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Publisher: Routledge

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Journal of Clinical Child & Adolescent Psychology

Publication details, including instructions for authors and subscription information:
<http://www.tandfonline.com/loi/hcap20>

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Published online: 07 Jun 2010.

To cite this article: Kathryn E. Grant , Bruce E. Compas , Audrey E. Thurm , Susan D. McMahon & Polly Y. Gipson (2004) Stressors and Child and Adolescent Psychopathology: Measurement Issues and Prospective Effects, *Journal of Clinical Child & Adolescent Psychology*, 33:2, 412-425, DOI: [10.1207/s15374424jccp3302_23](https://doi.org/10.1207/s15374424jccp3302_23)

To link to this article: http://dx.doi.org/10.1207/s15374424jccp3302_23

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REVIEW ARTICLE

Stressors and Child and Adolescent Psychopathology: Measurement Issues and Prospective Effects

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This article reviews existing research on the association between stressors and symptoms of psychopathology in children and adolescents with a focus on measurement issues and prospective effects. The first half of the article focuses on the measurement of stressors, emphasizing checklists and interviews. Available measures of stressful experiences are reviewed and critiqued. Results of this review reveal both substantial progress (i.e., development of valid stressor assessment tools) and remaining problems (i.e., inconsistent measurement across studies). The second half of this article reviews studies that have tested for prospective associations between stressors and symptoms of psychopathology in children and adolescents. Studies that have examined the prospective effects of recent or prior stressors on current psychological symptoms, while controlling for prior psychological symptoms, are reviewed. Results overall suggest that stressors predict changes in rates of symptoms of psychopathology in children and adolescents over time. Results also suggest that symptoms of psychopathology predict changes in rates of stressors over time. Implications of these findings are that conclusive evidence now exists for the importance of stressors in the development of child and adolescent psychopathology.

Stressors occupy a central role in the field of developmental psychopathology. Most etiological models include stressful life experiences as an important environmental contribution of risk for psychological problems in children and adolescents (Mash & Barkley, 2003). Yet, reviews of the child and adolescent stress literature published in the past two decades have reported relatively inconsistent findings. Most of these

reviews (e.g., L. Cohen & Park, 1992; Compas, 1987; Johnson, 1986; Johnson & Bradlyn, 1988) highlighted the need for the development of reliable and valid stressor measures and concluded that there was insufficient evidence to support the hypothesis that stressors predict psychopathology in children and adolescents over time (L. Cohen & Park, 1992; Compas, 1987; Johnson, 1986; Johnson & Bradlyn, 1988). These reviews also argued for more research examining (a) moderators of the relation between stressors and psychological problems (including the need for research examining changes in the association between stressors and psychopathology across development), (b) mediating processes in the relation between stressors and psychopathology, and (c) specificity in the relation be-

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tween particular types of stressors and particular types of psychopathology (L. Cohen & Park, 1992; Compas, 1987; Johnson, 1986; Johnson & Bradlyn, 1988).

To evaluate progress that has been made in the past 15 years, we have examined the stress literature in a series of four articles. These include reviews of evidence for processes of mediation and moderation in the association of stress and psychopathology (Grant, Compas, Stuhlmacher, et al., 2003; Grant, Compas, Thurm, et al., 2004) and evidence of specificity in the relations between stress and child and adolescent psychopathology (McMahon, Grant, Compas, Thurm, & Ey, 2003). This article examines two fundamental issues in this field: the measurement of stressors in childhood and adolescence and findings from prospective studies.

To conduct these reviews, we completed both computer (PsychLit and PsychInfo) and manual searches (tracking citations). The computer-generated search was limited to empirical studies published in scientific journals in English since 1986 (i.e., since the last comprehensive reviews, Compas, 1987; Johnson, 1986) and was conducted using the following key words: *stress* (or *events* or *hassles*), *psychopathology* (or *psychological symptoms* or *psychological disorder*), and *child* (or *adolescent*). This search was repeated with specific additional stressors substituted for the *stress* term: *abuse*, *divorce* (or *marital conflict*), *violence*, *poverty* (or *low income* or *low socioeconomic status*), *illness*, and *death*. Results of these additional searches were combined with the original search and duplicates removed, yielding more than 1,500 original empirical articles on the relation between stressors and psychological symptoms during childhood or adolescence published in scientific journals from 1987 to the present. Approximately 30% of these studies (approximately 500 studies) met criteria for inclusion in this review. These studies all moved beyond examination of simple cross-sectional associations between stressors and psychological symptoms by meeting one or more of the following criteria: (a) tested the prospective association between stressors and psychological symptoms, controlling for prior symptoms; (b) examined moderators in the association between stressors and psychological outcome; (c) used the series of regression analyses recommended by Baron and Kenny (1986) or structural equation modeling to examine mediating processes in the relation between stressors and psychological symptoms; or (d) tested for specific associations between particular stressors and particular outcomes.

The goals of this article are to examine critically the stress literature with regard to measurement issues and to evaluate evidence for prospective associations between stressors and child and adolescent psychopathology. The entire literature on stress in childhood and adolescence that met the inclusion criteria was examined for measurement issues, and longitudinal studies were examined for evidence of prospective effects.

Measurement of Stressors

Defining Stressors

In a separate review (Grant, Compas, Stuhlmacher, et al., 2003), we defined stressors as “*environmental* events or chronic conditions that objectively threaten the physical and/or psychological health or well-being of individuals of a particular age in a particular society” (italics in original; p. 449).¹ This definition is consistent with traditional “stimulus-based” definitions of stress (Holmes & Rahe, 1967) and more recent definitions of “stressors” (McCubbin & Patterson, 1983; Rice, 1999) and “objective stress” (Hammen, 1997). In combination with the element of threat, the essential element that distinguishes stressors from moderators, mediators, psychological symptoms, and other risk factors (e.g., genetic risk) is the environmental element (S. Cohen, Kessler, & Gordon, 1995).²

Measuring Stressors

Stressor Checklists

The most widely used method for assessing stressors affecting children and adolescents is the self-report checklist. Checklists are relatively easy to administer and allow investigators to collect data on large samples, thus increasing statistical power to detect relations among stressors, mediating and moderating variables, and psychological outcomes. Checklists vary in the extent to which they focus on breadth or depth. General checklists assess a broad range of stressful ex-

¹The degree to which events or circumstances deemed objectively threatening in one society would be deemed so in another is an empirical question. It is likely, however, that many of the events or circumstances considered most threatening in mainstream U.S. society are relatively universal (e.g., death of loved one, loss of limb, threat to one's life), notwithstanding the fact that cultural moderators influence the degree of distress experienced. On the other hand, some events or circumstances deemed relatively less threatening in the United States (e.g., death of a pet) could still meet criteria for objective threat in this society but not in another society. For this reason, a societally based definition is warranted at this time.

²In a separate review (Grant et al., 2003), we argued against the use of transactional definitions of stress (i.e., *relationship* between person and environment *perceived* as taxing or exceeding resources and endangering well-being; Lazarus & Folkman, 1984) with children and adolescents and recommended that appraisals be conceptualized as moderators, mediators, or both, which are likely to shift across development. In addition, given the historical association of the term *stress* with a wide array of psychological phenomena (i.e., from environmental stressors to mediating and moderating processes to psychological responses to environmental stressors), we (Grant et al., 2003) recommended use of the word *stressor* to refer to the environmental experiences that should be the defining feature of stress research. The broader term *stress* is more useful as an inclusive descriptor of research in the field (i.e., stress research), which includes a focus on the range of processes set in motion by exposure to environmental stressors.

periences, whereas specialized checklists assess specific types or domains of stressful events in the lives of young people.

General checklists of stressful events. Advances have been made in the development and refinement of general stressor checklists for adolescents, but less progress has been made in the development of checklists for children. At least 11 such measures for adolescents (Burnett & Fanshawe, 1997; Cheng, 1997; Coddington & Troxell, 1980; Compas, Davis, Forsythe, & Wagner, 1987; Johnson & McCutcheon, 1980; Masten, Neeman, & Andenas, 1994; Newcomb, Huba, & Bentler, 1981; Patterson & McCubbin, 1983; Swearingen & L. Cohen, 1985; Tolor, Murphy, Wilson, & Clayton, 1983; Yeaworth, York, Hussey, Ingle, & Goodwin, 1980) and at least 5 for children (Byrne, Velamoor, Cernovsky, Cortese, & Losztyn, 1990; Coddington, 1972; Deutsch & Erikson, 1989; Sandler, Ramirez, & Reynolds, 1986; Sandler, Wolchik, Braver, & Fogas, 1986) are relatively well established in the literature.

These checklists are all similar in that they present respondents with a sample of negative and, in some cases, positive events that are representative of the types of events that researchers deem relevant. None of the inventories are designed to be exhaustive; rather, they are intended to offer a sufficiently broad sampling to be representative of stressful events and experiences in childhood and adolescence. Early versions of these measures offered little information on their psychometric qualities, leading to concerns about the reliability and validity of these instruments (Compas, 1987). More recently, however, the test-retest reliability, internal consistency, and concurrent validity of several general life events checklists for adolescents have been established (e.g., Burnett & Fanshawe, 1997; Cheng, 1997; L. Cohen & Park, 1992; Compas et al., 1987). For example, L. Cohen, Burt, and Bjork (1987) reported 1-week test-retest reliability for reports of events in the past year on the Junior High Life Experiences Survey (Swearingen & L. Cohen, 1985) of .96 and 70% correspondence between adolescents' self-reports and their mothers' reports of adolescents' life events. Compas et al. (1987) reported 2-week test-retest reliabilities ranging from .74 to .89 for the Adolescent Perceived Events Scale and 82% correspondence between older adolescents' self-reports and reports obtained from their roommates. Similarly, Cheng (1997) reported 2-week test-retest reliability of .86 for the Chinese Adolescent Life Events Scale. These findings suggest that it is possible to obtain reliable reports of stressful events from adolescents on self-report checklists, and the correspondence between different informants can be interpreted as initial evidence of interrater reliability or initial evidence of convergent validity. Unfortunately, basic psychometric data are not available for many of the measures that have been

reported in the literature (e.g., Tolor et al., 1983; Yeaworth et al., 1980).

In contrast to self-report measures for adolescents, checklists for the assessment of children's life events are often designed for parents to complete, on the assumption that preadolescents may not be reliable informants (e.g., Coddington, 1972). However, little attention has been paid to the reliability and validity of child measures. Further, the implications of relying on external reports of parents as opposed to self-reports have not been examined.

Specialized checklists. Specialized stressor checklists have generally been developed with two related issues in mind: the need for specific measures for specific populations and the need for measures of specific types of events.

With few exceptions (e.g., Allison et al., 2004; Cheng, 1997), measures of cumulative life stressors have been developed on European American middle-class samples. These measures have been criticized for lacking items pertinent to youth of color, particularly those living in disadvantaged urban communities (Miller, Webster, & MacIntosh, 2002). A small number of measures have been developed to address this issue, particularly with regard to exposure to community violence among minority youth (e.g., Richters & Martinez, 1993). For example, Hastings and Kelley (1997) developed a scale to assess exposure to violence in a sample of low-income urban adolescents. Responses on the measure were correlated with objective crime data and symptoms, including anger, posttraumatic stress symptoms, and internalizing and externalizing symptoms (Hastings & Kelley, 1997). Although exposure to violence scales are important sources of information on stressors affecting low-income urban youth, they do not represent comprehensive measures of stressors likely to impact youth of color or other minority youth (Allison et al., 2004; Miller et al., 2002). Broader measures are needed that are inclusive of exposure to racism, discrimination, acculturation stressors (Gil, Vega, & Dimas, 1994; Nyborg & Curry, 2003), and specific economic stressors.

A small number of measures have been developed on predominantly White middle-class populations exposed to specific stressors, including measures of events related to parental divorce (Roosa, Beals, Sandler, & Pillow, 1990) and parental alcoholism (Roosa, Sandler, Gehring, Beals, & Cappo, 1988). These measures contain events and chronic stressors that characterize these broader stressful experiences. Measures developed for specific populations offer the advantage of being more comprehensive and sensitive in measuring the types of stressors experienced by these groups. On the other hand, the limited range of events included on these measures prohibits their use

in comparative studies across samples exposed to various types of stressful events and circumstances.

Critiques of the checklist approach. Although most stressor checklists are consistent with an objective conceptualization of environmental stress,³ the degree to which stressor checklists actually assess objective threat is unclear. The items included on stressor checklists have typically been selected by researchers based on their personal opinion, or general consensus about the nature of threatening experiences for young people, or information generated in small focus groups. Thus, the items themselves have not been empirically generated relative to objective threat. In addition, as cumulative stressor checklists include a list of brief items (e.g., death of a grandparent), it is unclear as to what degree each item assesses the same objective experience for different children and adolescents. For example, the death of a grandparent who has had little contact with a child represents less threat and disruption than the death of a grandparent who has served as that child's primary caregiver (Duggal et al., 2000).

Stressor checklists have also been criticized for limiting the number and types of stressful events that may be examined (Duggal et al., 2000). Measures for adolescents have ranged from 39 items (Swearingen & L. Cohen, 1985) to more than 200 items (Compas et al., 1987). Although longer measures can be assumed to be more comprehensive, abbreviated versions of longer checklists have also been found to be valid (e.g., Grant & Compas, 1995). Thus, the number and type of stressors necessary to adequately assess the effects of stressors on youth is unclear.

Another critique of stressor checklists is that they do not require respondents to provide information about the date of occurrence or timing of the events (Duggal et al., 2000). Most checklists focus on a particular period of time (e.g., events that have occurred in the previous 6 months) without specifying at what point during that period the event took place. This limits the usefulness of checklists in determining the role of the occurrence of stressors in relation to the onset and remission of psychiatric disorders.

Finally, most stressor checklists have been criticized for failing to distinguish between stressors that are independent of the individual's behavior and those that are not (Hammen, 1997). Independent events are

generally considered less confounded with psychopathology and therefore, represent "cleaner" markers of environmental effects. On the other hand, there is increasing evidence of a reciprocal relation between stressors and psychological symptoms (discussed further later), indicating the importance of examining dependent stressors as well.

Stressor Interviews

Stressor interviews were developed in part to address the methodological shortcomings of stressor checklists. The most extensive work in this area has been conducted by Goodyer and Altham (1991a, 1991b), Hammen and colleagues (e.g., Adrian & Hammen, 1993; Hammen, 1995, 1997; Rudolph & Hammen, 1999; Rudolph, Hammen, & Burge, 1997), Garber and colleagues (Garber, Keiley, & Martin, 2002; Garber & Robinson, 1997), and Frank and colleagues (Duggal et al., 2000; Williamson et al., 1998). Stressor interviews are designed to provide relatively objective indexes of the degree of contextual threat that is associated with stressful events and conditions in the lives of children and adolescents. Interviews are used to generate a list of stressful events that have been encountered and the conditions that surround these events. Probes for each event that has occurred include a description of what happened, when it happened (using a calendar to establish the dates of occurrence), who was involved, and the objective consequences of the event (Rudolph & Hammen, 1999; Rudolph et al., 1997). External raters then evaluate the level of threat associated with each event and condition or the severity of impact of each event. These ratings are then summed (or consensus is achieved among raters) to form an objective index of stressors that each child or adolescent has encountered. Interrater reliability of these ratings has typically been quite high. For example, Adrian and Hammen reported a correlation of .80 between teams of raters on objective threat ratings (71% exact agreement and 99% agreement within 1 point on a 5-point scale) and 98% agreement on ratings of whether events were independent or dependent on the child. Rudolph and Hammen (1999; Rudolph et al., 1997) reported intraclass correlations between two independent teams of raters of .85 for ratings of threat and .97 for event dependence and Cohen's kappas of .82 for classification of events into categories reflecting the content of events (e.g., parent-child, family, peer). Similarly, Garber and Robinson achieved 90% agreement among raters (kappa = .79) in judgments of the degree of objective threat of events.

Although many potential advantages of stressor interviews have been identified, there have been few empirical comparisons of the relative merits of interviews and checklists. Some preliminary evidence suggests that interviews may be more useful for research on par-

³Only a handful of stressor checklists (e.g., Allison et al., 2003; Compas et al., 1987) have been developed based on transactional conceptualizations of stress, in that they include questions about the degree to which specific events or circumstances are perceived as taxing or exceeding resources. Fewer than 4% of the approximately 500 studies conducted in the past 15 years that met criteria for this review used a measure consistent with a transactional definition of stress (e.g., Compas, Howell, Phares, Williams, & Guinta, 1989; Robinson, Garber, & Hilsman, 1995; Rosen, Compas, & Tacy, 1993; Wagner, Compas, & Howell, 1988).

ticular severe events. Duggal and colleagues (2000) administered the Bedford College Life Events and Difficulties Schedule interview (Brown & Harris, 1989) modified for adolescents (Monck & Dobbs, 1985) and the Life Events Checklist (LEC; Johnson & McCutcheon, 1980) to a sample of 35 depressed and 35 control adolescents. Comparisons between the two measures revealed that a similar total number of stressors was identified by each, and the two methods were equally effective at distinguishing between depressed adolescents and controls. However, different events appear to have been tapped by the two measures. In fact, 68% of the events identified as severe by objective coders of the Bedford College Life Events and Difficulties Schedule were not identified on the stressor checklist. This finding suggests that many important stressors were not represented on the checklist; nonetheless, the events identified by the LEC were also associated with depression.

There is also some preliminary evidence that stressor interviews may be better predictors of changes in symptomatology. Garber and Robinson (1997) administered the Life Events Interview for Adolescents (LEIA) to mothers and their adolescent children. Adolescents completed the LEC (Johnson & McCutcheon, 1980), and mothers completed the Family Inventory of Life Events (McCubbin & Patterson, 1983). Scores on the LEIA were significantly correlated with the LEC ($r = .46-.51$) and the Family Inventory of Life Events ($r = .51-.53$). Differences between the scores were due in part to the elimination of events in the scoring of the interview that were rated to have no objective impact on the adolescent. Multiple regression analyses indicated that the LEIA was a stronger predictor of changes in depressive symptoms in prospective analyses than either of the checklists. Further, survival analyses indicated that scores on the LEIA were predictive of risk for a depressive episode.

Critiques of the interview approach. Despite their potential advantages, stressor interviews have been used much less frequently than pencil-and-paper measures. Of the 500 studies examined in this review, fewer than 2% used interviews to assess stressors. This is likely due to the increased time demands and person power associated with interview administration, which bring substantially increased costs to the researcher and the participants. Given this reduced cost-effectiveness, interviews do not offer a complete solution to the problems identified with existing survey measures. Complete reliance on stressor interviews would limit the field by reducing the participation of some researchers and by reducing the sample sizes of those studies that are conducted.

Beyond concerns about cost-effectiveness, interviews have been criticized as less likely to elicit information that may be embarrassing or have potential

negative consequences if reported (Singleton & Straits, 1999). For example, children and adolescents may be less likely to truthfully answer questions about physical or sexual abuse in an interview format (to an interviewer who may be required to report such abuse) than they would in an anonymous survey.

Nonetheless, there are research questions for which stressor interviews are essential. In particular, interviews are recommended when the outcome examined is a categorical diagnosis rather than symptoms of psychopathology. When the focus is on categorical diagnoses based on *Diagnostic and Statistical Manual of Mental Disorders* (4th ed. [DSM-IV], American Psychiatric Association, 1994) criteria, the emphasis is on the onset, course, duration, and remission of a disorder. Therefore, researchers need to document the timing of stressful events in relation to changes in diagnostic status. This requires the use of measures of both stressful events and psychopathology that are sensitive to timing and duration and research designs that are able to identify the specific timing of events in relation to the onset or termination of an episode of disorder (S. Cohen et al., 1995). Interviews have been designed to identify the date and timing of stressful events so they can be linked to the timing of the onset and remission of a disorder. In contrast, stressor checklists do not generate information about event timing and duration.

General Critiques of Stressor Measurement Strategies in Child and Adolescent Research

In addition to critiques that are specific to either survey or interview methods, two significant problems apply to both approaches to measurement. A first general concern involves possible confounding of stressors and symptoms of psychopathology due to similar items appearing on measures of both constructs (e.g., Dohrenwend & Shrout, 1985). For example, fights or conflicts with others and worries or concerns about one's life situation have been included on some measures of stressors but are also symptoms of some forms of psychopathology (e.g., disruptive behavior disorders and anxiety). The development of an empirically based taxonomy of stressors, inclusive only of stressors that are not overly confounded with symptoms, could address this problem (discussed further later). In the meantime, researchers should evaluate existing stressor measures for degree of overlap with symptomatology.

A second area of concern centers on the lack of standardization of stressor measurement for children and adolescents. The approximately 500 studies examined in our review of this literature are exemplary in that each moved beyond examination of a simple association between stressors and symptoms to examine prospective, moderating, mediating, or specificity relations among stressors and outcome. Nonetheless, very

few of these studies used comparable stressor measures. Approximately 60% used cumulative stressor checklists or interviews (as opposed to measures of specific stressors such as sexual abuse or exposure to a hurricane). Of these studies, fewer than 10% used one of the well-validated measures reviewed previously, and no single measure was used in more than 3% of studies. Forty-five percent of studies indicated the authors developed their own measure of stressors, and the remaining studies used one of the approximately 50 currently available measures of cumulative stressors. Psychometric data on most of these measures was not provided, and few of the authors who developed their own scales provided information about their method of measurement development or items included in their scales.

This lack of standardization highlights a central difference between the state of the field of child and adolescent stressor measurement and the state of the field of child and adolescent psychopathology measurement. Specifically, taxonomies of child and adolescent psychopathology have been developed, but no such taxonomy exists for child and adolescent stressors.

Two well-established taxonomies for child and adolescent psychopathology have been developed (a) the *DSM-IV* and (b) the Achenbach System of Empirically Based Assessment (ASEBA; Achenbach & Rescorla, 2001). Although the *DSM-IV* is generally regarded as the gold standard of diagnostic systems, the ASEBA (and earlier versions of the measures on which the ASEBA is based) has been used more frequently in stress research on children and adolescents.⁴ The development of such taxonomies represents an important achievement in the past half century, which has dramatically improved the ability of researchers to communicate with one another and to replicate one another's work.

The progress made in stressor measurement over the past 15 years suggests it may be possible to also develop a taxonomy of stressors. In particular, the development of reliable and valid stressor interviews indi-

cates that it is possible to achieve agreement about events and conditions that pose a threat to children and adolescents in our society. Evidence for the reliability and validity of stressor surveys has also emerged, in spite of the fact that these measures have been developed independent of empirically based objective threat ratings. These achievements suggest that a standardized measure of stressors, which builds on the strengths of each of these methodologies, could be developed.

Recommended Next Steps in Measurement Research

Standardization of measures, the generation of normative data on the occurrence of stressors, and the development of a taxonomy of stressors are recommended as the next steps in stress measurement research.⁵ As development of such a taxonomy would be a labor-intensive process and the degree of threat posed by particular experiences may vary across development, it is advisable to focus initially on a particular developmental period. For example, adolescents are exposed to increased rates of potential stressors (e.g., pubertal development, academic pressures, peer pressures), and there is some evidence that increases in stressors account, at least in part, for the increased rates of psychological disorder (e.g., depression, conduct disorder, substance abuse) associated with this developmental period (Arnett, 1999; Compas, Hinden, & Gerhardt, 1995; Larson, Richards, Moneta, Holmbeck, & Duckett, 1996; Moffit, 1993; Rutter, 1986; Petersen et al., 1993; Scaramella, Conger, & Simons, 1999). There are also practical reasons for focusing on adolescents, including adolescents' greater ability to report on their own stressful experiences as compared with younger children and the fact that most well-established measures of environmental stressors to date have been developed on adolescents (e.g., Adolescent Perceived Events Scale, Compas et al., 1987; Junior High Life Experiences Survey, Swearingen & L. Cohen, 1985). Although these measures are not normatively or empirically based, several measures have demonstrated sound psychometrics and, thus, can be used as reference points during the next phase of measurement development.

Building on our proposed definition of stressors (Grant et al., 2003), the first step toward developing a taxonomy of stressors would be to identify a representative set of environmental changes, events, and situations that are objectively threatening to youth. The most promising methodology to guide this first step is structured interviews for the assessment of stressors. For this portion of the research, it would be important to sample adolescents who have been exposed to heightened rates of stressors (e.g., adolescents living in

⁴This is true for several theoretical and practical reasons. First, whereas the *DSM-IV* initially developed out of theory and research with adults, the ASEBA is exclusively based on empirical research with community and clinical samples of children and adolescents. Second, whereas the *DSM-IV* was designed to be a categorical system, the ASEBA allows for examination of symptomatology on a continuum, in keeping with growing evidence that symptoms in children and adolescents are likely to present in such a manner (Mash & Barkley, 2003). Third, whereas the *DSM-IV* provides limited normative data in the form of prevalence rates (APA, 1994), the ASEBA offers researchers the opportunity to compare symptom rates in a particular study with a large nationally representative sample. This provides an ideal point of comparison for research on at-risk children and adolescents. Finally, the ASEBA self-report format is much easier to administer than the clinical interviews generally associated with the *DSM-IV*, thus facilitating its use with samples that are large or difficult to access.

⁵We have begun this program of research.

urban poverty) and adolescents who have been underrepresented in stress research (e.g., adolescents of color) to generate a comprehensive and representative list of stressors. Each identified stressor should be coded for objective threat based on the coding protocol of a well-validated stressor interview (e.g., Hammen & Rudolph, 1996), and the contextual descriptors that lead to the judges' objective threat rating for each stressor should be identified.

Once this phase of quantitative analysis is complete, an inductive qualitative analysis should be conducted (Patton, 1990). This would involve analysis of stressor interview transcripts in conjunction with objective impact ratings for relevant stressor themes and descriptors (Harper et al., in press). The goal of the qualitative analysis would be to condense an initial list of individual stressors and their relevant contextual descriptors to a nonredundant list of stressors (of a length conducive to use in survey research) that includes contextual descriptors reflective of significant variation in objective impact ratings. This list would form the basis of the measure of stressors that can be used in taxometric analyses.

From this point, the development of a taxonomy of stressors could follow two paths. First, stressors could be grouped on conceptually based categories such as specific life domains (e.g., family events, school events, neighborhood events) or characteristics of the events (e.g., events involving loss, violence, or rejection). These categories could then be subjected to confirmatory factor analysis to determine if they reflect events that have a common pattern of occurrence. Alternatively, the development of a taxonomy of stressors could be empirically based, following Achenbach and Rescorla' (2001) method for development of a normatively based taxonomy of child and adolescent psychopathology. In either case, the measure should, eventually, be administered to a large nationally representative sample for the purpose of establishing stressor base rates, norms, and risk cutpoints relative to clinically significant symptomatology.

Until a taxonomy of stressors is developed, stress researchers must pay more attention to measurement issues in stress research by using currently available stressor measures with good psychometric properties, developing measures with sound psychometrics for stressors currently missing from the literature (e.g., measures of exposure to racism or discrimination), and providing detailed information about stressor measures utilized in their research.

Prospective Studies of the Relation Between Stressors and Child and Adolescent Psychopathology

As the field of stressor measurement has developed, stressor measures have been more frequently subjected

to the litmus test of prospective designs. The litmus test for any measure of stressors is to examine the association between stressors and symptoms of psychopathology or the onset of psychological disorders longitudinally. Prospective designs are not subject to potential confounding that may result when stressors and symptoms are measured contemporaneously. Furthermore, prospective designs can statistically control for prior levels of symptoms and examine the relation between stressors and changes (increases or decreases) in symptoms over time. Prospective designs can also be used to test the temporal relations between stressors and symptoms by determining if stressors predict later symptoms, if symptoms predict later stressors, or if this relation is bidirectional.

Earlier reviews of the literature on the association between stressors and psychological symptoms (L. Cohen & Park, 1992; Compas 1987; Johnson, 1986; Johnson & Bradlyn, 1988) concluded that there was insufficient evidence to support the hypothesis that stressors predict psychopathology in children and adolescents over time. The most consistent recommendation for further research was for additional studies of prospective associations between stressors and child and adolescent psychopathology.

Since those earlier reviews, at least 60 published studies have tested for a prospective association between stressors and psychological symptoms (e.g., Time 1 stressors predict Time 2 symptoms, controlling for Time 1 symptoms). Prospective research typically involves measurement of both stressors and symptoms of psychopathology at an initial assessment and measurement of both constructs again at a follow-up assessment. Analyses must control for initial psychological symptoms in predicting symptoms at follow-up to predict changes in symptoms over time, using stressful events at the initial, or at the follow-up, assessment as the predictor. Both the concurrent association of stressors and symptoms at follow-up as well as the association of initial stressors and subsequent symptoms reflect prospective tests of the stressor-symptom association, so long as initial symptoms are controlled (e.g., Compas, Howell, Phares, Williams, & Ledoux, 1989). These two designs test the contribution of prior versus recent stressors in accounting for changes in symptoms. In addition, prospective studies in which both stressors and psychopathology are measured at multiple points in time allow for consideration of the role of psychopathology in predicting subsequent stressors.

Empirical Evidence That Stressors Predict Child and Adolescent Psychopathology

At least 60 studies have now examined the association of stressful events with measures of symptoms of psychopathology, after controlling for initial levels of

these symptoms.⁶ A significant effect was found in 53 studies; that is, stressful events were predictive of *increases* in symptoms over time (Achenbach, Howell, McConaughy, & Stanger, 1995; Allgood-Merten, Lewinsohn, & Hops, 1990; Aseltine & Gore, 1993; Aseltine, Gore, & Colton, 1994; Attar, Guerra, & Tolan, 1994; Barrera, Li, & Chassin, 1995; Biafora, Warheit, Vega, & Gil, 1994; Bolger, Patterson, Thompson, & Kupersmidt, 1995; Boney-McCoy & Finkelhor, 1995; Burt, L. Cohen, & Bjork, 1988; Caspi & Moffitt, 1991; L. Cohen et al., 1987; Compas et al., 1989; Davila, Hammen, Burge, Paley, & Daley, 1995; Dixon & Aherns, 1992; Dodge, Pettit, Bates, & Valente, 1995; DuBois, Felner, Brand, Adan, & Evans, 1992; DuBois, Felner, Meares, & Krier, 1994; Durkin, Khan, Davidson, Zaman, & Stein, 1993; Garber & Little, 1999; Garrison, Jackson, Marsteller, McKeown, & Addy, 1990; Ge, Lorenz, Conger, Elder, & Simons, 1994; Gest, Neeman, Hubbard, Masten, & Tellegen, 1993; Gore & Aseltine, 1995; Guerra, Huesmann, Tolan, Van Acker, & Eron, 1995; Hammen, 1988; Hammen, Burge, & Adrian, 1991; Hammen & Goodman-Brown, 1990; Harold & Conger, 1997; Haug-Schnabel, 1992; Hilsman & Garber, 1995; Hoffman & Su, 1997; Khoury et al., 1997; La Greca, Silverman, Vernberg, & Prinstein, 1996; La Greca, Silverman, & Wasserstein, 1998; Luthar & Cushing, 1999; Mathijssen, Koot, & Verhulst, 1999; McFarlane, Bellissimo, Norman, & Lange, 1994; Nolen-Hoeksema, Girgus, & Seligman, 1992; Osborn, 1992; Pagani, Boulerice, Tremblay, & Vitaro, 1997; Panak & Garber, 1992; Robinson et al., 1995; Roosa et al., 1990; Rosen, Compas, & Tacy, 1993; Sandler, Tein, & West, 1994; Seifer, Sameroff, Balswin, & Baldwin, 1992; Shirk, Boergers, Eason, & Van Horn, 1998; Siegel & Brown, 1988; Stiffman, Chueh, & Earls, 1992; Wagner, Compas, & Howell, 1988; Walker, Garber, & Greene, 1994; Ystgaard, Tambs, & Dalgard, 1999). Effect sizes ranged from 1% to 21%, with an average of 4% for those studies that reported rigorous measures of unique variance.

The vast majority of studies (88%), therefore, reported evidence in support of the proposition that stressors contribute to psychopathology. Cumulative measures of stressors and particular stressful experiences (e.g., poverty, divorce) were both found to predict psychological symptoms, and positive associations were reported for both interviews (e.g., Hammen et al., 1991) and checklists (e.g., DuBois et al., 1992).

⁶Although we propose a definition of stressors that focuses exclusively on environmental threats to the individual, we did not exclude from our review studies measuring stressors based on a transactional definition (e.g., Lazarus & Folkman, 1984). We excluded studies using a pure "response-based" definition of stressors (i.e., psychological or physiological distress in response to external events; Selye, 1974), as this definition is overly confounded with psychological symptoms.

In addition, stressful events were found to predict both internalizing and externalizing symptoms (e.g., Robinson et al., 1995) though the associations were typically stronger with internalizing than externalizing problems (Compas et al., 1989), and externalizing symptoms were examined less frequently. The prospective association between stressors and psychopathology also emerged across different informants, though the association of child and adolescent reported stressors was greater with self-reports than parental reports of symptoms (e.g., Compas et al., 1989; Dubow, Tisak, Causey, Hryshko, & Reid, 1991).⁷

As noted previously, stressors accounted for only small to moderate portions of the variance in the change in symptoms. Nonetheless, it is important to recognize that modest effect sizes reflect unique variance attributable to stressors after controlling for prior levels of symptoms (and in some cases, several other variables as well). Therefore, children and adolescents experienced increased symptoms of emotional and behavioral problems following exposure to stressors, above and beyond baseline levels of symptoms at initial data collection.

Seven studies failed to find a significant prospective association between stressful events and changes in symptoms (Dubow et al., 1991; Leadbeater & Linares, 1992; Luthar, Doernberger, & Zigler, 1993; Routh, Hill, Steele, Elliott, & Dewey, 1995; Steer, Scholl, & Beck, 1990; Walker, Downey, & Bergman, 1989; Zimmerman, Ramirez-Valles, Zapert, & Maton, 2000). Comparison of studies that found significant effects with those that did not yielded few methodological differences on most dimensions. Measurement of stressors varied within and across both groups of studies, making meaningful comparisons difficult (discussed further later). For example, in studies reporting significant effects, stressful events were measured by a variety of different checklists and interviews, as they were in the seven studies that did not report significant effects. Studies with significant effects and those without significant effects included measures of both internalizing and externalizing outcomes (25 of those with significant effects and 4 of those without significant effects) or examined internalizing outcomes only (19 of those with significant effects and 2 of those without significant effects). Studies that did and did not find significant effects also did not differ on the age of the participants, as both involved mostly adolescent samples. There also was no substantial difference in the time span between the assessments of stressors and

⁷This pattern may indicate that the association between stressors and symptoms reflects, at least in part, the common method variance between the predictor and the outcome. Alternatively, the stronger association between child and adolescent report of stressors and outcomes may reflect the fact that children and adolescents have first-hand knowledge of the stressors and the symptoms they experience.

symptoms of psychopathology (mean of 14 months for significant studies; mean of 13 months for nonsignificant studies).

Two methodological differences are apparent between those studies that did and those that did not find significant effects. First, the studies differed on sample size. The 53 studies that found effects had samples ranging from $n = 10$ (Haug-Schnabel, 1992) to $n = 9,413$ (Osborn, 1992), with a mean sample size of 606 participants (excluding the Osborn study because its sample was disproportionately large and the Haug-Schnabel study because its sample was disproportionately small). By comparison, studies that did not find significant effects had a mean sample size of 119, ranging from $n = 33$ (Routh et al., 1995) to $n = 302$ (L. Cohen et al., 1987). Nonetheless, most of these studies had sufficient statistical power to detect at least minimum effects.

Second, among those studies using the most common method for testing prospective effects—using regression analyses or structural equation modeling to examine the association of stressors and current symptoms controlling for prior symptom levels (i.e., Time 1 or Time 2 stressors on Time 2 symptoms controlling for Time 1 symptoms)—4 of 6 (67%) nonsignificant studies focused exclusively on the effects of prior stressors on current symptoms (i.e., Time 1 stressors on Time 2 symptoms controlling for Time 1 symptoms); whereas only 9 of 31 significant studies (29%) focused solely on prior stressors. Among those studies that examined both prior and concurrent stressors (Compas et al., 1989; DuBois et al., 1992; Dubow et al., 1991; Hoffmann & Su, 1997; La Greca et al., 1996; Mathijssen et al., 1999; Roosa et al., 1990; Rosen et al., 1993; Siegel & Brown, 1988; Hilsman & Garber, 1995), 9 of 10 found effects for more recent stressors, whereas only 3 of 10 found effects for prior stressors.

This pattern is consistent with the notion that recent stressors exert greater impact than prior stressors on the mental health of children and adolescents (Compas et al., 1989) and has implications for future research on prospective associations between stressors and child and adolescent psychopathology. First, it makes intuitive sense that recent stressors would be more strongly associated than prior stressors with current symptoms. For assessment of the greatest potential impact of stressors on child and adolescent psychopathology, therefore, it is advisable to use measures of recent stressors as predictors. As analyses of the stressor–psychopathology relation become more sophisticated, however, investigating differential effects of timing of stressors across development will become more and more valuable. Research such as this should be theory based and could include analyses of the relation between stressors experienced at varying periods of development with outcomes manifest at varying periods of development (e.g., examination of the associa-

tion between physical abuse experienced in early childhood with bullying behavior manifest in early adolescence; Hinshaw & Anderson, 1996; McGee, Wolfe, & Olson, 2001; Wekerle & Wolfe, 1996), as well as analyses of the relation between the recency of stressors and differing manifestations or severity of psychopathology (i.e., symptoms, syndromes, and disorders; Compas, Ey, & Grant, 1993).

Examination of reciprocal and dynamic relations among stressors, moderators and mediators, and psychopathology is also needed to fully understand differential effects of prior versus recent stressors on child and adolescent mental health. The greater length of time between prior stressors and psychopathology implies a greater number of intervening moderators and mediators, which may act to attenuate or accentuate the association between stressor and symptomatology. The severity, type, and controllability of the stressor are also likely to influence the degree to which prior stressors continue to exert an impact on mental health. For example, more severe uncontrollable stressors (e.g., sexual abuse) may be more likely to elicit coping strategies that provide relief in the short run but are associated with poorer outcomes in the long run (e.g., avoidant coping; Spaccarelli, 1994). On the other hand, the effects of milder stressors may be more likely to dissipate over time, as a greater number of protective factors may be effective with these stressors (Masten et al., 1999).

In addition, the relation between prior stressors and current psychopathology is likely to represent a series of reciprocal relations between stressors and psychological distress. For example, prior exposure to uncontrollable stressors may lead to immediate psychological distress, which, in turn, leads to additional controllable stressors, which, in turn, lead to additional psychological symptoms. Longitudinal research of reciprocal and dynamic relations (discussed further later) among stressors, mediators and moderators, and psychopathology is needed to develop a greater understanding of these complex relations.

Analysis of Measurement Issues in Prospective Research

In addition to the analysis of methodological differences that may account for differences between those studies finding and those not finding significant effects, prospective studies were examined in relation to the two general measurement issues raised in the first half of this article. The first issue is related to concerns about the validity of some stressor measures due to confounding with symptom items, and this critique is directly addressed by prospective research. The consistent pattern of significant prospective effects (i.e., controlling for Time 1 symptoms) indicates that stressor measures are validly assessing environmental risk dis-

tinct from confounding symptomatology. That is, the occurrence of stressors is associated with increases in symptoms above and beyond the effects of prior symptoms.

The second issue involves inconsistent measurement of stressors, a problem identified previously in our measurement review. Inconsistent measurement across studies characterized this area of research as well. Fifty-one different stressor measures were used across the 60 studies examined in this review. Of these stressor measures, only two (the LEC and the Life Events Questionnaire) were used by more than one research group. This pattern of inconsistent measurement limited the degree to which we were able to examine whether measurement differences may have accounted for differing findings across studies in our prospective review. Nonetheless, the fact that prospective effects have emerged in spite of inconsistent measurement of stressors suggests that the measures have achieved minimum levels of reliability. That is, if untested measures of stressors were in fact unreliable, a consistent pattern of associations with symptoms would not have occurred.

Empirical Evidence That Psychopathology Predicts Stressors in Children and Adolescents

Prospective research is essential for testing the proposition that the relations among stressors, moderators and mediators, and psychological outcomes are reciprocal and dynamic (Grant et al., 2003). Examination of this hypothesis is important for understanding the ways in which stressors influence children and adolescents, as it addresses the shifting nature of relations among variables across development (Grant et al., 2003). To date, however, extant research has focused on reciprocal relations between stressors and psychopathology (e.g., Compas et al., 1989; DuBois et al., 1992; DuBois et al., 1994; Dubow et al., 1991; Sandler et al., 1994; Wagner et al., 1988). This research has assessed both stressors and symptoms at more than one point in time and examined both the association between initial stressors and subsequent symptoms and the association between initial symptoms and subsequent stressors.

Results of these studies indicate that the relation between stressors and psychopathology is, indeed, reciprocal. That is, stressors predict subsequent increases in symptoms of psychopathology, and symptoms of psychopathology predict subsequent increases in stressful events (e.g., Compas et al., 1989; DuBois et al., 1992; DuBois et al., 1994; Dubow et al., 1991; Sandler et al., 1994; Wagner et al., 1988). This suggests that at least some children and adolescents are caught in a continuing cycle in which stressful experiences contribute to increases in symptoms of internalizing or externalizing

problems, and these problems contribute to disrupted interpersonal relationships, failures in achievement tasks, and other types of stressors.

Additional research is needed to determine the extent to which this holds true for a broader range of stressors and a broader range of psychological outcomes. In addition, studies testing for prospective relations among particular stressors, particular moderating and mediating processes, and particular outcomes are needed. Little research has been conducted on reciprocal and dynamic relations among these variables.

Although a literature large enough for review is not available, at least two studies exemplify the type of research needed in this area. Davila and colleagues (1995) tested the hypothesis that interpersonal stressors function both as predictors of depressive symptoms and as mediators of the relation between initial and later depressive symptoms in a sample of late adolescents. The authors found support for their hypothesis in a series of reciprocal relations, thus illustrating the dynamic relations among stressors, psychopathology, and mediating processes. In a second study, Nolen-Hoeksema and colleagues (1992) found that stressors predicted a pessimistic explanatory style in youth that was associated with depression but did not remit with the remittance of depressive symptoms. This phenomenon, which the authors labeled a "scar," suggests that pessimistic explanatory style may initially play a mediating role in response to stressors in the prediction of depression but, over time, may become a fixed pattern of responding and, eventually, function as a moderator in relation to future stressors. Additional studies, testing hypotheses such as these, are needed to determine the ways in which relations among stressors, mediators and moderators, and psychological problems may be reciprocal and dynamic.

Summary and Conclusion

Since the last comprehensive reviews of the stress literature were published, a great deal of progress has been made. This review examined progress in two central areas: (a) stressor measurement and (b) prospective effects. Our review of stressor measures revealed substantial progress in the development of valid and reliable measures for adolescents (especially for White, middle-class youth), with more limited progress in the area of child measures and measures assessing the particular experiences of children and youth of color and other minorities. Although valid measures have been developed, inconsistent measurement and ongoing development of new tools without rigorous psychometrics remain the norm in stress research. To address these problems, the development of a taxonomy of stressors similar to the taxonomies developed for child and adolescent psychopathology is recommended.

In spite of inconsistencies in the measurement of stressors, consistent findings have emerged from prospective studies of the association between stressors and psychological symptoms in children and adolescents. Results of our review of the 60 studies that have tested this association provide evidence that stressful life experiences predict increases in psychological problems in children and adolescents over time. Results of studies that examined reciprocal effects also provide evidence that psychopathology predicts additional stressful experiences. Next steps in this research include studies of prospective and reciprocal relations among particular stressors, moderators and mediators, and psychological outcomes.

In conclusion, stressors remain a construct of central importance in the field of developmental psychopathology. Results of studies testing for prospective relations between stressors and psychological problems in children and adolescents reaffirm this importance. Concerted efforts to address remaining measurement problems are needed so that we may realize the enormous potential of stress research to inform both etiological models of developmental psychopathology and prevention, intervention, and policy initiatives.

References

- Achenbach, T. M., Howell, C. T., McConaughy, S. H., & Stanger, C. (1995). Six-year predictors of problems in a national sample: III. Transitions to young adult syndromes. *Journal of the American Academy of Child & Adolescent Psychiatry*, *34*, 658–669.
- Achenbach, T. M., & Rescorla, L. A. (2001). *Manual for the ASEBA school-age forms and profiles*. Burlington: University of Vermont, Research Center for Children, Youth, and Families.
- Adrian, C., & Hammen, C. (1993). Stress exposure and stress generation in children of depressed mothers. *Journal of Consulting and Clinical Psychology*, *61*, 354–359.
- Allgood-Merten, B., Lewinsohn, P., & Hops, H. (1990). Sex differences and adolescent depression. *Journal of Abnormal Psychology*, *99*, 55–63.
- Allison, K. W., Burton, L., Marshall, S., Perez-Febles, A., Yarrington, J., Bloch Kirsh, L., et al. (2003). *Life experiences among urban adolescents: Measurement and the role of context*. Manuscript submitted for publication.
- American Psychiatric Association. (1994). *Diagnostic and statistical manual of mental disorders* (4th ed.). Washington, DC: Author.
- Arnett, J. J. (1999). Adolescent storm and stress, reconsidered. *American Psychologist*, *54*, 317–326.
- Aseltine, R., & Gore, S. (1993). Mental health and social adaptation following the transition from high school. *Journal of Research on Adolescence*, *3*, 247–270.
- Aseltine, R., Gore, S., & Colton, M. E. (1994). Depression and the social developmental context of adolescence. *Journal of Personality and Social Psychology*, *67*, 252–263.
- Attar, B., Guerra, N., & Tolan, P. (1994). Neighborhood disadvantage, stressful life events, and adjustment in urban elementary-school children. *Journal of Clinical Child Psychology*, *23*, 391–400.
- Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, *51*, 1173–1182.
- Barrera, M., Li, S. A., & Chassin, L. (1995). Effects of parental alcoholism and life stress on Hispanic and Non-Hispanic Caucasian adolescents: A prospective study. *American Journal of Community Psychology*, *23*, 479–507.
- Biafora, F., Warheit, G., Vega, W., & Gil, A. (1994). Stressful life events and changes in substance use among a multiracial/ethnic sample of adolescent boys. *Journal of Community Psychology*, *22*, 296–311.
- Bolger, K. E., Patterson, C. J., Thompson, W. W., & Kupersmidt, J. B. (1995). Adjustment among children experiencing persistent and intermittent family economic hardship. *Child Development*, *66*, 1107–1129.
- Boney-McCoy, S., & Finkelhor, D. (1995). Psychosocial sequelae of violent victimization in a national youth sample. *Journal of Consulting and Clinical Psychology*, *63*, 726–736.
- Brown, G. W., & Harris, T. O. (Eds.). (1989). *Life events and illness*. New York: Guilford.
- Burnett, P. C., & Fanshawe, J. P. (1997). Measuring school-related stressor in adolescents. *Journal of Youth and Adolescence*, *26*, 415–428.
- Burt, C. E., Cohen, L. H., & Bjork, J. P. (1988). Perceived family environment as a moderator of young adolescents' life stress adjustment. *American Journal of Community Psychology*, *16*, 101–122.
- Byrne, C. P., Velamoor, V. R., Cernovsky, Z. Z., Cortese, L., & Loszyn, S. (1990). A comparison of borderline and schizophrenic patients for childhood life events and parent–child relationships. *Canadian Journal of Psychiatry*, *35*, 590–595.
- Caspi, A., & Moffitt, T. E. (1991). Individual differences are accentuated during periods of social change: The sample case of girls at puberty. *Journal of Personality and Social Psychology*, *61*, 157–168.
- Cheng, C. (1997). Assessment of major life events for Hong Kong adolescents: The Chinese Life Event Scale. *American Journal of Community Psychology*, *25*, 17–33.
- Coddington, R. D. (1972). The significance of life events as etiologic factors in the diseases of children: II. A study of a normal population. *Journal of Psychosomatic Research*, *16*, 205–213.
- Coddington, R. D., & Troxell, J. R. (1980). The effect of emotional factors on football injury rates: A pilot study. *Journal of Human Stress*, *6*, 3–5.
- Cohen, L., Burt, C., & Bjork, J. (1987). Life stress and adjustment: Effects of life events experienced by young adolescents and their parents. *Developmental Psychology*, *23*, 583–592.
- Cohen, L. H., & Park, C. (1992). Life stress in children and adolescents: An overview of conceptual and methodological issues. In A. M. La Graca, L. J. Siegel, J. L. Wallander, & C. E. Walker (Eds.), *Stress and coping in child health* (pp. 25–43). New York: Guilford.
- Cohen, S., Kessler, R. C., & Gordon, L. U. (1995). *Measuring stress*. New York: Oxford University Press.
- Compas, B. E. (1987). Stress and life events during childhood and adolescence. *Clinical Psychology Review*, *7*, 275–302.
- Compas, B. E., Davis, G. E., Forsythe, C. J., & Wagner, B. M. (1987). Assessment of major and daily stressful events during adolescence: The Adolescent Perceived Events Scale. *Journal of Consulting and Clinical Psychology*, *55*, 534–541.
- Compas, B. E., Ey, S., & Grant, K. E. (1993). Taxonomy, assessment, and diagnosis of depression during adolescence. *Psychological Bulletin*, *114*, 323–344.
- Compas, B. E., Hinden, B., & Gerhardt, C. (1995). Adolescent development: Pathways and processes of risk and resilience. *Annual Review of Psychology*, *46*, 265–293.
- Compas, B. E., Howell, D. C., Phares, V., Williams, R. A., & Ledoux, N. (1989). Parent and child stress and symptoms: An integrative analysis. *Developmental Psychology*, *25*, 550–559.

- Davila, J., Hammen, C., Burge, D., Paley, B., & Daley, E. (1995). Cognitive/interpersonal correlates of adult interpersonal problem-solving strategies. *Cognitive Therapy and Research, 20*, 465–480.
- Deutsch, L., & Erickson, M. (1989). Early life events as discriminatory of socialized and undersocialized delinquents. *Journal of Abnormal Child Psychology, 17*, 541–551.
- Dixon, J., & Aherns, A. (1992). Stress and attributional style as predictors of self-reported depression in children. *Cognitive Therapy and Research, 16*, 623–634.
- Dodge, K. A., Pettit, G. S., Bates, J. E., & Valente, E. (1995). Social information-processing patterns partially mediate the effect of early physical abuse on later conduct problems. *Journal of Abnormal Psychology, 104*, 632–643.
- Dohrenwend, B. P., & Shrout, P. E. (1985). “Hassles” in the conceptualization and measurement of life stress variables. *American Psychologist, 4*, 780–785.
- DuBois, D. L., Felner, R. D., Brand, S., Adan, A., & Evans, E. (1992). A prospective study of life stress, social support, and adaptation in early adolescence. *Child Development, 63*, 542–557.
- DuBois, D., Felner, R., Meares, H., & Krier, M. (1994). Prospective investigation of the effects of socioeconomic disadvantage, life stress, and social support on early adolescent adjustment. *Journal of Abnormal Psychology, 103*, 511–522.
- Dubow, E. F., Tisak, J., Causey, D., Hryshko, A., & Reid, G. (1991). A two-year longitudinal study of stressful life events, social support, and social problem-solving skills: Contributions to children’s behavioral and academic adjustment. *Child Development, 62*, 583–599.
- Duggal, S., Malkoff-Schwartz, S., Birmaher, B., Anderson, B. P., Matty, M. K., Houck, P. R., et al. (2000). Assessment of life stress in adolescents: Self-report versus interview methods. *Journal of the American Academy of Child & Adolescent Psychiatry, 39*, 445–451.
- Durkin, M. S., Khan, N., Davidson, L.L., Zaman, S. S., & Stein, Z. A. (1993). The effects of a natural disorder on child behavior: Evidence for posttraumatic stress. *American Journal of Public Health, 83*, 1549–1553.
- Garber, J., Keiley, M. K., & Martin, N. C. (2002). Developmental trajectories of adolescents’ depressive symptoms: Predictors of change. *Journal of Consulting and Clinical Psychology, 70*, 79–95.
- Garber, J., & Little, S. (1999). Predictors of competence among offspring of depressed mothers. *Journal of Adolescent Research, 14*, 44–71.
- Garber, J., & Robinson, N. (1997, April). *The development and validation of the Life Events Interview for Adolescents*. Paper presented at the biennial meeting of the Society for Research in Child Development, Washington, DC.
- Garrison, C., Jackson, K., Marsteller, F., Mckeown, R., & Addy, C. (1990). A longitudinal study of depressive symptomatology in young adolescents. *Journal of Child and Adolescent Psychiatry, 29*, 581–585.
- Ge, X., Lorenz, F., Conger, R., Edler, C., & Simmons, R. (1994). Trajectories of stressful life events and depressive symptoms during adolescence. *Developmental Psychology, 30*, 467–483.
- Gest, S. D., Neemann, J., Hubbard, J. J., Masten, A. S., & Tellegen, A. (1993). Parenting quality, adversity, and conduct problems in adolescence: Testing process-oriented models of resilience. *Development and Psychopathology, 5*, 663–682.
- Gil, A. G., Vega, W. A., & Dimas, J. M. (1994). Acculturative stress and personal adjustment among Hispanic adolescent boys. *Journal of Community Psychology, 22*, 43–54.
- Goodyer, I. M., & Altham, P. M. E. (1991a). Lifetime exit events and recent social and family adversities in anxious and depressed school-age children and adolescents: I. *Journal of Affective Disorders, 21*, 219–228.
- Goodyer, I. M., & Altham, P. M. E. (1991b). Lifetime exit events and recent social and family adversities in anxious and depressed school-age children and adolescents: II. *Journal of Affective Disorders, 21*, 229–238.
- Gore, S., & Aseltine, R. H. (1995). Protective processes in adolescence: Matching stressors with social resources. *American Journal of Community Psychology, 23*, 301–327.
- Grant, K. E., & Compas, B. E. (1995). Stress and symptoms of depression/anxiety among adolescents: Searching for mechanisms of risk. *Journal of Consulting and Clinical Psychology, 63*, 1015–1021.
- Grant, K. E., Compas, B. E., Thurm, A. E., McMahon, S. D., Gipson, P., Campbell, A. J., et al. (2004). *Moderating and mediating processes in the relation between stressors and child/adolescent psychopathology*. Manuscript submitted for publication.
- Grant, K. E., Compas, B. E., Stuhlmacher, A., Thurm, A. E., McMahon, S., & Halpert, J. (2003). Stressors and child/adolescent psychopathology: Moving from markers to mechanisms of risk. *Psychological Bulletin, 129*, 447–466.
- Guerra, N. G., Huesmann, L. R., Tolan, P. H., VanAcker, R., & Eron, L. D. (1995). Stressful events and individual beliefs as correlates of economic disadvantage and aggression among urban children. *Journal of Consulting and Clinical Psychology, 63*, 518–528.
- Hammen, C. (1988). Self-cognitions, stressful events and the prediction of depression in children of depressed mothers. *Journal of Abnormal Child Psychology, 16*, 347–360.
- Hammen, C. (1995). The social context of risk for depression. In K. D. Craig & K. S. Dobson (Eds.), *Anxiety and depression in adults and children* (pp. 82–96). Thousand Oaks, CA: Sage.
- Hammen, C. (1997). *UCLA Child and Adolescent Life Stress Interview*. Unpublished manuscript, University of California at Los Angeles.
- Hammen, C., Burge, D., & Adrian, C. (1991). Timing of mother and child depression in a longitudinal study of children at risk. *Journal of Consulting and Clinical Psychology, 59*, 341–345.
- Hammen, C., & Goodman-Brown, T. (1990). Self-schemas and vulnerability to specific life stress in children at risk for depression. *Cognitive Therapy and Research, 14*, 215–227.
- Hammen, C., & Rudolph, K. D. (1996). Childhood depression. In E. J. Mash & R. A. Barkley (Eds.), *Child psychopathology*. New York: Guilford.
- Harold, G. T., & Conger, R. D. (1997). Marital conflict and adolescent distress: The role of adolescent awareness. *Child Development, 68*, 333–350.
- Harper, G. W., Lardon, C., Rappaport, J., Bangi, A. K., Contreras, R., & Pedraza, A. (in press). Community narratives: The use of narrative ethnography in participatory community research. In L. Jason, C. Keys, Y. Suarez-Balcazar, R. R. Taylor, M. Davis, J. Durlak, & D. Isenberg (Eds.), *Participatory community research: Theories and methods in action*. Washington, DC: American Psychological Association.
- Hastings, T. L., & Kelley, M. L. (1997). Development and validation of the Screen for Adolescent Violence Exposure (SAVE). *Journal of Abnormal Child Psychology, 25*, 511–520.
- Haug-Schnabel, G. (1992). Daytime and nighttime enuresis: A functional disorder and its ethological decoding. *Behavior, 120*, 232–261.
- Hilsman, R., & Garber, J. (1995). A test of the cognitive diathesis-stress model of depression in children: Academic stressors, attributional style, perceived competence, and control. *Journal of Personality and Social Psychology, 69*, 370–380.
- Hinshaw, S. P., & Anderson, C. A. (1996). Conduct and oppositional defiant disorders. In E. J. Mash & R. A. Barkley (Eds.), *Child psychopathology*. New York: Guilford.
- Hoffmann, J. P., & Su, S. S. (1997). The conditional effects of stress on delinquency and drug use: A strain theory assessment of sex

- differences. *Journal of Research in Crime and Delinquency*, 34, 46–78.
- Holmes, T. H., & Rahe, R. H. (1967). The Social Readjustment Rating Scale. *Journal of Psychosomatic Research*, 11, 213–218.
- Johnson, J. H. (1986). *Life events as stressors in childhood and adolescence*. Beverly Hills, CA: Sage.
- Johnson, J. H., & Bradlyn, A. S. (1988). Assessing stressful life events in childhood and adolescence. In P. Karoly (Ed.), *Handbook of child health assessment: Biopsychological perspectives* (pp. 303–331). New York: Wiley.
- Johnson, J. H., & McCutcheon, S. (1980). Assessing life events in older children and adolescents. Preliminary findings with the Life Events Checklist. In G. Sarason & C. D. Spielberger (Eds.), *Stress and anxiety*. Washington, DC: Hemisphere.
- Khoury, E. L., Warheit, G. J., Hargrove, M. C., Zimmerman, R. S., Vega, W. A., & Gil, A. G. (1997). The impact of Hurricane Andrew on deviant behavior among a multi-racial/ethnic sample of adolescents in Dade County, Florida: A longitudinal analysis. *Journal of Traumatic Stress*, 10, 71–91.
- La Greca, A., Silverman, W., Vernberg, E., & Prinstein, M. (1996). Symptoms of posttraumatic stress in children after Hurricane Andrew: A prospective study. *Journal of Consulting and Clinical Psychology*, 64, 712–723.
- La Greca, A. M., Silverman, W. K., & Wasserstein, S. B. (1998). Children's predisaster functioning Hurricane Andrew. *Journal of Consulting and Clinical Psychology*, 66, 883–892.
- Larson, R., Richards, M. H., Moneta, G., Holmbeck, G., & Duckett, X. (1996). Changes in adolescents' daily interactions with their families from ages 10–18: Disengagement and transformation. *Developmental Psychology*, 32, 744–754.
- Leadbeater, B., & Linares, O. (1992). Depressive symptoms in Black and Puerto Rican adolescent mothers in the first 3 years postpartum. *Development and Psychopathology*, 4, 451–468.
- Luthar, S., & Cushing, G. (1999). Neighborhood influences and child development: A prospective study of substance abusers' offspring. *Development and Psychopathology*, 11, 763–784.
- Luthar, S., Doernberger, C., & Zigler, E. (1993). Resilience is not a unidimensional construct: Insights from a prospective study of inner city adolescents. *Development and Psychopathology*, 5, 703–717.
- Mash, E. J., & Barkely, R. A. (Eds.). (2003). *Child psychopathology* (2nd ed.). New York: Guilford.
- Masten, A. S., Hubbard, J. J., Gest, S. D., Tellegen, A., Garmezy, N., & Ramirez, M. (1999). Competence in the context of adversity: Pathways to resilience and maladaptation from childhood to late adolescence. *Development and Psychopathology*, 11, 143–169.
- Masten, A. S., Neeman, J., & Andenas, S. (1994). Life events and adjustment in adolescents: The significance of event independence, desirability, and chronicity. *Journal of Research on Adolescence*, 4, 71–97.
- Mathijssen, J., Koot, H., & Verhulst, F. (1999). Predicting change in problem behavior from child and family characteristics and stress in referred children and adolescents. *Development and Psychopathology*, 11, 305–320.
- McCubbin, H. I., & Patterson, J. M. (1983). The family stress process: The double ABCX model of adjustment and adaptation. *Marriage and Family Review*, 6, 7–37.
- McFarlane, A., Bellissimo, A., Norman, G. R., & Lange, P. (1994). Adolescent depression in a school-based community sample: Preliminary findings on contributing social factors. *Journal of Youth and Adolescence*, 23, 601–620.
- McGee, R., Wolfe, D., & Olson, J. (2001). Multiple maltreatment, attribution of blame, and adjustment among adolescents. *Development and Psychopathology*, 13, 827–846.
- McMahon, S. D., Grant, K. E., Compas, B. E., Thurm, A. E., & Ey, S. (2003). Stress and psychopathology in children and adolescents: Is there evidence of specificity? *Journal of Child Psychology and Psychiatry and the Allied Disciplines: Annual Research Review*, 44, 107–133.
- Miller, D. B., Webster, S. E., & MacIntosh, R. (2002). What's there and what's not: Measuring daily hassles in urban African American adolescents. *Research on Social Work Practice*, 12, 375–388.
- Moffitt, T. E. (1993). Adolescence-limited and life-course-persistent antisocial behavior: A developmental taxonomy. *Psychological Review*, 100, 674–701.
- Monck, E., & Dobbs, R. (1985). Measuring life events in an adolescent population: Methodological issues and related findings. *Psychological Medicine*, 15, 841–850.
- Newcomb, M. D., Huba, G. A., & Bentler, P. A. (1981). A multidimensional assessment of stressful life events among adolescents: Derivation and correlates. *Journal of Health and Social Behavior*, 22, 400–415.
- Nolen-Hoeksema, S., Girgus, J. S., & Seligman, M. E. P. (1992). Predictors and consequences of childhood depressive symptoms: A 5-year longitudinal study. *Journal of Abnormal Psychology*, 101, 405–422.
- Nyborg, V. M., & Curry, J. F. (2003). The impact of perceived racism: Psychological symptoms among African American boys. *Journal of Clinical Child and Adolescent Psychology*, 32, 258–266.
- Osborn, A. F. (1992). Social influences on conduct disorder in mid-childhood. *Studia Psychologica*, 34, 29–42.
- Pagani, L., Boulterice, B., Tremblay, R., & Vitaro, F. (1997). Behavioural development in children of divorce and remarriage. *Journal of Child Psychology and Psychiatry and the Allied Disciplines*, 38, 769–781.
- Panak, W., & Garber, J. (1992). Role of aggression, rejection, and attributions in the predictions of depression in children. *Development and Psychopathology*, 4, 145–165.
- Patterson, J. M., & McCubbin, H. I. (1983). The impact of family life events and changes on the health of a chronically ill child. *Family Relations: Journal of Applied and Family Studies*, 32, 255–264.
- Patton, M. Q. (1990). *Qualitative evaluation and research methods*. Thousand Oaks, CA: Sage.
- Petersen, A. C., Compas, B. E., Brooks-Gunn, J., Stemmler, M., Ey, S., & Grant, K. E. (1993). Depression in adolescence. *American Psychologist*, 48, 155–168.
- Rice, P. L. (1999). *Stress and health*. New York: Brooks/Cole.
- Richters, J. E., & Martinez, P. (1993). The NIMH community violence project: I. Children as victims of and witnesses to violence. *Psychiatry*, 56, 7–21.
- Robinson, N. S., Garber, J., & Hilsman, R. (1995). Cognitions and stress: Direct and moderating effects on depressive versus externalizing symptoms during the junior high school transition. *Journal of Abnormal Psychology*, 104, 453–463.
- Roosa, M. W., Beals, J., Sandler, I. N., & Pillow, D. R. (1990). The role of risk and protective factors in predicting symptomatology in adolescent self-identified children of alcoholic parents. *American Journal of Community Psychology*, 18, 725–741.
- Roosa, M. W., Sandler, I. N., Gehring, M., Beals, J., & Cappo, L. (1988). The Children of Alcoholics Life-Events Schedule: A stress scale for children of alcohol abusing parents. *Journal of Studies on Alcohol*, 49, 422–429.
- Rosen, J., Compas, B., & Tacy, B. (1993). The relation among stress, psychological symptoms, and eating disorder symptoms: A prospective analysis. *International Journal of Eating Disorders*, 14, 153–162.
- Routh, C., Hill, J., Steele, H., & Elliott, C. (1995). Maternal attachment status, psychosocial stressors, problem behaviour: Follow-up after parent training courses for conduct disorder. *Journal of Child Psychology and Psychiatry and the Allied Disciplines*, 36, 1179–1198.

- Rudolph, K., & Hammen, C. (1999). Age and gender as determinants of stress exposure, generation, and reactions in youngsters: A transactional perspective. *Child Development, 70*, 660–677.
- Rudolph, K. D., Hammen, C., & Burge, D. (1997). A cognitive–interpersonal approach to depressive symptoms in preadolescent children. *Journal of Abnormal Child Psychology, 25*, 33–45.
- Rutter, M. (1986). The developmental psychopathology of depression: Issues and perspectives. In M. Rutter, C. E. Izard, & P. B. Read (Eds.), *Depression in young people: Developmental and clinical perspectives* (pp. 3–30). New York: Guilford.
- Sandler, I. N., Ramirez, R., & Reynolds, K. (1986, August). *Life stress for children of divorce, bereaved, and asthmatic children*. Paper presented at the meeting of the American Psychological Association, Washington, DC.
- Sandler, I. N., Tein, J., & West, S. G. (1994). Coping, stress, and psychological symptoms of children of divorce: A cross-sectional and longitudinal study. *Child Development, 65*, 1744–1763.
- Sandler, I., Wolchik, S., Braver, S., & Fogas, B. (1986). Significant events of children of divorce: Toward the assessment of risky situations. In S. M. Auerbach & A. Stolberg (Eds.), *Crisis intervention with children and families* (pp. 65–83). New York: Hemisphere.
- Scaramella, L., Conger, R., & Simons, R. (1999). Parental protective influences and gender-specific increases in adolescent internalizing and externalizing problems. *Journal of Research on Adolescence, 9*, 111–141.
- Seifer, R., Sameroff, A., Baldwin, C., & Baldwin, A. (1992). Child and family factors that ameliorate risk between 4 and 13 years of age. *Journal of the American Academy of Child and Adolescent Psychiatry, 31*, 893–903.
- Shirk, S., Boergers, J., Eason, A., & Van Horn, M. (1998). Dysphoric interpersonal schemata and preadolescents' sensitization to negative events. *Journal of Clinical Child Psychology, 27*, 54–65.
- Siegel, J. M., & Brown, J. D. (1998). A prospective study of stressful circumstances, illness symptoms, and depressed mood among adolescents. *Developmental Psychology, 24*, 715–721.
- Singleton, R. A., & Straits, B. C. (1999). *Approaches to social research* (3rd ed.). New York: Oxford University Press.
- Spaccarelli, S. (1994). Stress appraisal and coping in child sexual abuse: A theoretical and empirical review. *Psychological Bulletin, 116*, 340–362.
- Steer, R. A., Scholl, T. O., & Beck, A. T. (1990). Revised Beck Depression Inventory scores of inner-city adolescents: Pre- and postpartum. *Psychological Reports, 66*, 315–120.
- Stiffman, A., Chueh, H., & Earls, F. (1992). Predictive modeling of change in depressive disorder and counts of depressive symptoms in urban youths. *Journal of Research on Adolescence, 2*, 295–316.
- Swearingen, E. M., & Cohen, L. H. (1985). Measurement of adolescent life events: The Junior High School Life Experiences Survey. *American Journal of Community Psychology, 13*, 69–85.
- Tolor, A., Murphy, V. M., Wilson, L. T., & Clayton, J. (1983). The High School Social Readjustment Scale: An attempt to quantify stressful events in young people. *Research Communications in Psychology, Psychiatry, and Behavior, 8*, 85–111.
- Wagner, B. M., Compas, B. E., & Howell, D. C. (1988). Daily and major life events: A test of an integrative model of stress. *American Journal of Community Psychology, 16*, 189–205.
- Walker, E., Downey, G., & Bergman, A. (1989). The effects of parental psychopathology and maltreatment on child behavior: A test of the diathesis-stress model. *Child Development, 60*, 15–24.
- Walker, L. S., Garber, J., & Greene, J. W. (1994). Somatic complaints in pediatric patients: A prospective study of the role of negative life events, child social and academic competence, and parental somatic symptoms. *Journal of Consulting and Clinical Psychology, 62*, 1213–1221.
- Wekerle, C., & Wolfe, D. A. (1996). Child maltreatment. In E. J. Mash & R. A. Barkley (Eds.), *Child psychopathology*. New York: Guilford.
- Williamson, D. E., Birmaher, B., Frank, E., Anderson, B. P., Matty, M. K., & Kupfer, D. J. (1998). Nature of life events and difficulties in depressed adolescents. *Journal of the American Academy of Child & Adolescent Psychiatry, 37*, 1049–1057.
- Yeaworth, R. C., York, J., Hussey, M. A., Ingle, M. E., & Goodwin, T. (1980). The development of an adolescent life change event scale. *Adolescence, 15*, 91–97.
- Ystgaard, M., Tambs, K., & Dalgard, O. S. (1999). Life stress, social support and psychological distress in late adolescence: A longitudinal study. *Social Psychiatry and Psychiatric Epidemiology, 34*, 12–19.
- Zimmerman, M., Ramirez-Valles, J., Zapert, K., & Maton, K. (2000). A longitudinal study of stress-buffering effects for urban African-American male adolescent problem behaviors and mental health. *Journal of Community Psychology, 28*, 17–33.

Received September 8, 2003

Accepted November 28, 2003