Age and Gender as Determinants of Stress Exposure, Generation, and Reactions in Youngsters: A Transactional Perspective

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The present study used a contextual and transactional approach to examine age and gender differences in the experience and consequences of life stress in clinic-referred preadolescents and adolescents. Eighty-eight youngsters and their parents completed the Child Episodic Life Stress Interview, a detailed semistructured interview assessing the occurrence of stressful events in multiple life domains. Interviews were coded using a contextual threat rating method to determine event stressfulness and dependence. Youngsters also completed the Children's Depression Inventory and the Revised Child Manifest Anxiety Scale to assess self-reported symptoms of depression and anxiety. Consistent with predictions, age- and gender-related patterns of life stress varied across the type and context of stressors. Most notably, adolescent girls experienced the highest levels of interpersonal stress, especially stress and conflict that they generated within parent-child and peer relationships. Preadolescent girls experienced the highest levels of independent stress and conflict in the family context. Adolescent boys experienced the highest levels of noninterpersonal stress associated with self-generated events. Girls demonstrated particular vulnerability to depressive responses to dependent stress. The results build on and extend previous theory and research on age and gender differences in close relationships and stress, and illustrate the value of more refined conceptual models and more sophisticated methodologies in child life stress research.

INTRODUCTION

Contextually based models of normative and atypical development, which consider the influence of environmental forces on children's functioning, have flourished in recent years (e.g., Bronfenbrenner, 1986; Cicchetti & Schneider-Rosen, 1984; Sroufe & Rutter, 1984). This emphasis on the role of child-environment interactions in child development has spawned a large body of research examining stressful events and circumstances as risk factors for maladjustment. Reviews of this literature (Cohen & Park, 1992; Compas, 1987; Johnson, 1982) have revealed that exposure to a range of stressors is associated with a wide array of maladaptive psychological and physical outcomes in children and adolescents. Research also has identified factors that may increase youngsters' likelihood of exposure to stress, or may moderate the effects of stress on adjustment (Compas, 1987; Compas & Phares, 1991; Masten & Garmezy, 1985). For example, the transition into adolescence has been found to be marked by a "pileup" of stressful events and psychosocial challenges (Ge, Lorenz, Conger, Elder, & Simons, 1994; Larson & Ham, 1993), particularly for girls (Compas & Wagner, 1991; Simmons, Burgeson, Carlton-Ford, & Blyth, 1987; Wagner & Compas, 1990).

However, traditional approaches to life stress research have focused almost exclusively on children's exposure and reactions to environmental influences, and thus reflect an implicit view of child-environment interactions as static and unidirectional. In contrast, a transactional approach to development considers not only the *response* of children to their environment, but also the active *contribution* that children make to the construction of their social contexts (Cicchetti & Schneider-Rosen, 1984; Sroufe & Rutter, 1984). Indeed, some preliminary evidence substantiates reciprocal relations between stressors and maladjustment (e.g., Cohen, Burt, & Bjorck, 1987; Compas, Slavin, Wagner, & Vannatta, 1986; Masten, Neemann, & Andenas, 1994). Thus, a primary objective of the present research was to examine bidirectional paths between children and stressful events in their environments. In particular, we examined whether a transactional perspective would shed additional light on observed age and gender differences in life stress.

Developing a more complete understanding of patterns of life stress also may be facilitated by differentiating among specific contexts of stress. In light of developmental shifts and gender differences in the salience and impact of various social contexts, such as the family, peer, and school domains (e.g., Burke & Weir, 1978; Larson & Asmussen, 1991; Laursen, 1996; Steinberg & Silverberg, 1986), studies that have relied on aggregate indexes of negative life events may not account for more subtle variations in youngsters' experience of stress. Thus, a second goal of the present study was to evaluate age and gender differences across multiple domains of stress.

To address these concerns, as well as several methodological limitations of previous research, we used a semistructured interview that allowed for detailed assessment and analysis of stressful life events in children. Furthermore, we examined whether prior findings from community samples could be extended to clinic-referred preadolescents and adolescents. Community-based research has provided a broad base of knowledge concerning stressors that are likely to occur in the context of normative developmental challenges and transitions. We adopted a complementary approach, by identifying an outpatient sample of children who were likely to experience intensified levels of both normative stressors as well as more atypical or severe stressors. This approach provided a unique opportunity for the contextual analysis of stress in children from high-risk environments.

Below we review relevant areas of life stress research. Because our reseach questions involved multiple and complex interactions, each general area of interest first is discussed separately, followed by an integrative section that presents specific hypotheses and predictions.

Stress Exposure versus Stress Generation

A primary goal of the present study was to apply a transactional approach to the examination of age- and gender-related patterns of stress. Within the life stress literature, a transactional conceptualization is best exemplified by Hammen's (1991, 1992) stress-generation model, which underscores the role played by individuals in the precipitation of stressful events and conditions. Central to this conceptualization is the distinction between *independent* (i.e., fateful) life events, or events whose occurrence is outside of an individual's control, and *dependent* life events, or events to which an individual at least partially contributes. The child life stress literature primarily has focused on the role of independent life events (e.g., Ge et al., 1994; Sandler & Block, 1979). When both independent and "controllable" events have been included in life stress measures, they often are combined to yield a single stress score (e.g., Coddington, 1972; Larson & Ham, 1993). However, elucidating age and gender differences in life stress may require a segregation of independent and dependent events.

From a developmental perspective, consideration of dependent, or self-generated, events may be especially important in adolescence (Cohen et al., 1987), a stage of life during which increased experimentation with novel roles and experiences may lead youngsters to engage in higher levels of stress-inducing behaviors. For instance, adolescents seeking autonomy

from adults may engage in truancy from school or opposition to parental rules, leading to higher levels of conflict with authority figures. Furthermore, youngsters begin to gain more control over various aspects of their lives and to participate in more active transactions with their environment across development. For example, parental monitoring of peer relationships diminishes with age (Parke & Bhavnagri, 1989); adolescents therefore may assume more responsibility in the selection of their peer groups and in the regulation of their friendships. At the same time that parental influence declines, youngsters become less resistant to peer pressure (Steinberg & Silverberg, 1986). This tendency to succumb to peer pressure, especially in antisocial situations (e.g., vandalism, cheating), is particularly evident in adolescent boys (Steinberg & Silverberg, 1986). Thus, adolescent boys may be more likely to participate in peer-sanctioned antisocial behaviors that precipitate dependent stressful life events (e.g., getting into trouble with the police, being suspended from school). To identify differential age- and gender-related patterns of stress *exposure* versus stress *generation*, the present study distinguished between independent and dependent life events.

The Role of Social Context

A second goal of this study was to assess age and gender differences in stress across multiple social contexts. Theory and research on interpersonal relationships have yielded a wealth of information indicating substantial variance in the nature, role, and consequences of close relationships across development and gender. For example, adolescence has been identified as a transition period during which the salience of the peer group as a context for activity, socialization, and emotional experience increases, as the salience of the family decreases (Larson & Asmussen, 1991; Laursen, 1996; Steinberg & Silverberg, 1986). Moreover, adolescent friendships are characterized by higher levels of intimacy, loyalty, and closeness than those in preadolescence (Buhrmester & Furman, 1987; Furman & Buhrmester, 1992; reviewed in Laursen, 1996). Similarly, female friendships, particularly during adolescence, are more likely to entail intimacy and disclosure than male friendships, which more frequently are based on companionship and affiliation (Berndt, 1982; Cooper & Ayers-Lopez, 1985; Youniss & Smollar, 1985). Although these distinctive attributes of adolescent female friendships may provide a strong sense of social connectedness and belonging, they also may come with some costs. For instance, the value placed on relationships by girls may be accompanied by heightened vulnerability and

stress, especially during adolescence when interpersonal roles and expectations undergo significant redefinition and disruption (see Greene & Larson, 1991; Fenzel & Blyth, 1986). Because adolescent girls may be more invested than boys in their relationships as a source of emotional support and, perhaps, personal identity, interpersonal stress may be more salient and may act as a stronger threat to their well-being.

Indeed, research demonstrates that the rise in intimacy within adolescent friendships may be matched by a *decline* in perceived support and satisfaction (Clark-Lempers, Lempers, & Ho, 1991). Furthermore, adolescents become increasingly sensitive to the potential costs of interpersonal conflict. Girls have been found to be particularly aware of the threat of conflict to friendships, and this gender difference intensifies with age (reviewed in Laursen, 1996). This sensitivity may represent both an asset and a liability for adolescent girls: On the one hand, heightened concern may stimulate greater motivation to minimize or to effectively manage conflict; on the other hand, heightened concern may stimulate higher levels of stress when conflict does occur. Conflict with parents also rises during adolescence (reviewed in Laursen, 1996). Again, particularly high levels of conflict may be expected between adolescent girls and their parents. Although girls report more emotional autonomy from parents than do boys during adolescence (Steinberg & Silverberg, 1986), these perceptions may clash with parental tendencies to employ higher levels of control in the absence of autonomy-granting behavior with girls than with boys (Pomerantz & Ruble, 1998). This discrepancy between girls' levels of perceived and actual autonomy is likely to generate tension in the parent-child relationship.

This general picture from the close relationships literature of adolescence as a vulnerable period for girls, due in part to gender and age differences in the nature of interpersonal relations, is mirrored by a limited data base on domain-specific life stress. For example, Larson and Ham (1993) reported that girls experienced more negative friend events, whereas boys experienced more negative school-related events. Adolescents experienced an increased incidence of events in all of the measured domains—family, peer, school, and other—in comparison to preadolescents (Larson & Ham, 1993). However, adolescent females, in particular, have been found to report significantly more negative interpersonal events than adolescent males, to perceive these events as more stressful (Wagner & Compas, 1990), and to be more vulnerable to stress in the peer and family contexts (Greene & Larson, 1991). These findings point to the importance of considering gender and age *interactions* in levels of

life stress within certain social contexts. Finally, negative mood states in girls tend to be linked to experiences within interpersonal domains, such as the family and peer group, whereas negative mood states in boys tend to be linked to activity-based experiences (e.g., competitive games); this gender disparity is amplified during adolescence (Larson & Asmussen, 1991).

To summarize, past research has characterized adolescence as a time of intensified stress and challenge. Such environmental risks appear to be most salient for adolescent females, especially within the interpersonal domain. However, preliminary evidence suggests that boys may experience higher levels of stress in noninterpersonal domains, such as the school setting or nonschool activities. Thus, previous studies that have used composite measures of stress and that have indicated higher stress levels only in adolescent girls may be somewhat misleading. To identify whether distinct *patterns* of stress occur in girls versus boys and in preadolescents versus adolescents, we differentiated among levels of stress within multiple life domains, with a focus on the comparison of interpersonal and noninterpersonal stressors.

Stress Reactions: Vulnerability to Depressive Outcomes

Our third goal was to examine age and gender differences in stress reactions, or the consequences of stress. In particular, a growing body of research has revealed an association between life stress and depression in youth (reviewed in Compas, Grant, & Ey, 1994; Garber & Hilsman, 1992). The experience of stressful life events may contribute to depressive outcomes through several pathways. Exposure to multiple *independent*, or uncontrollable, stressors may lead to decreased perceptions of control over the environment and a sense of hopelessness about the future, which have been linked to child depression (Mc-Cauley, Mitchell, Burke, & Moss, 1988; Weisz, Sweeney, Proffitt, & Carr, 1994). Generation of *dependent* stressors, to the extent that children are aware of and take responsibility for their own contribution to the events, may lead to maladaptive self-evaluative processes, such as a negative attributional style or decreased perceptions of competence, which in turn may increase risk for depression (e.g., Nolen-Hoeksema, Girgus, & Seligman, 1992; Robinson, Garber, & Hilsman, 1995). For example, Cole and Turner (1993) have obtained support for a model wherein maladaptive cognitions about the self mediate the link between negative environmental events and depressive symptoms.

Although the present study did not explore directly the mechanisms linking stress and depression, consideration of these pathways may help to elucidate possible gender and age differences in stress vulnerability. With regard to gender, girls may be more susceptible to negative self-evaluative processes, such as taking responsibility for failure (Pomerantz & Ruble, 1998). Girls may therefore tend to attribute the occurrence of dependent stressors to personal incompetence, which may then induce a depressive reaction. For example, girls may be more likely to attribute a fight with a friend to their own social actions, whereas boys may be more likely to attribute a fight to a friend's behavior. Alternatively, girls may possess certain characteristics that increase their likelihood of maladaptive reactions to stress (Nolen-Hoeksema & Girgus, 1994), regardless of whether stressors lead to negative self-evaluation. In this vein, some researchers have suggested that gender differences in responsivity to stress, particularly in the interpersonal domain, may underlie the rise in depression among adolescent females (Ge et al., 1994; Nolen-Hoeksema & Girgus, 1994; Simmons et al., 1987).

With regard to age, predictions are more complex. Some studies have suggested that negative life events are more strongly associated with negative affect and depressive symptoms in adolescents than in preadolescents (Ge et al., 1994; Larson & Ham, 1993). In contrast, other studies have demonstrated that negative life events alone are predictive of depression in younger children, whereas negative events are predictive of depression in older children only in the presence of pathogenic cognitive styles (Nolen-Hoeksema et al., 1992; Turner & Cole, 1994). These contradictory findings may arise in part from the failure of past research to distinguish between independent and dependent life events. On the one hand, the cognitive processes posited to mediate between *independent* events and depression, such as low perceived control and hopelessness, may increase with age along with youngsters' growing tendency to generalize and project into the future (see Weisz, Rudolph, Granger, & Sweeney, 1992). However, the cognitive processes posited to mediate between *dependent* events and depression, such as attributional style and perceived competence, are less solidified in early childhood, and therefore may be more reactive to immediate environmental influences (Cole & Turner, 1993). Thus, the occurrence of stressful *dependent* events may be sufficient to foster negative self-evaluative processes and depression in younger children. In an attempt to account for previous contradictions in the literature, the present study separately examined age- and gender-related patterns of depressive outcomes associated with independent versus dependent life events.

Methodological Issues

In the context of addressing our major goals, we also tried to overcome several methodological limitations in the child life stress literature. An ongoing debate concerns the use of normative- versus appraisal-based methods of assessment (Cohen & Park, 1992). Proponents of normative-based methods (e.g., Coddington, 1972; Dohrenwend, Shrout, Link, Martin, & Skodol, 1986), which rely on independent, objective judgments of the valence and stressfulness of events, emphasize the importance of stress ratings that are not confounded by individual response biases. Proponents of appraisal-based methods (e.g., Compas, 1987; Lazarus & Folkman, 1984), which rely on individual judgments of the valence and stressfulness of events, emphasize the importance of stress ratings that take into account subjective reactions to external stressors. Studies using tallies of life events or counts weighted by normative ratings of stressfulness may overlook the context of events, and may therefore underestimate true differences in the impact of stress. In contrast, studies using subjective ratings may confound idiosyncratic perceptions of the environment (e.g., perceptions due to mood-related biases or personality characteristics) with the actual stressfulness of events. Thus, any observed differences in stress impact may be due to a tendency for some individuals to rate the identical events as more stressful, rather than to actual differences in stress levels, thereby confounding stress exposure and stress reactions.

To address these concerns, some researchers studying life stress in adults have adopted more extensive "contextual threat" interview methods (Brown & Harris, 1978; Hammen, 1991). These interviews provide a means of obtaining objective ratings of stressfulness, while taking into account the context and significance of an event for a particular individual. Surprisingly, these methods rarely have been employed in the child life stress literature (for exceptions, see Adrian & Hammen, 1993; Goodyer & Altham, 1991a, 1991b). Yet individualized approaches to life stress assessment may be particularly important in children: Because the salience, meaning, and stressfulness of specific events may vary according to developmental level, checklist methods may not capture the variability inherent in children's experience of stress. Furthermore, decisions about event controllability may be difficult to make on the basis of life event checklists due to a lack of information about the context of events (Cohen et al., 1987).

Overview of the Present Research

To examine age and gender differences in stress exposure, generation, and reactions, we adapted the Episodic Life Stress Interview (e.g., Hammen, 1991) for use with preadolescents and adolescents. Several methodological issues were addressed. First, application of the contextual threat methodology allowed for more sophisticated assessment, coding, and analysis of life stress, and for a clearer determination of event dependence. Second, this interview elicited child-identified events, thereby yielding a developmentally sensitive assessment of stressors that are relevant to children at different ages (see Greene & Larson, 1991; Larson & Ham, 1993). Third, in light of evidence that parent- and child-reported stress may differ (Compas, Howell, Phares, Williams, & Giunta, 1989; Larson & Ham, 1993), we gathered information from both youngsters and their parents.

A central concern involved the comparison of two major dimensions of stressful life events: independent versus dependent stressors, and interpersonal versus noninterpersonal stressors. More specifically, our classification of events focused on domains of life stress with strong conceptual and empirical ties to age and gender. Within the interpersonal context, we focused on the parent-child, family, and peer domains. Because theory and research on close relationships have illustrated important age- and gender-related features of interpersonal conflict (see earlier discussion), we also separately examined conflict-related events. Within the noninterpersonal context, we focused on the school domain.

Contextual hypotheses. We expected that girls would experience higher overall levels of life stress than would boys, and that adolescents would experience higher overall levels of life stress than would preadolescents. We further predicted that age and gender differences would vary across social contexts. In general, we expected that interpersonal stress would be more prevalent in girls than in boys, whereas noninterpersonal stress would be more prevalent in boys than in girls. Both types of stress were expected to be more prevalent in adolescents than in preadolescents; however, in line with research discussed earlier suggesting discrete areas of risk for girls and boys during adolescence, gender was expected to moderate the effects of age on stress levels. For interpersonal stress we anticipated that age differences would be present in girls but not in boys, whereas for noninterpersonal stress we anticipated that age differences would be present in boys but not in girls.

Transactional hypotheses. Moreover, we expected differences in age- and gender-related patterns of stress

exposure (i.e., independent events) versus stress generation (i.e., dependent events). Because the family context is typically a more salient interpersonal arena for younger children, it was hypothesized that preadolescent girls would be exposed to more *independent* family and parent-child stress than would adolescents girls, whereas no age differences would be present in boys. In contrast, we expected that developmental shifts in the salience of the peer group would expose adolescent girls to higher levels of *independent* peer stress than preadolescent girls, but that adolescent and preadolescent boys would not differ. Based on past research, adolescents and boys were expected to be exposed to higher levels of *independent* noninterpersonal stress than preadolescents and girls, respectively.

In light of theory and research indicating disturbances in both parent-child and peer relationships in adolescent girls, we expected that this group would generate higher levels of *dependent* interpersonal stress, particularly conflict, in their relationships within and outside of the family than would preadolescent girls. However, parallel to our prediction about independent family stress, we anticipated that the higher involvement of preadolescent girls in the family setting would lead them to experience more conflict-related family stress other than direct conflict with their parents (e.g., sibling and interparental conflict). No age differences in dependent interpersonal stress or conflict were expected in boys. In contrast, we predicted that, in comparison to preadolescents, adolescent boys would generate higher levels of *dependent* noninterpersonal stress (e.g., academic failures, school suspensions, and trouble with the police). Adolescent and preadolescent girls were not expected to differ in their generation of noninterpersonal stress. We also predicted that the ratio of dependent to independent events would increase in adolescence, reflecting developmental trends in the occurrence of stress-inducing behaviors.

Stress reaction hypotheses. Finally, we examined age and gender differences in the association between life stress and depressive symptoms. We expected to find stronger links between both independent and dependent stress, particularly in the interpersonal domain, and depressive symptoms in girls than in boys. We predicted that *independent* stress would be more strongly associated with depressive symptoms in adolescents than in preadolescents, due to an age-related increase in the tendency to generalize into the future. In contrast, because of the hypothesized role of self-evaluative processes in determining depressive responses to dependent events, we expected that preadolescents, whose self-evaluative cognitions may be more reactive to immediate environmental events, would show stron-

ger associations between *dependent* stress and depressive symptoms than would adolescents. To examine whether any observed effects were specific to depression or represented a more general link between stress and "negative affectivity" (Finch, Lipovsky, & Casat, 1989), we also examined the association between stress and anxiety symptoms.

METHOD

Participants

Participants were a subset of a larger sample participating in an ongoing study of children's mental health care (Weisz, 1997). Youngsters in the larger sample were referred to outpatient clinics for a variety of emotional and behavioral problems (e.g., mood disorders, disruptive behavior disorders, adjustment difficulties). Of the eligible families that were contacted, 66% agreed to participate in the present study. This subgroup included 88 youngsters (31 girls, 57 boys) who ranged in age from 8.33 to 18.17 years ($M = 12.87$, $SD = 2.57$). Participants and nonparticipants did not significantly differ in age, gender, or ethnicity. The most frequently cited reason for not participating in the current study was the time-consuming nature of the two research projects. Forty-six of the participants were preadolescents (8- to 12-year-olds; 31 boys), and 42 were adolescents (13- to 18-year-olds; 26 boys). The ethnic composition was 58% Caucasian, 19.3% African American, 17% Latino, 3.4% Asian American, and 2.3% other. All of the children had a female caregiver living in the home (90.9% biological mothers, 2.3% stepmothers, and 6.7% other), and 50% had a male caregiver living in the home (23.9% biological fathers, 21.6% stepfathers, and 4.5% other). The median family income level was between $15,000 and $30,000.

Procedure

A member of the larger project obtained consent for research staff to contact the families. Families were provided with information about the present study by telephone, and were asked to provide separate written consent for participation. Youngsters and their primary caregivers participated in an in-person assessment session during which families completed interviews and questionnaires that assessed both parent and child functioning. The subset of measures used in this study is described below.

Measures

Children's Depression Inventory (CDI; Kovacs, 1980/81). The CDI is a 27-item self-report questionnaire that measures depressive symptoms in children. For each item, children endorse one of three statements that describe none, mild, or severe depressive symptoms. Adequate internal consistency and test-retest reliability have been established (Kovacs, 1980/81; Smucker, Craighead, Craighead, & Green, 1986). Scores in the present sample ranged from 0 to 20 ($M = 6.31$, $SD = 5.14$).

Revised Child Manifest Anxiety Scale (RCMAS; Reynolds & Richmond, 1978). The RCMAS assesses the presence of anxiety symptoms and yields an anxiety score ranging from 0 to 28. Sound psychometric properties have been documented, with reliability coefficients $>.80$ (Reynolds & Richmond, 1978). Scores in the present sample ranged from 0 to 24 ($M = 8.27$, $SD = 5.86$).

Child Episodic Life Stress Interview (Adrian & Hammen, 1993). A semistructured interview was administered separately to parents and children to assess the occurrence of stressful life events during the past year. This interview was modeled after the "contextual threat" method developed in adults (Brown & Harris, 1978). First, interviewers asked a global question about children's experience of stressful events: "Has anything happened in the past year that has upset you [your child], or caused you [your child] trouble?" Follow-up inquiries were made about specific life domains (e.g., family, friends, school, neighborhood, health, legal troubles). For example, interviewers probed about the occurrence of problems or changes in parent-child and marital relationships (e.g., parental separation or divorce, major arguments with a parent, separations from a parent), problems or changes in peer relationships and friendships (e.g., friends moving away, arguments or physical fights with peers), school difficulties (e.g., academic failures, detentions, suspensions), normative adjustments (e.g., school changes, geographical moves), health problems in self and significant others (e.g., accidents, illnesses), and financial difficulties (e.g., significant decreases in family income). These specific probes were derived from the existing life stress literature in children and adolescents, as well as from prior research using the Child Episodic Life Stress Interview.

Second, interviewers used relevant probes to elicit detailed information about the nature of the event, event timing and duration, and the associated circumstances (e.g., previous experience with that type of event, objective consequences of the event). To facilitate accurate recall and dating, interviewers constructed a timeline with significant personal events for parents and children, such as birthdays and holidays. During the interview, a written narrative account was developed to summarize information about

the context of each event. For instance, if a child reported that a friend had moved away, interviewers gathered *objective* information about such factors as the duration and closeness of the friendship (e.g., how often the child engaged in activities with the friend), the number of other friends that the child had, and how often the child was able to talk with or see the friend after the move.

Information gathered from parent and child reports was combined for the coding process; events included those that were reported by the parent only, child only, or both. On the basis of a written summary read aloud by the interviewer, an independent team of two to four members, blind to children's depression scores on the CDI and subjective reactions to the events, provided two consensual ratings for each event. First, the team rated the *objective stress* or *impact* of each event on a scale of 1 (*No Negative Stress/Impact*) to 5 (*Severe Negative Stress/Impact*). For example, a rating of 1 might be assigned to a minor illness in a distant relative; a rating of 3 might be assigned to a serious argument with a good friend; and a rating of 5 might be assigned to the death of a parent. It should be noted, however, that the exact rating assigned to any particular event was highly contingent on the circumstances surrounding the event. Only events associated with at least mild levels of stress (i.e., impact ratings of 1.5 or higher) were included in subsequent analyses.

Second, the team rated the *dependence* of each event, or the extent to which the child contributed to the event's occurrence, on a scale of 1 (*Completely Independent*) to 5 (*Completely Dependent*). For example, a rating of 1 might be assigned to a geographical move about which the child had no choice; a rating of 3 might be assigned to a fight with a sibling; and a rating of 5 might be assigned to an arrest for car theft. Again, the exact rating assigned to any particular event was highly contingent on the circumstances surrounding the event. Events with dependence ratings of 3 (*Partially Dependent*) or above were categorized as dependent for later analyses.

Separate indexes were computed for independent and dependent events by summing the objective stress ratings across relevant events. Intraclass correlation coefficients based on ratings of 49 events by two independent teams revealed high reliability for objective stress/impact, $r(47) = .85$, $p < .001$, and for dependence, $r(47) = .97$, $p < .001$.

Events also were categorized into one of six mutually exclusive, domain-specific content areas. Four of the categories focused on *interpersonal* events: *parent-child*, *family*, *peer*, and *other*. The *other* category included interpersonal events that involved individuals other than parents, family members, or peers (e.g., teachers, bosses). Events were coded as interpersonal only if they involved a significant interaction between the child and another person, or if they directly affected the relationship between the child and another person. For example, a job loss by the child's parent was not coded as a parent-child event unless it significantly affected the parent-child relationship (e.g., the parent spent more time at home with the child). Parent-child and family events were distinguished according to the particular family members involved. The parent-child category included only those interpersonal events that explicitly involved the relationship between the child and one or both parents. The family category included events that involved the marital relationship and that directly affected the child (e.g., separation of parents), events that involved other family members and that directly affected the child (e.g., sibling moving out of the house), and events that involved the relationship between the child and a nonparent family member (e.g., fight with a sibling or grandparent). For events that involved some form of interpersonal conflict, an additional code was assigned for one of four conflict categories: *parent-child*, *family*, *peer*, and *other*. Because no specific predictions were made about *other-interpersonal* and *other-conflict* events, and because of their low base rates (*M*s ranged from .18 to .30), they were included in composite scores but were not analyzed separately.

The remaining two categories focused on *noninterpersonal* events: *school* (e.g., academic failure, move to a new school, transition to a special education class) and *other-noninterpersonal* (e.g., death of a pet, illness of a grandparent, trouble with the police). Noninterpersonal events that were not related to the school context were collapsed into a single category due to the diversity of types of events, many of which occurred with relatively low base rates.

If an event met criteria for more than one category, decisions about category placement were based on the most salient aspect of the event. For example, a fight with another child at school was coded as a peer, rather than a school, event. Based on the independent coding of 80 events, Cohen's κs for the six content and four conflict categories, respectively, were .82 and .85. Thus, although some events potentially could be classified into several categories, the application of carefully delineated decision rules yielded high reliability. Discrepancies that did emerge during reliability coding were resolved through rater consensus. Stress indexes were calculated by summing the relevant objective stress ratings within each domain.

Table 1 Correlations among Composite Stress Indexes

	1	2	3	4	5	6	7	8
1. Total objective stress								
2. Total independent stress	.67***							
3. Independent interpersonal stress	.54***	.83***						
4. Independent noninterpersonal stress	.33**	.46***	−.09					
5. Total dependent stress	.73***	−.01	−.03	−.01				
6. Dependent interpersonal stress	.62***	.00	.00	.00	.82***			
7. Dependent noninterpersonal Stress	.48***	−.02	−.05	.00	.69***	.15		
8. Interpersonal conflict stress	.69***	.28*	.27*	.07	.67***	.80***	.14	

$* p < .01$; $** p < .005$; $*** p < .001$.

RESULTS

Interrelations among Stress Indexes

We first examined the relations among the stress indexes, distinguishing between the two major dimensions of interest: independence versus dependence, and interpersonal versus noninterpersonal contexts (see Table 1). Notably, correlations among indexes of independent and dependent stress were all close to zero. Similarly, interpersonal and noninterpersonal stress were not significantly associated. The orthogonal nature of independent versus dependent stress, and interpersonal versus noninterpersonal stress, illustrates the value of conducting separate analyses for these types of events. Furthermore, these findings lend credence to the contextual threat interview and rating method as a useful approach to life stress assessment that may be less sensitive than traditional checklists to reporting biases.

Age and Gender Differences in Stress Exposure and Stress Generation

A mixed-model multivariate analysis of variance (MANOVA) was conducted with age (preadolescent, adolescent) and gender (female, male) as between-subjects factors, and context of stressor (interpersonal, noninterpersonal) and type of stressor (independent, dependent) as within-subjects factors. Wilks' criterion was used to evaluate the significance of all multivariate effects. Significant multivariate interactions were followed up with univariate analyses of variance (ANOVA) and t tests to examine relevant lower-order effects. Although many of our hypotheses and results involved complex interactions, main effects and lower-order interactions first will be presented to provide a basis for understanding how our results mesh with past research. However, these effects should only be interpreted in the context of the relevant higher-order interactions. One-tailed signifi-

cance levels are reported for analyses in which specific predictions were made regarding the direction of effects; two-tailed significance levels are reported for analyses in which no specific directional predictions were made.

Overall Stress

Table 2 displays the means and standard deviations of the stress indexes by gender and age groups. As expected, adolescents experienced higher overall levels of stress than preadolescents (Ms = 16.07 versus 10.85), $F(1, 84)$ = 12.07, $p < .001$. However, girls and boys did not differ in their overall levels of stress (Ms = 13.90 versus 13.04), $F(1, 84) < 1$.[1] A significant main effect of Type of Stressor indicated that youngsters experienced higher levels of independent than dependent stress (Ms = 7.94 versus 5.40), $F(1, 84)$ = 7.77, $p < .01$. Consistent with our prediction regarding age-related trends in self-generated stress, an Age × Type of Stressor interaction, $F(1, 84)$ = 3.31, $p < .05$, indicated that this difference was significant in preadolescents (Ms = 7.33 versus 3.52), $t(45)$ = 3.91, $p < .001$, but not in adolescents (Ms = 8.62 versus 7.45), $t(41) < 1$ (see Figure 1).

A significant main effect of Context of Stressor indicated that youngsters experienced higher levels of interpersonal than noninterpersonal stress (Ms = 7.45 versus 5.89), $F(1, 84)$ = 7.92, $p < .01$. As expected, however, a significant Gender × Context of Stressor interaction, $F(1, 84)$ = 9.50, $p < .005$, indicated that girls experienced higher levels of interpersonal stress than did boys (Ms = 9.27 versus 6.46), $t(86)$ = 2.16, $p < .05$, whereas boys experienced higher levels of noninterpersonal stress than did girls (Ms = 6.58

[1] In a community sample of children and adolescents in the same age range, a parallel methodology yielded an average 1-year mean objective stress level of 9.2 (SD = 4.4; Adrian & Hammen, 1993), suggesting that our sample was indeed at risk for experiencing higher than normal levels of stress.

Table 2   Means and Standard Deviations of Stress Indexes by Gender and Age Groups

| | Girls | | | | Boys | | | | |
| | Preadolescents (n = 15) | | Adolescents (n = 16) | | Preadolescents (n = 31) | | Adolescents (n = 26) | | Range in Total |
Stress Indexes	M	SD	M	SD	M	SD	M	SD	Sample
Total objective stress	10.73[a]	7.52	16.88[a]	7.19	10.90[b]	7.42	15.58[b]	5.84	0–33.00
Total independent stress	7.37	6.32	8.09	5.26	7.31	4.97	8.94	4.13	0–24.50
Interpersonal	4.93	5.58	4.94	4.33	3.73	3.93	4.60	4.37	0–18.00
Parent-child	1.37	3.89	.94	1.65	1.18	2.19	1.23	2.31	0–15.00
Family	3.33[a]	3.97	1.25[a]	1.62	1.84	2.06	1.85	2.22	0–12.00
Peer	.23[a]	.62	2.09[a]	3.37	.55	2.36	1.52	2.61	0–13.00
Noninterpersonal	2.43	2.24	3.16	3.37	3.58	2.53	4.35	3.10	0–12.00
School	.47	.99	.59	1.66	.76	1.63	.46	1.04	0–06.50
Other	1.97	1.96	2.56	2.77	2.82	2.37	3.88	2.77	0–10.50
Total dependent stress	3.37[a]	4.24	8.78[a]	7.15	3.60[b]	4.64	6.63[b]	4.83	0–22.00
Interpersonal	1.93[a]	2.43	6.59[a]	5.70	2.11	3.39	2.60	3.19	0–17.00
Parent-child	.83[a]	1.51	2.75[a]	2.47	.61	1.66	.56	1.47	0–08.00
Family	.40	1.06	.38	.83	.27	1.15	.25	.89	0–06.00
Peer	.70[a]	1.03	2.88[a]	3.05	1.05	1.81	1.71	2.13	0–10.50
Noninterpersonal	1.43	2.64	2.19	2.63	1.48[b]	2.23	4.04[b]	4.06	0–16.50
School	.73	1.64	1.28	2.10	1.02[b]	1.90	2.33[b]	2.22	0–08.50
Other	.70	1.60	.91	1.53	.47[b]	1.15	1.71[b]	2.94	0–11.50
Total conflict stress	3.20[a]	2.59	6.25[a]	5.08	2.87	4.56	3.21	3.09	0–23.50
Parent-child	.97[a]	1.71	2.53[a]	2.55	.35	.94	.77	1.61	0–07.50
Family	1.53[a]	1.59	.38[a]	.83	.84	1.76	.67	1.28	0–07.00
Peer	.70[a]	1.03	2.75[a]	2.66	1.40	3.24	1.46	1.80	0–16.00

[a] Significant difference between preadolescent and adolescent girls, $ps < .05$ or lower.

[b] Significant difference between preadolescent and adolescent boys, $ps < .05$ or lower.

versus 4.63), $t(86) = 2.10$, $p < .05$ (see Figure 2). This interaction was further moderated by age, $F(1, 84) = 2.73$, $p = .05$. As expected, adolescent girls experienced significantly higher levels of interpersonal stress than did preadolescent girls ($Ms = 11.53$ versus 6.87), $t(29) = 2.18$, $p < .05$, whereas adolescent and preadolescent boys did not significantly differ ($Ms = 7.19$ versus 5.84), $t(55) < 1$. In contrast, as predicted, adolescent boys experienced significantly higher levels of noninterpersonal stress than did preado-

Figure 1   The interaction between age and type of stressor.

lescent boys ($Ms = 8.38$ versus 5.06), $t(55) = 3.04$, $p < .005$, whereas adolescent and preadolescent girls did not significantly differ ($Ms = 5.34$ versus 3.87), $t(29) = 1.12$, ns.

Finally, an Age × Gender × Context of Stressor × Type of Stressor interaction, $F(1, 84) = 4.64$, $p < .05$, indicated that the nature of the three-way interaction differed across independent and dependent events. Specifically, the Age × Gender × Context of Stressor interaction was significant for dependent stress, $F(1, 84) = 9.27$, $p < .005$, but not for independent stress, $F(1, 84) < 1$ (see Figures 3 and 4). Thus, we assessed the different configurations of dependent stress across contexts. Consistent with predictions, for dependent interpersonal stress, the Age × Gender interaction, $F(1, 87) = 6.27$, $p < .01$, indicated that adolescent girls generated significantly more stress than did preadolescent girls, $t(29) = 2.92$, $p < .005$, whereas adolescent and preadolescent boys did not significantly differ, $t(55) < 1$. For dependent noninterpersonal stress, a marginal Age × Gender interaction, $F(1, 84) = 1.79$, $p = .09$, indicated that adolescent boys generated significantly more stress than did preadolescent
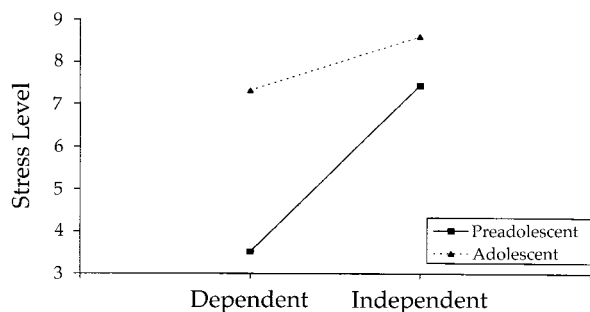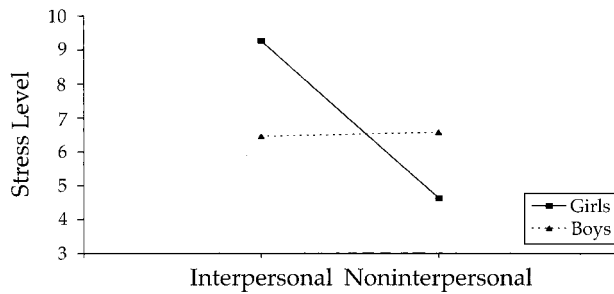
Figure 2   The interaction between gender and context of stressor.

boys, $t(55) = 3.01$, $p < .005$, whereas adolescent and preadolescent girls did not significantly differ, $t(29) < 1$.

Summary. As anticipated, adolescents experienced higher levels of stress than did preadolescents, although girls did not experience higher levels of stress than boys. Consistent with predictions, however, specific age and gender patterns differed across social context and type of stress. Whereas girls experienced higher levels of interpersonal stress than did boys, boys experienced higher levels of noninterpersonal stress than did girls. Furthermore, adolescence was a time of increased interpersonal stress in girls, but not in boys, whereas adolescence was a time of increased noninterpersonal stress in boys, but not in girls. Yet these different configurations held only for depen-

dent stress. Finally, the generation of dependent events emerged as a larger component of stress during adolescence than preadolescence.

Specific Domains of Stress

The second set of analyses examined age and gender differences within more specific domains of interpersonal and noninterpersonal stress. Because of our conceptual interest in differentiating stress exposure and stress generation, we examined these domains separately for independent and dependent stress. (For those effects that either were redundant with previous effects or were not central to our major hypotheses, findings are summarized in parentheses. Specific results from these analyses are available from the first author.)

Independent stress. To examine the pattern of effects within specific domains of independent interpersonal stress, we conducted a mixed-model MANOVA in which age and gender served as between-subjects factors, and the three interpersonal domains (*parent-child*, *family*, and *peer*) served as within-subjects factors. This analysis yielded a marginal Age × Gender × Domain of Stressor interaction, $F(2, 83) = 2.09$, $p = .07$. (This analysis also yielded a main effect of domain of stressor and an Age × Domain of Stressor interaction.) We therefore conducted a series of ANOVAs to examine the effects separately by interpersonal do-
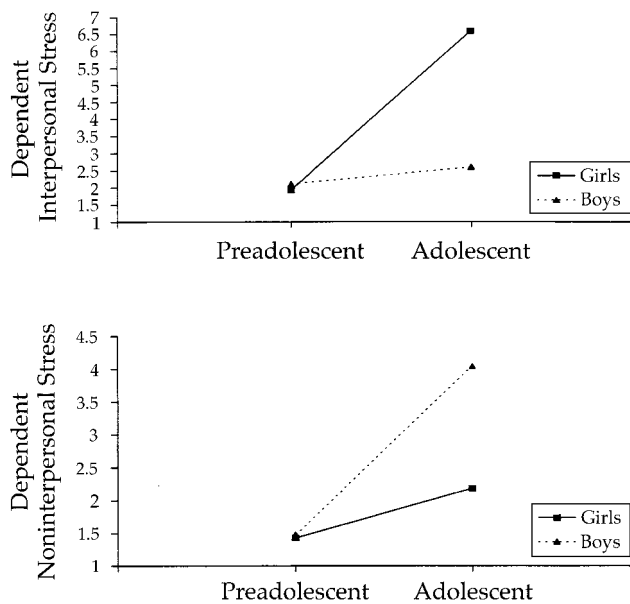

Figure 3   The interaction between age and gender in the determination of dependent interpersonal and noninterpersonal stress.
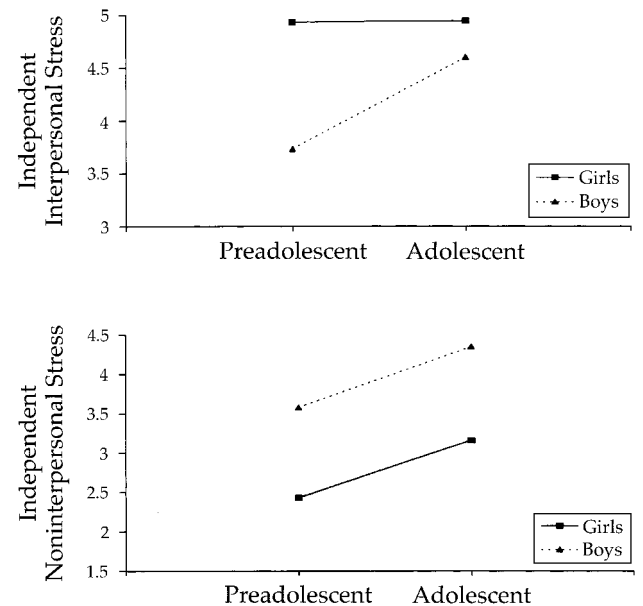

Figure 4   The interaction between age and gender in the determination of independent interpersonal and noninterpersonal stress.

main. A significant Age × Gender interaction was found for independent family stress, $F(1, 84) = 3.60$, $p < .05$. As predicted, preadolescent girls experienced significantly higher levels of independent family stress than did adolescent girls, $t(29) = 1.94$, $p < .05$, whereas preadolescent and adolescent boys did not significantly differ, $t(55) < 1$. For independent peer stress, a significant main effect of age, $F(1, 84) = 5.91$, $p < .01$, revealed that adolescents experienced significantly higher levels than did preadolescents ($Ms = 1.74$ versus .45). Although the interaction was not significant, as predicted adolescent girls experienced significantly higher levels of stress than did preadolescent girls, $t(29) = 2.10$, $p < .05$, whereas adolescent and preadolescent boys did not significantly differ, $t(55) = 1.47$, ns (see Figure 5).

A parallel analysis was conducted with the two domains of independent noninterpersonal stress (*school-related* and *other*) as the within-subjects factor. A main effect of gender, $F(1, 84) = 3.42$, $p < .05$, indicated that boys experienced higher stress levels than did girls ($Ms = 3.93$ versus 2.81). The Age × Gender × Domain of Stressor interaction was nonsignificant, $F(1, 84) < 1$. (This analysis also yielded a main effect of domain of stressor.)

Dependent stress. To examine the pattern of effects within specific domains of dependent interpersonal stress, we again conducted a mixed-model MANOVA in which age and gender served as between-subjects

factors, and the three interpersonal domains (*parent-child*, *family*, and *peer*) served as within-subjects factors. This analysis yielded a significant Age × Gender × Domain of Stressor interaction, $F(2, 83) = 3.82$, $p < .05$. (This analysis also yielded main effects of age, gender, and domain of stressor, as well as Age × Gender, Age × Domain of Stressor, and Gender × Domain of Stressor interactions.) We therefore conducted a series of ANOVAs to examine the effects separately by specific interpersonal domains. A significant Age × Gender interaction was found for dependent parent-child stress, $F(1, 84) = 6.23$, $p < .01$, and a marginal Age × Gender interaction was found for dependent peer stress, $F(1, 84) = 2.62$, $p = .05$. As predicted, adolescent girls experienced higher levels of dependent parent-child stress than did preadolescent girls, $t(29) = 2.59$, $p < .01$, whereas adolescent and preadolescent boys did not differ, $t(55) < 1$. Likewise, adolescent girls experienced higher levels of dependent peer stress than did preadolescent girls, $t(29) = 2.62$, $p < .01$, whereas adolescent and preadolescent boys did not differ, $t(55) = 1.27$, ns (see Figure 6).

A parallel analysis was conducted with the two domains of dependent noninterpersonal stress (*school-related* and *other*) as the within-subjects factor. A significant main effect of age, $F(1, 84) = 6.03$, $p < .01$, indicated that adolescents experienced higher stress levels than did preadolescents ($Ms = 3.33$ versus 1.47). A marginal main effect of gender, $F(1, 84) =$
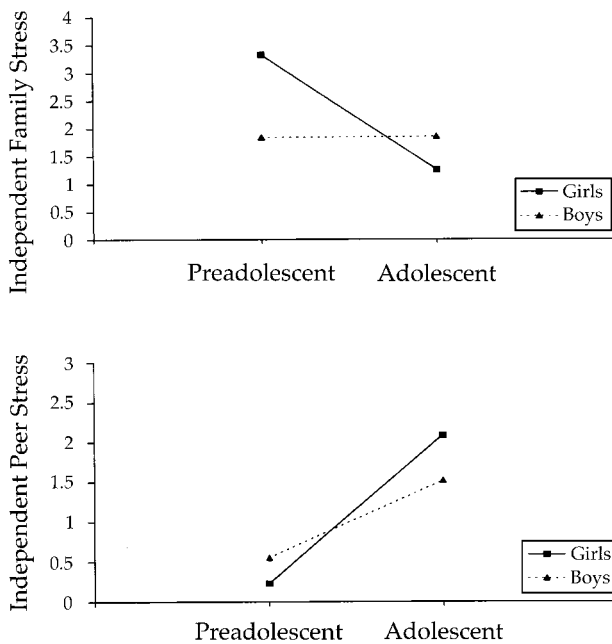

Figure 5   The interaction between age and gender in the determination of independent family and peer stress.
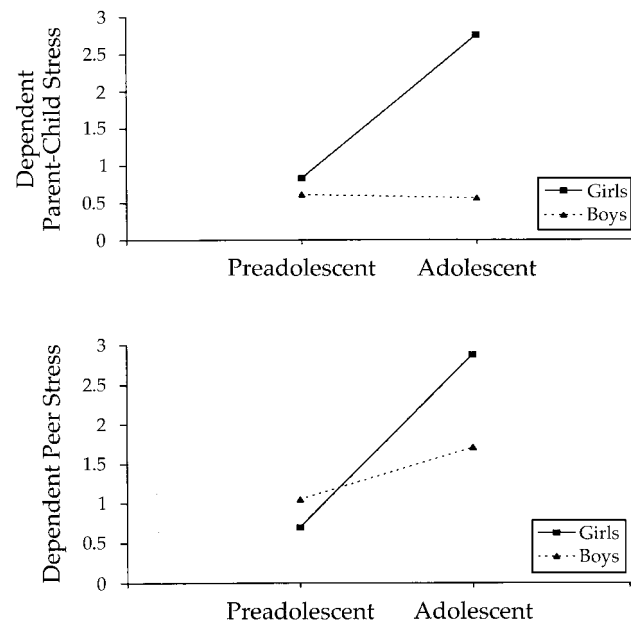

Figure 6   The interaction between age and gender in the determination of dependent parent-child and peer stress.

1.99, $p = .08$, indicated that boys experienced somewhat higher stress levels than did girls ($Ms = 2.65$ versus 1.82). The Age × Gender × Domain of Stressor interaction was nonsignificant, $F(1, 84) < 1$. (This analysis also yielded the marginal Age × Gender interaction described earlier.)

Summary. Importantly, microlevel analyses of specific domains of independent interpersonal stress revealed context effects that were masked by an analysis of overall levels of interpersonal stress. That is, consistent with predictions, age and gender interactions differed across domains: Whereas preadolescent girls were particularly likely to experience independent stress in the family context, adolescent girls were particularly likely to experience independent stress in the peer context. Age- and gender-related effects were not found to differ significantly across noninterpersonal domains. Patterns of dependent stress also were most clearly elucidated when age, gender, and specific domains were considered simultaneously. In particular, adolescent girls were especially likely to generate stress in parent-child and peer relationships. Adolescent boys were especially likely to generate stress in noninterpersonal contexts regardless of the specific domain (i.e., school versus other).

Interpersonal Conflict Stress

To examine age and gender differences in interpersonal conflict stress, a mixed-model MANOVA was conducted with age and gender as between-subjects factors, and domain of conflict stress (*parent-child, family,* and *peer*) as a within-subjects factor. As anticipated, a significant main effect of gender, $F(1, 84) = 3.95$, $p < .05$, and a marginal main effect of age, $F(1, 84) = 2.68$, $p = .05$, indicated that girls experienced significantly higher levels of conflict than did boys ($Ms = 4.77$ versus 3.03), and adolescents experienced somewhat higher levels of conflict than did preadolescents ($Ms = 4.37$ versus 2.98). Consistent with predictions that age and gender effects would differ across domains of conflict, these effects were qualified by an Age × Gender × Domain of Conflict interaction, $F(2, 83) = 4.18$, $p < .01$. (This analysis also yielded a main effect of domain of conflict, as well as a significant Age × Domain of Conflict interaction.)

Once again, we conducted a series of ANOVAs to examine the effects separately by the three conflict domains. Marginal Age × Gender interactions were found for family conflict, $F(1, 84) = 2.31$, $p = .07$, and parent-child conflict, $F(1, 84) = 2.42$, $p = .06$, and a significant interaction was found for peer conflict, $F(1, 84) = 3.22$, $p < .05$. As predicted, for family conflict, preadolescent girls experienced significantly

higher levels of stress than did adolescent girls, $t(29) = 2.57$, $p < .01$, whereas preadolescent and adolescent boys did not significantly differ, $t(55) < 1$. For parent-child conflict, adolescent girls experienced significantly higher levels of stress than did preadolescent girls, $t(29) = 1.99$, $p < .05$, whereas adolescent and preadolescent boys did not significantly differ, $t(55) = 1.21$, *ns.* For peer conflict, adolescent girls experienced significantly higher levels of stress than did preadolescent girls, $t(29) = 2.79$, $p < .005$, whereas adolescent and preadolescent boys did not significantly differ, $t(55) < 1$.

Summary. Results again indicated that clarifying age- and gender-related patterns of stress can be best accomplished by differentiating among interpersonal domains. Specifically, preadolescent girls were most likely to experience conflict in the family domain, whereas adolescent girls were most likely to experience conflict in the parent-child and peer domains. Adolescence did not emerge as a time of enhanced conflict in boys.

Age and Gender Differences in Stress Reactions

Finally, we examined age and gender differences in the stress-depression relationship. Due to the strong correlation between depression and anxiety, $r(86) = .51$, $p < .001$, a series of partial correlations was conducted to examine the associations between stress and depressive and anxiety symptoms, while controlling for the alternate symptom domain. We predicted that independent and dependent stress, particularly in the interpersonal context, would be associated with depressive symptoms in girls but not in boys. As displayed in Table 3, depressive symptoms in girls were significantly associated with total objective stress and interpersonal conflict stress, and were marginally associated with independent interpersonal stress and dependent noninterpersonal stress. Depressive symptoms in boys were not significantly associated with any of the stress indexes. Comparisons of the correlations between stress indexes and depressive symptoms in girls versus boys using Fishers *r*-to-*z* transformations revealed significant differences for total objective stress, independent interpersonal stress, and interpersonal conflict stress, $zs \geq 1.70$, $ps < .05$, one-tailed.

We further predicted that independent stress would be associated more strongly with depressive symptoms in adolescents than in preadolescents, whereas dependent stress would be associated more strongly with depressive symptoms in preadolescents than in adolescents. As displayed in Table 3, depressive symptoms in adolescents were significantly associ-

Table 3   Correlations Between Stress Indexes and Symptoms by Gender and Age Groups

	Depressive Symptoms[a]				Anxiety Symptoms[b]			
	Girls (N = 31)	Boys (N = 57)	Preadol. (N = 46)	Adolescents (N = 42)	Girls (N = 31)	Boys (N = 57)	Preadol. (N = 46)	Adolescents (N = 42)
Total objective stress	.43**	−.02	.06	.22†	−.11	−.04	.09	−.23†
Independent interpersonal	.25†	−.14	−.14	.26*	−.20	.02	.11	−.33*
Independent noninterpersonal	.13	−.02	.00	−.03	.21	.20†	.26*	.24†
Dependent interpersonal	.23	.03	.17	.06	.00	.01	−.05	.07
Dependent noninterpersonal	.25†	.12	.24†	.04	−.15	−.28*	−.13	−.31*
Total interpersonal conflict	.43**	−.04	.09	.19	−.12	.11	.06	−.03

[a] Controlling for anxiety symptoms.
[b] Controlling for depressive symptoms.
† $p < .10$; * $p < .05$; ** $p < .01$.

ated with independent interpersonal stress, and were marginally associated with total objective stress. Depressive symptoms in preadolescents were marginally associated with dependent noninterpersonal stress. A significant difference was found between the association of depressive symptoms with independent interpersonal stress in preadolescents versus adolescents, $z = 1.84$, $p < .05$, one-tailed.

Anxiety was significantly associated with independent noninterpersonal stress in preadolescents, and was marginally associated with independent noninterpersonal stress in boys and adolescents. Interestingly, anxiety was *negatively* associated with independent interpersonal stress in adolescents and with dependent noninterpersonal stress in boys and adolescents. Finally, anxiety was marginally *negatively* associated with total objective stress in adolescents.

Summary. Overall, results supported our hypothesis that stress would be associated more consistently with depressive symptoms in girls than in boys. The observed *pattern* of associations between stress and depression in preadolescents and adolescents was consistent with our predictions. Depression was associated with dependent stress in preadolescents and with independent stress in adolescents, although the correlations were modest. Distinct patterns were found for anxiety: Anxiety was most consistently, albeit modestly, associated with independent noninterpersonal stress across groups. Furthermore, some negative associations were found between stress and anxiety.

DISCUSSION

Using detailed life stress interviews and a contextual threat coding method, the present study examined the influence of age and gender on stress exposure, generation, and reactions in clinic-referred preadolescents and adolescents. The first goal was to evaluate whether age- and gender-related patterns of life stress could be understood more fully within a transactional framework. The second goal was to evaluate whether age- and gender-related patterns of life stress varied across social contexts. The third goal was to examine age- and gender-related patterns of stress reactions. Overall, the results confirmed that age and gender differences in the experience and consequences of stress were context-specific; as expected, however, delineating these differences required a consideration of both independent and dependent life events.

Stress Exposure versus Stress Generation

Consistent with prior research, adolescents experienced higher overall levels of stress than did preadolescents; however, girls did not experience higher overall levels of stress than boys. More precise analyses revealed the complexity of these patterns. Importantly, findings upheld a distinction between interpersonal and noninterpersonal stress. First, levels of stress within these two contexts were not significantly related. Second, age and gender differences were qualified by the context of the stressors. In particular, girls experienced more interpersonal stress than did boys, whereas boys experienced more noninterpersonal stress than did girls. As expected, however, these patterns were clarified even further when age and gender were considered together. That is, it appears that adolescence may be a time of increased stress for both girls and boys, but within different contexts: Adolescent girls were more likely than preadolescent girls to experience interpersonal stress,

whereas adolescent boys were more likely than preadolescent boys to experience noninterpersonal stress. These patterns were consistent with other evidence of interpersonal stress as an area of particular sensitivity for adolescent girls (Greene & Larson, 1991; Wagner & Compas, 1990), and further indicated that noninterpersonal stress may be an area of particular sensitivity for adolescent boys. However, it should be noted that the methodology and clinic-referred sample used here were quite distinct from prior research; thus, results cannot be generalized without further study, particularly given the fairly modest sample size.

Thus, these data confirmed that the examination of global stress levels may obscure context-specific age and gender differences. Furthermore, incorporating a transactional perspective unveiled even more intricate age- and gender-related configurations of stress, thereby reinforcing the critical distinction between independent and dependent life events. First, the lack of association between these two types of events validated them as discrete sources of stress. Second, age and gender differences varied across these two types of events. As predicted, adolescent girls were particularly prone to dependent interpersonal stress, and adolescent boys were particularly prone to dependent noninterpersonal stress. In contrast, age and gender interactions were not found to differ across context, when measured globally, for independent stress. These findings suggest that context- and gender-specific experiences of life stress during adolescence may be accounted for in part by stress that is generated by youngsters.

These distinctive life stress profiles were clarified further when specific domains of independent and dependent interpersonal stress were considered. Consistent with predictions, preadolescent girls were exposed to the highest levels of *independent* family stress and family conflict, whereas adolescent girls generated the highest levels of *dependent* parent-child stress and parent-child conflict. Adolescent girls also experienced the highest levels of independent and dependent peer stress and conflict. The opposite pattern emerged for gender differences in noninterpersonal stress. As anticipated, boys were exposed to higher levels of *independent* noninterpersonal stress than were girls, and, as noted above, adolescent boys were at the highest risk for the generation of *dependent* noninterpersonal stressors.

The discrepancy between the current findings and those based on aggregate stress levels, which consistently have revealed elevated stress in adolescent girls, underscores the importance of examining domain-specific indexes of both independent and dependent stress. Clearly, a contextual approach to development

not only must account for the generic influence of environmental stress on youngsters, but also must take into account individual variations in the experience of specific types of stress. In particular, the distinction between interpersonal and noninterpersonal stressors appears to be pivotal to the delineation of age and gender differences in both stress exposure and stress generation.

Our findings also have implications for developmental theory and research on the evolution of close relationships. Results bore a striking resemblance to those that have emerged from prior investigations of age and gender differences in the nature of interpersonal relations. For example, findings of increased exposure to independent family stress in preadolescent girls and to independent peer stress in adolescent girls were consistent with well-documented developmental trajectories reflecting an ascendance of the peer group as a context for activity and socialization during adolescence (Burke & Weir, 1978; Steinberg & Silverberg, 1986). Although a higher level of family involvement may be expected in preadolescents, we hypothesized that tension associated with a growing desire for autonomy from parental influence may lead adolescent girls to generate more stress and conflict within parent-child relationships. Indeed, this seemed to be the case. Moreover, the prevalence of dependent peer stress and conflict in adolescent girls meshed with research indicating greater difficulties in the peer relationships of adolescent females than in those of adolescent males or preadolescents (Compas et al., 1986; Greene & Larson, 1991).

Beyond these commonalities, the present study expands prior work on close relationships. Previous investigations have relied on youngsters' global perceptions of various parameters of family and peer relationships, such as closeness, intimacy, and conflict (e.g., Furman & Buhrmester, 1992; Steinberg & Silverberg, 1986). In contrast, this study provides a window onto identifiable day-to-day events that likely serve as the basis for more generalized reports about relationships. Similarly, our assessment of noninterpersonal events provides information about significant occurrences in the daily lives of youngsters outside of the social sphere. The parallelism between our results and those obtained in community samples suggests that similar patterns of age and gender differences hold at quite severe levels of stress.

Stress Reactions: Vulnerability to Depressive Outcomes

This study also yielded data regarding the implications of stress for youngsters' adjustment. As pre-

dicted, stress was associated with depressive symptoms in girls but not in boys; in particular, depression was most strongly associated with interpersonal conflict. Whereas dependent (particularly noninterpersonal) stress was associated with depression in preadolescents, independent (particularly interpersonal) stress was associated with depression in adolescents. These results were modest but consistent with hypotheses, suggesting that further inquiry is warranted. A critical next step in this line of research will be to determine whether increased vulnerability to depression is indeed mediated by maladaptive social-cognitive mechanisms. Although the role of these mechanisms cannot be determined from this study, the findings were consistent with our proposition that dependent stress may induce depression by fostering negative self-evaluative processes, such as negative attributions about the cause of events or decreased perceptions of self-competence. Specifically, we would expect that girls may be more vulnerable to these processes than boys (Pomerantz & Ruble, 1998). Likewise, we would expect that self-evaluative processes may be less consolidated and more reactive to immediate environmental events in preadolescents than in adolescents (Turner & Cole, 1994). Extrapolating from these presumptions, we might anticipate that the occurrence of dependent stress would render girls and preadolescents more vulnerable to depressive outcomes. Some evidence does corroborate this type of social-cognitive mediation (Cole & Turner, 1993), but the explicit role of dependent stress in such models and the specificity of such models to depression have not yet been explored.

Interestingly, the positive association of dependent stress and conflict with symptoms was specific to depression; in contrast, exposure to independent noninterpersonal stress predicted anxiety but not depression. Moreover, the *negative* association between anxiety and dependent noninterpersonal stress in boys and adolescents suggested that higher levels of anxiety potentially may *protect* these groups from engaging in behaviors that generate certain types of stress (e.g., antisocial actions that create trouble with adult authority figures). These preliminary patterns suggest that the development of disorder-specific models of stress may benefit from the differentiation of independent and dependent events.

These findings also add to emerging models of gender differences in adolescent depression. Nolen-Hoeksema and Girgus (1994) have delineated three possible models to account for these differences; of these, they conclude that a review of the literature yields the strongest support for a model wherein gender differences in certain personality or behavioral characteristics that are present before adolescence interact with the challenges of adolescence to place girls at particularly high risk for depression. In the present study, we found that both boys and girls faced higher levels of stress during adolescence. However, one type of stress that was especially salient in adolescent girls, namely interpersonal conflict, was also most strongly associated with depressive symptoms. Moreover, this association held for girls but not for boys. Thus, these results suggest that girls both may experience higher levels of the types of stress associated with depression *and* may be more reactive to these types of stress than boys.

The interactional nature of the above model (Nolen-Hoeksema & Girgus, 1994) has implications for the interpretation of results from the present study. In particular, it is important to note that our findings do not indicate that adolescents are less prone than preadolescents to depressive reactions to dependent stress. Rather, dependent stress alone may not be a sufficient determinant of depressive outcomes in adolescents, and therefore we may need to consider *combinations* of vulnerability and risk factors in the prediction of adolescent depression (e.g., Cole & Turner, 1993; Nolen-Hoeksema et al., 1992). However, tests of interactional models only recently have begun to include context-specific stressors, and have not yet ascertained the relative contributions of independent and dependent stressors.

Conclusions

This study is among the first to examine both stress exposure and stress generation in clinic-referred youngsters using a comprehensive interview and contextual threat rating methodology. These findings suggest that a transactional approach to the study of life stress may help to elucidate the processes underlying cross-situational and cross-temporal continuity in adjustment. For example, Caspi, Elder, and Bem (1988) have identified two types of continuity across the life span—cumulative continuity, whereby "behaviors are sustained across time by the progressive accumulation of their own consequences" (p. 824), and interactional continuity, whereby behaviors tend "to evoke maintaining responses from others during reciprocal social interactions" (p. 824). The stress-generation process may serve as one mechanism whereby dysfunctional child characteristics and behaviors produce negative consequences, which in turn act as further stressors that tax children's already compromised resources. Moreover, our data indicated that there may be individual variation, partially associated with gender, in the extent to which these

processes operate in interpersonal versus noninterpersonal contexts. Our results also demonstrated that dependent events become an increasingly potent ingredient of stress during adolescence. Thus, developmentally sensitive models will need to incorporate dependent stress as an integral component of the context in which youngsters develop, and will need to account for continuity and change in stress-generation processes over time.

Finally, it should be noted that conclusions cannot be drawn as to the direction of the relation between dependent stress and depression. Although the stressors occurred in the 1-year period preceding our evaluation of symptoms, it is likely that many youngsters had experienced symptoms throughout the year. In fact, we would expect that depression and its accompanying psychosocial impairments would themselves act as precipitants of negative events, thereby setting into motion a cycle of symptoms and stress. Identifying characteristics of youngsters that augment their vulnerability to becoming ensnared in such a cycle, as well as elaborating on the processes that maintain and fuel such a cycle, represent potentially fruitful avenues for the next generation of child life stress research.

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ADDRESSES AND AFFILIATIONS

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