal depression ( $n = 9$ ) experienced symptoms of Adjustment Disorder with Depressed Mood, Depressive Disorder NOS, and Bereavement. Of youth in the clinical depression group, 79.2% had diagnoses in the past year and in the present (past month); 8.3% had diagnoses in the past year and symptoms in the present; and 12.5% had diagnoses in the past year and no symptoms in the present. Of youth in the subsyndromal depression group, 65.5% had symptoms in the past year and in the present, and 34.5% had symptoms in the past year only.

Interrater reliability was evaluated based on independent coding of 25% of the audiotaped interviews by a faculty member, post-doctoral student, and doctoral students who received intensive training in the assessment and diagnosis of psychopathology in youth. Strong reliability was found for depressive disorders (Cohen's  $\kappa = .96$  and  $.94$  for past and current, respectively).

**Life stress**—The Youth Life Stress Interview (Rudolph & Flynn, 2007), an adaptation of the Child Episodic Life Stress Interview (Rudolph & Hammen, 1999; Rudolph et al., 2000), was used to assess youths' exposure to episodic life stress during the year prior to the interview. This interview assesses life stress using the contextual threat method (Brown & Harris, 1978). Specific, detailed probes are used to elicit objective information separately from caregivers and youth about youths' experience of episodic events in several life domains (e.g., school, same- and opposite-sex peer relationships, parent-child relationships, health, finances). First, the interviewer provides a general probe regarding the occurrence of stressful events in the past year. Following the general probe, questions are asked about the

occurrence of specific events within a variety of domains (e.g., an argument with a parent, failure of a test, a friend moving away, a serious injury). Based on detailed follow-up questions concerning the timing, duration, and context of the stress, interviewers prepare a narrative summary of each specific stressful event. If parent and child report differ, a best-estimate approach is used to combine information from both reports. This information is presented to an independent team of coders with no knowledge of the youth's diagnosis and subjective reaction to the events.

Consensual ratings are assigned by integrating information across caregiver and youth reports. If only one informant provides information about an event, this information is used for the ratings. For each life event, the team assigns two ratings on a 5-point scale: (a) the *objective stress* or negative impact that would be associated with the event for a typical youth in the same circumstances (events that were rated "no negative stress/impact" were excluded from analyses), and (b) the *dependence* of each event, or the extent to which the youth contributed to the event's occurrence. Following previous protocol (Daley et al., 1997; Davila, Hammen, Burge, Paley, & Daley, 1995; Rudolph et al., 2000), events with dependence ratings of 3 or higher were categorized as dependent to reflect the fact that the youth was at least an equal partner in determining the occurrence of the event. The team also categorizes each event according to its content: interpersonal (events that involve a significant interaction between the youth and another person, or events that directly affect the relationship between the youth and another person) and noninterpersonal. Four composite scores (independent interpersonal, independent noninterpersonal, dependent interpersonal, dependent noninterpersonal) were calculated by summing the impact ratings across relevant events. For example, the death of a relative would be coded as an independent interpersonal stressor, getting sick would be coded as an independent noninterpersonal stressor, an argument with a friend would be coded as a dependent interpersonal stressor (assuming contextual information suggested that the youth contributed to the argument), and failing a test because the child did not study would be coded as a dependent noninterpersonal stressor.

For reliability purposes, two independent teams of raters coded a subset of 160 life events reported by participants in this study. High reliability was found for ratings of episodic stress impact (intraclass correlation coefficient = .90), dependence (intraclass correlation coefficient = .96), and event content (Cohen's  $\kappa$  = .92).

**Cognitive appraisals**—Cognitive appraisals were assessed in the context of the episodic life events reported by the youth. Immediately following youths' report of each event, they provided ratings on a five-point scale (1 = *Not at All* to 5 = *Very Much*) of event stressfulness ("How stressful or how much of a problem was [event]?") and of their contribution to the event's occurrence ("How much do you think that [event] was caused by something that you did?"). To examine youths' stress estimations, standardized residual scores for each event were computed by regressing youths' appraisals of stressfulness onto the team's objective stress rating. Higher scores on this variable represent an overestimation of stress. Likewise, to examine youths' dependence estimations, standardized residual scores for each event were computed by regressing youths' appraisals of their contribution to the event's occurrence onto the team's objective dependence rating. Higher scores on this variable represent an overestimation of dependence. This approach (i.e., calculation of standardized residuals) is typical in studies designed to compare objective and subjective ratings (e.g., Cole, Martin, Peeke, Serocynski, & Hoffman, 1998; Connell & Iardi, 1987; David & Kistner, 2000; De Los Reyes & Prinstein, 2004; Pomerantz & Rudolph, 2003). Average stress-estimation and dependence-estimation scores were calculated separately for interpersonal and noninterpersonal events by taking the mean of the residualized scores across the relevant events. Scores could not be calculated for mother-reported events or in

cases where the sample size for calculating the standardized residual scores was less than three.

## Results

### Overview of Analyses

Planned comparisons were conducted on each pair of the three diagnostic groups (Nonsymptomatic, Subsyndromal Depression, Clinical Depression) to examine our central hypotheses concerning differences in youths' experience and appraisals of stress.

### Diagnostic Group Differences in Episodic Stress

Table 1 presents group means, standard deviations, effect sizes, and results of planned comparisons for stress exposure (i.e., independent stress) and generation (i.e., dependent stress). Planned comparisons revealed that clinically depressed youth and youth with subsyndromal depression experienced significantly more independent and dependent interpersonal stress than did youth in the nonsymptomatic group. Effect sizes for these comparisons were medium to large (Cohen, 1988). Although the difference did not reach significance, a small-to-medium effect size suggested that clinically depressed youth experienced more independent interpersonal stress than did youth with subsyndromal depression. Youth with subsyndromal depression experienced more dependent noninterpersonal stress than did youth in both the nonsymptomatic and the clinically depressed groups. No significant group differences were found for independent noninterpersonal stress, and effect sizes were close to 0.

### Diagnostic Group Differences in Cognitive Appraisals

Table 2 presents group means, standard deviations, effect sizes, and results of planned comparisons for youths' cognitive appraisals of stressors. Planned comparisons revealed that clinically depressed youth were more likely than youth in the nonsymptomatic group to overestimate the stressfulness of both interpersonal and noninterpersonal events, as reflected in medium to large effect sizes. Youth with subsyndromal depression were more likely than those in the nonsymptomatic group to overestimate the stressfulness of noninterpersonal events. Clinically depressed youth also were more likely than youth in the nonsymptomatic group to overestimate their contribution to interpersonal events. No group differences were found for dependence-estimations with regard to noninterpersonal events. Clinically depressed youth and youth with subsyndromal depression did not significantly differ in their cognitive appraisals, although effect sizes for the difference in stress-estimations and dependence-estimations for interpersonal events were close to medium (.45 and .47).

## Discussion

The goal of the present research was to examine depressed youths' experience and appraisals of life stress, with a focus on understanding the accuracy with which these youth appraise naturally occurring stressful life events. Consistent with cognitive vulnerability-stress models, depressed youth experienced higher levels of stress, particularly within an interpersonal context, and demonstrated more biased appraisals of these events than did nondepressed youth. These findings suggest that depression occurs in the context of both realistic environmental adversity as well as negatively biased perceptions of the environment.

### Stress Exposure and Generation

Consistent with predictions, depressed youth experienced higher levels of independent and dependent interpersonal stress than did nondepressed youth. These differences in stress

exposure and stress generation were quite large, for youth with clinical diagnoses as well as for those with subsyndromal levels of symptoms. Depressed and nondepressed youth did not differ in their experience of independent noninterpersonal stress, but youth with subsyndromal symptoms generated more noninterpersonal stress than did youth without symptoms and youth with clinical depression.

Findings of heightened interpersonal stress exposure and generation in depressed youth are consistent with interpersonal models of depression that focus on the interplay between youth and their social environments, wherein depressed individuals both create and react to disruptions in their relationships (Coyne, 1976; Hammen, 2006; Rudolph et al., 2000). In contrast, the pattern of heightened noninterpersonal stress generation in subsyndromal youth relative to depressed youth was unexpected. We speculated that perhaps this pattern resulted from differences in symptom expression between the two depressed groups. Thus, we compared these two groups on several clinical characteristics (i.e., duration of symptoms, level of externalizing psychopathology, and level of total psychopathology other than depression) that we thought might account for the observed effect for dependent noninterpersonal stress. These analyses revealed that the three groups did not significantly differ on any of these characteristics. Additional research is therefore needed to replicate this finding and, if replicated, to determine possible factors that might account for it (e.g., other unmeasured demographic or clinical characteristics that distinguish between youth with subsyndromal levels of symptoms versus clinical depression).

### **Cognitive Appraisals of Stress**

Despite a wealth of research that documents a link between depression and maladaptive cognitions, far less is known about the extent to which negative appraisals of self and the world reflect realistic versus distorted perceptions of reality. On the one hand, stable personality characteristics (e.g., negative emotionality, neuroticism; Hankin et al., 2005; Lengua et al., 1999) or negative mood states (e.g., Nolen-Hoeksema, Girgus, & Seligman, 1992) might cause depressed youth to overestimate the stressfulness of events and to overattribute negative events to their own lack of competence or effort. On the other hand, consistent with the idea of “depressive realism” (Alloy & Abramson, 1988), depressed youth actually might experience events that are more stressful and might play a larger role in creating stressful events than their nondepressed peers.

The present study disentangled these two possibilities by comparing youths’ cognitive appraisals of naturally occurring stressors to objective ratings of stressfulness and dependence. Using this approach, we were able to establish directly that the stress appraisals characteristic of depressed youth are, in fact, negatively biased. Specifically, in comparison to nondepressed youth, clinically depressed youth overestimated the stressfulness of events and overestimated their contribution to the occurrence of (interpersonal) events relative to objective indexes. Youth with subsyndromal depression also overestimated the stressfulness of noninterpersonal events relative to nondepressed youth.

These findings are consistent with prior research demonstrating that depressed youth are more likely than nondepressed youth to report lower perceptions of control and coping efficacy (which might result, in part, from a view of stressors as particularly threatening or overwhelming) and to make internal attributions for negative events (for reviews, see Hankin & Abramson, 2001; Rudolph et al., 2006). Importantly, these results extend a small but growing body of research that directly confirms the presence of a depressive bias in self-appraisals of competence (e.g., Brengden et al., 2002; Cole et al., 1998; Kistner et al., 2001; McGrath & Repetti, 2002; Pomerantz & Rudolph, 2003; Rudolph & Clark, 2001) by showing that a similar bias occurs in depressed youths’ appraisals of life events. The distinct pattern of group differences in dependence-estimations for interpersonal events (medium to

large effect sizes for the clinically depressed group) versus noninterpersonal events (small effect sizes) suggests that theory and research focused on cognitive biases related to the causes of events (e.g., attributional or inferential style) would benefit from distinguishing among different domains of stress.

### **Implications for Research, Policy, and Practice**

**Implications for Cognitive Vulnerability-Stress Models of Depression**—These findings are consistent with cognitive vulnerability-stress models of depression that implicate the joint role of biased cognitive appraisals and environmental adversity in depression. Moreover, this research highlights the interpersonal context of cognitive appraisals and stress. However, because of the concurrent nature of the data, we cannot determine whether biased appraisals and heightened stress served as precursors or consequences of depression. Contemporary theory and research on depression implicate transactional processes between youth and their environments (Cicchetti & Toth, 1998; Hankin & Abramson, 2001; Hammen & Rudolph, 2003; Rudolph et al., 2006). According to this perspective, youth who are exposed to heightened interpersonal stress and who overestimate the stressfulness of events and their contribution to events might feel overwhelmed and ineffective at coping with their environments, resulting in declines in self-worth, increases in shame or hopelessness, and consequent depression. Depressive symptoms, in turn, might leave a “cognitive scar” (Nolen-Hoeksema et al., 1992; Rohde, Lewinsohn, & Seeley, 1990) and further disrupt youths’ relationships (Rudolph et al., 2000).

Empirical evidence is mixed regarding the role of cognitive appraisals as precursors versus consequences of depression. Research supports the idea that some types of maladaptive cognitions, such as a negative attributional style (Garber, Keiley & Martin, 2002) and low perceptions of control (Rudolph et al., 2001), predict subsequent depression. In contrast, research that investigates cognitive bias more directly (e.g., underestimations of competence) suggests that negative cognitive appraisals emerge from, rather than contribute to, depressive symptoms (Cole et al., 1998; McGrath & Repetti, 2002; Pomerantz & Rudolph, 2003). However, this research has not yet fully tested cognitive vulnerability-stress models by examining whether cognitive bias predicts increases in depression under conditions of high stress. Given evidence that cognition x stress interactions predict depression using more standard indexes of cognitive style (Abela, 2001; Hilsman & Garber, 1995; Robinson, Garber, & Hilsman, 1995), it will be important for future investigations to further test the predictive role of cognitive bias. More generally, research is needed to study the interactions and transactions among stress appraisals, exposure to stress, and depression across development.

### **Implications for Dimensional Versus Categorical Perspectives on Depression**

—The present findings also contribute to growing evidence (e.g., Gotlib et al., 1995; Lewinsohn et al., 2000) that youth with subsyndromal depression suffer impairment that is similar, albeit less severe, than youth with clinical diagnoses of depression. For the most part, youth with subsyndromal depression demonstrated similar patterns of life stress and cognitive appraisals as youth with clinical depression. Despite the absence of significant differences between the two depressed groups, however, youth in the clinically depressed group showed elevated levels of independent interpersonal stress, stress-estimations for interpersonal events, and dependence-estimations for interpersonal events (effect sizes of .42 – .47) relative to youth in the subsyndromal group. Thus, failure to detect significant differences between these two groups might be due in part to reduced power. Overall, this pattern of findings supports recent arguments for a dimensional conceptualization of depression (Hankin et al., 2005), wherein subsyndromal symptoms are viewed as quantitatively rather than qualitatively different from clinical diagnoses.

**Methodological Caveats**—Before closing, it is worth noting a few caveats about the methods used in this study. First, the age range of the sample was broad, and the sample size made it difficult to assess whether or not age influenced the pattern of results. Future research will need to examine whether similar patterns apply across age. Second, the Youth Life Stress Interview uses the best-estimate approach to combine information from parent and youth reports. Therefore, a greater number of stressful events were likely obtained using this approach than relying on information from only one informant, which may have led to a different pattern of results. Finally, the relatively small sample size made it difficult to examine whether the findings were influenced by the presence of comorbid disorders (e.g., anxiety and externalizing disorders) in the depressed youth. Future research should explore how comorbid disorders might influence the experience and appraisal of life stress.

**Implications for Practice with Depressed Youth**—This research can inform the development of interventions for depressed youth in several ways. Broadly, our findings support the utility of cognitive-behavioral approaches that target both youths' appraisals of stress and their behavioral styles. More specifically, these results illustrate the importance of identifying and modifying characteristics of depressed youth that influence their reactivity to stressful life events, their tendency to engage in self-blame for interpersonal difficulties, and their likelihood of creating stress in their lives. Helping depressed youth to take a proactive approach toward changing their life circumstances and their appraisals of difficulties, rather than engaging in self-blaming attributions and consequent feelings of helplessness, is critical for interrupting the cycle of stress-generation and self-denigration that characterizes the course of depression in youth.

## Conclusions

This research highlights the importance of integrative theories of depression that consider both depressed youths' actual environmental experiences and their interpretation of these experiences. Moreover, these findings reveal that depression is associated with considerable impairment even at subclinical levels, suggesting that it is important to consider milder symptoms of depression not just as an expression of normative variations in mood and behavior but as a significant indicator of disturbance. Finally, these findings suggest that assessment and intervention with depressed youth should target both psychological deficits that might foster heightened stress reactivity (e.g., biased appraisals of stressful life events) as well as behavioral deficits that might lead to the generation of stress.

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**Table 1**

Mean Scores and Planned Comparisons on Episodic Stress By Diagnostic Group

	<b>I</b>			<b>Planned Group Comparisons</b>			<b>p Value</b>
	<b>Non-Symptomatic (n = 36)</b>	<b>Subsyndromal Depression (n = 29)</b>	<b>Clinical Depression (n = 24)</b>				
	<b>1</b>	<b>2</b>	<b>3</b>				
<b>Independent Episodic Stress</b>							
Interpersonal	3.85 (3.13)	7.19 (5.32)	9.67 (6.37)	1 vs. 2	.77	<i>p</i> = .005	
				1 vs. 3	1.16	<i>p</i> = .001	
				2 vs. 3	.42	<i>ns</i>	
Noninterpersonal	3.57 (2.59)	3.84 (3.15)	3.63 (3.17)	1 vs. 2	.09	<i>ns</i>	
				1 vs. 3	.02	<i>ns</i>	
				2 vs. 3	-.07	<i>ns</i>	
<b>Dependent Episodic Stress</b>							
Interpersonal	1.33 (2.13)	5.17 (5.84)	4.15 (4.90)	1 vs. 2	.87	<i>p</i> = .002	
				1 vs. 3	.75	<i>p</i> = .013	
				2 vs. 3	-.19	<i>ns</i>	
Noninterpersonal	1.83 (2.50)	3.69 (3.17)	1.92 (2.90)	1 vs. 2	.65	<i>p</i> = .010	
				1 vs. 3	.03	<i>ns</i>	
				2 vs. 3	-.58	<i>p</i> = .026	

*Note.* Standard deviations are shown in parentheses. The *p* values are based on two-tailed significance tests.

**Table 2**

Mean Scores and Planned Comparisons on Cognitive Appraisals By Diagnostic Group

	Non-Symptomatic (n = 29) 1	Subsyndromal Depression (n = 26) 2	Clinical Depression (n = 22) 3	Planned Group Comparisons	Effect Size (d)	p Value
<b>Stress-Estimation</b>						
Interpersonal	-.41 (.65)	-.10 (.80)	.23 (.66)	1 vs. 2 1 vs. 3 2 vs. 3	.43 .98 .45	ns p = .002 ns
Noninterpersonal	-.25 (.84)	.30 (.74)	.37 (.78)	1 vs. 2 1 vs. 3 2 vs. 3	.69 .76 .09	p = .014 p = .010 ns
<b>Dependence-Estimation</b>						
Interpersonal	-.23 (.81)	.00 (.74)	.33 (.65)	1 vs. 2 1 vs. 3 2 vs. 3	.30 .76 .47	ns p = .011 ns
Noninterpersonal	-.09 (.71)	.10 (1.08)	.06 (.76)	1 vs. 2 1 vs. 3 2 vs. 3	.21 .20 -.04	ns ns ns

Note. Standard deviations are shown in parentheses. The p values are based on two-tailed significance tests. Ns vary slightly across analyses.