Risk Factors for Emotional/Behavioral Problems in Young Adolescents: A Prospective Analysis of Adolescent and Parental Stress and Symptoms

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Stressful events in the lives of 309 10- to 15-year-olds and stressful events and psychological symptoms reported by their parents were examined in a 9-month study. Ss' self-reported emotional/ behavioral problems were predicted by their reports of stressful events and their fathers' reports of psychological symptoms in cross-sectional analyses. Analyses at follow-up after controlling for initial reports of emotional/behavioral problems and prospective analyses predicting from first assessment to follow-up yielded significant effects for Ss' self-reported stressful events. Mothers' reports of children's problems were predicted by mothers' psychological symptoms in cross-sectional analyses and at follow-up after controlling for initial emotional/behavioral problems. Only prior levels of maternal reports of emotional/behavioral problems predicted mothers' reports of their children's problems 9 months later.

The identification of factors associated with increased risk for emotional/behavioral problems in adolescents is essential for the accurate prediction and prevention of such problems. Establishing markers of increased probability of maladjustment in community samples is particularly important for developing primary prevention efforts directed at nondisordered populations. Two potential sources of risk for adolescent emotional/behavioral problems are stressful events in the lives of adolescents and stressors and psychological symptoms in their parents.

Cross-sectional studies have shown an association between stressful events and emotional/behavioral problems in adolescents (Compas, 1987; Johnson, 1986). However, prospective studies are needed to examine whether stress is predictive of later maladjustment and to clarify the direction of the relation between these variables (Compas & Phares, in press). One approach is to test the concurrent association between stressful events and psychological symptoms after controlling for prior symptoms. This design examines the contribution of stressful events to changes in symptoms over time. A second approach is to test the prediction of symptoms at one time from stressful events measured at a prior time, again controlling for prior levels of symptoms. This design is less affected by possible confounds between stressful events and symptoms than when they are assessed concurrently. Although these designs cannot be

used to test true causal relations among these variables, studies using each approach have found a prospective association between stressful events and symptoms in older adolescents (e.g., Wagner, Compas, & Howell, 1988), college students (e.g., Hammen, Mayol, deMayo, & Marks, 1986), and adults (e.g., Monroe, 1982).

Prospective studies of stressful events and emotional/behavioral problems in young adolescents have been rare (Cohen, Burt, & Bjork, 1987; Gersten, Langner, Eisenberg, & Simcha-Fagan, 1977; Glyshaw, Cohen, & Towbes, 1988; Siegel & Brown, 1988; Swearingen & Cohen, 1985a). For example, Cohen et al. found that young adolescents' self-reports of stressful events accounted for a significant portion (5%) of the variance in self-reports of depressive and anxious symptoms after controlling for self-reports of symptoms 5 months earlier. However, initial stressful events did not predict symptoms 5 months later after controlling for initial symptoms, whereas initial symptoms predicted later stressful events after initial events were controlled. Siegel and Brown found that stressful events predicted later physical and depressive symptoms only in interaction with positive events. Only Glyshaw et al. found that young adolescents' stressful events predicted self-reported anxiety and depression 5 months later, controlling for initial levels of symptoms. These studies provide only weak support for the role of stressful events as a risk factor for maladjustment in young adolescents and suggest the additional importance of examining emotional/behavioral problems as a predictor of stressful events.

Prospective studies have also examined parents' stressful events and psychological symptoms as sources of risk for adolescent emotional/behavioral problems (e.g., Cohen et al., 1987; Hammen et al., 1987; Holahan & Moos, 1987). Here differences among reports by various informants may be particularly important. For example, Cohen et al. did not find an association between parents' self-reports of major life events and their children's self-reports of depression and anxiety. Holahan and

Moos found that parents' reports of their major life events and depressive and physical symptoms were related to mothers' reports of their children's maladjustment in cross-sectional analyses but not in follow-up analyses 1 year later after controlling for prior reports of maladjustment. Hammen et al. reported an association of mothers' reports of their own chronic stress/strains and depressive symptoms with maternal, teacher, and child reports of child behavior problems. However, prior levels of children's behavior problems were not controlled for in follow-up analyses. It is difficult to draw clear conclusions from these studies about the role of parental stress and psychological symptoms as risk factors for adolescent maladjustment.

In this study we obtained reports of parents' and adolescents' major and daily stressful events, parents' reports of their psychological symptoms, and maternal and adolescent reports of adolescents' emotional/behavioral problems twice, 9 months apart.[1] This study adds to previous prospective studies by investigating both internalizing and externalizing emotional/behavioral problems and by examining both adolescent major and daily stressful events (cf. Rowlison & Felner, 1988). Our design also allowed for a direct comparison of adolescents' and parents' reports of adolescent emotional/behavioral problems. We hypothesized that adolescents' reports of their daily stressors would predict their self-reported emotional/behavioral problems but not maternal reports of these problems. In contrast, maternal and paternal reports of their own daily stressors and their own psychological symptoms were expected to be significant predictors of maternal reports of adolescent emotional/behavioral problems but not of adolescents' self-reports of these problems.

Method

Subjects

Participants were 309 children and young adolescents (167 girls and 142 boys) and their parents living in the rural northeast portion of Vermont. The children and adolescents ranged from 10 to 15 years of age with a mean of 12 years (SD = 1.01) and were attending the sixth through eighth grades. As is typical of the Vermont population, more than 98% of the families were White, and the remaining 2% were Black. Median family income was between $20,000 and $24,999, ranging from less than $3,000 to more than $40,000. Eighty-two percent of the families had two parents in the home; 18% were single-parent families. A total of 81.4% of mothers worked outside of the home for an average of 33.94 hr/week (SD = 13.90); 93.8% of fathers worked outside of the home for an average of 46.07 hr/week (SD = 11.39). Mothers had a mean of 13.18 years of education (SD = 2.47), and fathers had an average of 12.72 years (SD = 3.44). Family socioeconomic status (SES) based on education, occupation, gender, and marital status (Hollingshead, 1975) was as follows: 3% Level I (unskilled laborer); 23% Level II (semiskilled worker); 27% Level III (skilled craftsperson, clerical worker); 33% Level IV (medium business, minor professional); and 14% Level V (major business or professional). The number of children in the families ranged from 1 to 6 with a mean of 2.61 (SD = 1.06). This sample is comparable to the population in this section of Vermont in annual income, percentage of two-parent families, education, and family size (Vermont Office of Policy Research and Coordination, 1988).

Procedures

All students in the sixth, seventh, and eighth grades in six rural schools were given a letter of informed consent to take home to their parents. Approximately half of the available families volunteered to take part in the study. Participation was voluntary, and a $25 remuneration was given to each family for completing the forms. Questionnaires were completed anonymously (identified only by a code number for each family).

Students completed their questionnaires at school in small groups of approximately 10 students each, with a research assistant available to explain directions and answer any questions. The measures were administered in a 50-min session (additional measures not reported here were completed in a second session 1 week later). Students were given an envelope containing questionnaires for their parents and were instructed to take these materials home and return the completed parent forms in a sealed envelope at the second session the following week.

Parents and their children were reminded via a letter of the follow-up 9 months later. The 9-month time period was selected so that the data collections would coincide with the beginning and end of the school year. All procedures at follow-up were identical with those at the initial data collection.

Measures

Adolescent stress. The junior high school version of the Adolescent Perceived Events Scale (APES; Compas, Davis, Forsythe, & Wagner, 1987) was used to measure adolescents' major and daily stressful events. It contains a list of 164 major and daily events representative of those experienced during early adolescence.[2] For each event, respondents indicate whether or not the event has occurred within the last 3 months. If the event has occurred, subjects then rate the perceived desirability of the event on a 9-point scale: *extremely undesirable* (−4), *neutral* (0), *extremely desirable* (+4). Total weighted negative event scores were calculated by summing events rated as −4 through −1. Test–retest reliability of the junior high school version of the APES over 2 weeks is r = .86 (Compas et al., 1987).

Events were categorized into two groups to determine "major life event" and "daily event" scores. All items that appear on adolescent major life event measures (Johnson & McCutcheon, 1980; Newcomb, Huba, & Bentler, 1981; Swearingen & Cohen, 1985b) were categorized as major life events. The remaining events from the APES were independently categorized as major or daily events by three researchers familiar with this area. Categorization was based on agreement between at least two of three raters. All of the events were classified as either a major life event or a daily event, resulting in 58 major events (α = .73) and 106 daily events (α = .86). Lists of the events are available from Bruce E. Compas. Total weighted negative major and daily events scores were used in the analyses.[3]

[1] Analyses of the Time 1 data for two-parent families have been reported previously (Compas, Howell, Phares, Williams, & Ledoux, 1989). These previous analyses were concerned with the relation between major and daily stressors, as well as the association of stressful events with parents' and young adolescents' psychological symptoms.

[2] Five events related to sexuality were omitted at the request of local school officials, which resulted in 159 items for the present analyses.

[3] The possibility of confounding between stressful events and psychological symptoms is a concern when self-report measures are used to assess both variables (e.g., Dohrenwend & Shrout, 1985; Lazarus, DeLongis, Folkman, & Gruen 1985; Rowlison & Felner, 1988). Prior analyses with the Adolescent Perceived Events Scale (APES) indicated that the correlation between stressful events and symptoms was not affected by items on the APES that may be confounded with symptoms (Compas, Davis, Forsythe, & Wagner, 1987). Similar analyses were run with the present data in which 20 potentially confounded items on the APES were excluded from the analyses with the Youth Self-Report. None of the correlations at Time 1 or Time 2 changed significantly, and

Adolescent emotional/behavioral problems. Self-reports of adolescents' emotional/behavioral problems were obtained on the Youth Self-Report (YSR; Achenbach & Edelbrock, 1987), a checklist of 102 behavior problem items rated "not true," "somewhat or sometimes true," or "very true or often true" of the respondent. Mothers completed the Child Behavior Checklist (CBCL; Achenbach & Edelbrock, 1983), which consists of 118 behavior problem items that are rated by parents as "not true," "somewhat or sometimes true," or "very true or often true" of their child. Normalized *T* scores based on a sample of clinical and nonclinical youth were used for the total behavior problems, internalizing, and externalizing scores for both measures.

Parental stress. The Hassles Scale (Kanner, Coyne, Schaefer, & Lazarus, 1981) was used to measure chronic, minor sources of stress in parents' daily lives. These events were rated for occurrence during the previous month and for the severity with which the hassle was experienced. The severity ratings were summed to yield a total hassles score.[4]

Parental symptoms. The Symptom Checklist-90-Revised (SCL-90-R; Derogatis, 1983) was used to assess parental psychological and somatic symptoms. Respondents rate the extent to which they have been distressed by each of the 90 symptoms during the previous week on a scale from *not at all* (0) to *extremely* (4). Test–retest reliability, internal consistency, and concurrent validity have all been shown to be excellent (Derogatis, 1983). The Global Severity Index (GSI), which is the mean across individual items, was used in all analyses. Internal consistency of the GSI for the present sample was .98 for mothers and .97 for fathers.

Demographic questionnaire. Parents completed a demographic questionnaire concerning their marital status, age, education, income, and number of children in the family.

Results

Analysis of Attrition

The number of participants providing complete data at both times varied across the different measures: 242 adolescents completed the APES at both times,[5] 271 adolescents completed the YSR twice, 183 mothers completed the CBCL twice, 187 mothers and 116 fathers completed the SCL-90-R twice, and 185 mothers and 114 fathers completed the Hassles Scale twice. Scores on each of the measures at Time 1 were compared for those who participated at both times and those who participated only at Time 1. These groups did not differ on family income or SES or on any of the measures completed by mothers, fathers, or their children.[6]

Descriptive Statistics

Means and standard deviations for parent and adolescent stressful events, symptoms, and emotional/behavioral problems at the two points in time are presented in Table 1. Mean *T* scores for the YSR and CBCL total behavior problem, internalizing, and externalizing scores were all within the normal range. Using a cutoff of a *T* score of greater than 62 on the YSR (Achenbach & Edelbrock, 1987), 11%, 14%, and 8% of the children were in the clinical range on total, internalizing, and externalizing problems, respectively. Using a cutoff of 63 on the CBCL (Achenbach & Edelbrock, 1983), 20%, 17%, and 15% were in the clinical range on total, internalizing, and externaliz-

ing problems, respectively. Approximately 10% of a nonreferred sample is expected to be identified in the clinical range on each measure. The mean GSI scores on the SCL-90-R for mothers correspond to *T* scores of 60 at Time 1 and 56 at Time 2; and fathers' mean GSI scores correspond to *T* scores of 58 at Time 1 and 57 at Time 2, on the basis of norms for a nonclinical sample of adults (Derogatis, 1983). Mothers' and fathers' GSI scores decreased significantly from Time 1 to Time 2, $t(186) = 6.20, p < .001$, and $t(115) = 2.64, p = .009$, respectively. There were no other significant differences between measures at the two points in time.

Correlational Analyses

Pearson correlations between the measures within and across the two data collections are presented in Table 2. Correlations among the measures at Time 1 and among the measures at Time 2 are offset by solid lines, and correlations between measures at Time 1 and Time 2 are offset by dotted lines. A multistage Bonferroni procedure was used to control for Type I error rate (Larzelere & Mulaik, 1977), and listwise deletion of cases was used in order to make the analyses comparable to the regression analyses described later. All of the measures were relatively stable from Time 1 to Time 2 with the correlations ranging from $r(97) = .60$ for fathers' hassles to $r(97) = .73$ for fathers' symptoms. Correlations between daily hassles and symptoms for mothers and fathers at Time 1 and at Time 2, ranging from $r(147) = .62$ to $r(147) = .69$, and correlations of adolescent stressful events on the APES with total behavior problems on the YSR, $r(147) = .44$ at Time 1 and $r(141) = .54$ at Time 2, were similar in magnitude to those reported in previous studies. The total behavior problem *T* score on the YSR correlated significantly with only one parent variable, fathers' symptoms at Time 1. The total behavior problem *T* score on the CBCL correlated significantly with mothers' and fathers' hassles and symptoms. The correlations between the YSR and CBCL total behavior problem *T* scores were significant, and the magnitude of these correlations, $r(181) = .23$ at Time 1 and $r(181) = .22$ at Time 2, was similar to that reported in other studies (Achenbach, McConaughy, & Howell, 1987).

Regression Analyses

The YSR and CBCL *T* scores for total, internalizing, and externalizing behavior problems were each used as the criterion

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[4] Parents' reports of major life events during the previous year were also obtained on the Life Experiences Survey (LES; Sarason, Johnson, & Siegel, 1978). However, because of an error in the instructions given to parents at follow-up, the Time 2 data could not be analyzed. Previous analyses of the Time 1 data indicated that scores on the LES did not add significantly to the prediction of child maladjustment (Compas, Howell, Phares, Williams, & Ledoux, 1989).

[5] Twenty-seven adolescents failed to complete the APES at Time 1 but continued as participants in the study at Time 2, which resulted in more completed APES at Time 2 than at Time 1.

[6] As a further check of the representativeness of the sample, *T* scores for academic and social competence on the Youth Self-Report and Child Behavior Checklist at Time 1 and Time 2 were examined. The mean *T* scores ranged from 46.22 to 55.47, which indicated that the sample was well within the normal range.

in fact the largest change was from $r = .482$ to $r = .466$ for total behavior problems at Time 2.

Table 1
Means and Standard Deviations for Parent and Adolescent Measures at Time 1 and Time 2

	Time 1			Time 2		
Variable	*n*	*M*	*SD*	*n*	*M*	*SD*
Adolescents' stressful events (APES)						
Total negative events	259	47.20	37.11	286	45.28	39.32
Negative major events	259	14.42	14.53	286	14.94	15.02
Negative daily events	259	32.66	25.49	286	30.34	26.62
Adolescents' behavior problems (YSR)						
Total problems *T* score	289	50.98	10.44	281	50.43	10.10
Internalizing *T* score	289	51.97	10.19	281	50.92	9.73
Externalizing *T* score	289	49.46	9.69	281	49.74	9.85
Adolescents' behavior problems (CBCL)						
Total problems *T* score	261	55.53	9.43	199	54.19	9.42
Internalizing *T* score	261	55.24	8.78	199	53.92	9.18
Externalizing *T* score	261	54.38	8.95	199	53.24	8.89
Parents' symptoms (SCL-90-R)						
Mothers' symptoms (GSI)	255	0.63	0.52	204	0.44	0.38
Fathers' symptoms (GSI)	175	0.39	0.32	151	0.36	0.36
Parents' daily hassles						
Mothers	254	34.68	28.12	203	32.93	26.15
Fathers	173	27.12	22.17	149	30.45	27.63

Note. APES = Adolescent Perceived Events Scale; YSR = Youth Self-Report; CBCL = Child Behavior Checklist; SCL-90-R = Symptom Checklist-90-Revised; GSI = Global Severity Index.

Table 2
Pearson Correlations Among Parent and Adolescent Measures at Time 1 and Time 2

Measure	1	2	3	4	5	6	7	8	9	10	11	12	13
Time 1													
Mother													
1. Hassles	—												
2. Symptoms	.69*	—											
Father													
3. Hassles	.48*	.38*	—										
4. Symptoms	.37*	.42*	.62*	—									
Adolescent													
5. APES total	−.02	.12	.07	.00	—								
6. CBCL total	.30*	.39*	.22*	.24*	.11	—							
7. YSR total	.03	.19	.07	.20*	.44*	.23*	—						
Time 2													
Mother													
8. Hassles	.62*	.65*	.42*	.43*	.11	.31*	.08	—					
9. Symptoms	.46*	.72*	.39*	.42*	.07	.36*	.14	.64*	—				
Father													
10. Hassles	.44*	.34*	.60*	.68*	.14	.19	.17	.42*	.30*	—			
11. Symptoms	.43*	.46*	.39*	.73*	.01	.13	.11	.32*	.31*	.69*	—		
Adolescent													
12. APES total	−.02	.11	.11	.03	.70*	.34*	.42*	.04	.01	.17	.04	—	
13. CBCL total	.23*	.36*	.26*	.17	.13	.73*	.14	.33*	.35*	.22*	.15	.12	—
14. YSR total	−.08	.08	.01	.14	.37*	.18	.62*	.02	.05	.14	.15	.54*	.22*

Note. A multistage Bonferroni procedure (Larzelere & Mulaik, 1977) was used to control for Type I error rate. APES = Adolescent Perceived Events Scale; CBCL = Child Behavior Checklist; YSR = Youth Self-Report. Correlations among the measures at Time 1 and among the measures at Time 2 are offset by solid lines, and correlations between measures at Time 1 and Time 2 are offset by dotted lines.
* *p* < .05 after Bonferroni correction.

Table 3
Simultaneous Multiple Regression Analyses to Predict Adolescents' Self-Reported Emotional/Behavioral Problems on YSR

	Incremental R^2 controlling for all other predictors						
Variable	Time 1 YSR	Mothers' hassles	Mothers' symptoms	Fathers' hassles	Fathers' symptoms	Adolescents' stress (APES)	Overall R^2
Time 1 behavior problems							
Total	N/A	—	—	—	.033	.171	.247
Internalizing	N/A	—	—	—	.045	.177	.277
Externalizing	N/A	—	—	—	—	.097	.131
Time 2 behavior problems							
Total	N/A	—	—	—	—	.287	.315
Internalizing	N/A	—	—	—	.039	.287	.316
Externalizing	N/A	—	—	—	—	.144	.175
Time 2 behavior problems (controlling for Time 1 behavior problems)							
Total	.193	—	—	—	—	.110	.518
Internalizing	.180	—	—	—	—	.108	.509
Externalizing	.295	—	—	—	—	.050	.465
Time 2 behavior problems (predicted from Time 1 variables)							
Total	.281	—	—	—	—	.026	.502
Internalizing	.242	—	—	—	—	—	.460
Externalizing	.379	—	—	—	—	.019	.526

Note. All overall R^2 were significant ($p < .05$) after Bonferroni correction. Only statistically significant ($p < .05$) increments once other variables were controlled for are noted. Dashes indicate nonsignificant values ($p > .05$), and N/A indicates predictor was not applicable. YSR = Youth Self-Report; APES = Adolescent Perceived Events Scale.

variable in four sets of simultaneous regression analyses:[7] (a) cross-sectional analyses at Time 1, (b) cross-sectional analyses at Time 2, (c) analyses of data within Time 2 controlling for Time 1 levels of the criterion variable, and (d) prospective analyses from Time 1 to Time 2 controlling for Time 1 levels of the criterion variable. Adolescent stressful events on the APES, mothers' and fathers' daily hassles, and mothers' and fathers' total symptoms (GSI) on the SCL-90-R served as predictors. Listwise deletion using only cases with nonmissing values on all variables was used in all regression analyses. A multistage Bonferroni procedure was used to control for error in each set of regression analyses.

Prediction of YSR. The cross-sectional and prospective regression analyses predicting the YSR are summarized in Table 3. For each of the four regression analyses (cross-sectional at Time 1, cross-sectional at Time 2, within Time 2 controlling for Time 1, and prospective from Time 1 to Time 2), the percentage of variance accounted for by each variable controlling for all other variables in the model (i.e., the squared semipartial correlation) is reported, followed by the total percentage of variance accounted for by all predictors in the equation.

For the cross-sectional analyses at Time 1, regressions were run with YSR total, internalizing, and externalizing behavior problems as the criterion variables and Time 1 adolescent stressful events on the APES, mothers' and fathers' daily hassles, and mothers' and fathers' symptoms (GSI scores on the SCL-90-R) as the predictors ($df = 141$). With YSR total behavior problems as the criterion, adolescent stressful events ($sr^2 = .171$) and fathers' symptoms ($sr^2 = .033$) were significant predictors. Similarly, adolescent stressful events ($sr^2 = .177$) and

fathers' symptoms ($sr^2 = .045$) were significant predictors of internalizing behavior problems on the YSR. Using YSR externalizing behavior problems as the criterion, only adolescent stressful events were a significant predictor ($sr^2 = .097$).

Cross-sectional regression analyses at Time 2 were run with YSR total, internalizing, and externalizing behavior problems as the criterion variables and Time 2 adolescent stressful events, mothers' and fathers' daily hassles, and mothers' and fathers' symptoms as the predictors ($df = 135$). Adolescents' stressful events ($sr^2 = .287$) were the only significant predictor of total behavior problems, but fathers' symptoms approached significance ($sr^2 = .015$, $p = .089$). Internalizing behavior problems were related to both adolescents' stressful events on the APES ($sr^2 = .287$) and fathers' symptoms ($sr^2 = .039$), whereas externalizing problems were related only to adolescents' stressful events ($sr^2 = .144$).

The regression analyses with Time 2 YSR total, internalizing, and externalizing behavior problems as criteria were repeated, with the appropriate YSR variable at Time 1 included as a pre-

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[7] Simultaneous regression analyses were conducted because they yield the most conservative estimate of the unique variance attributable to each predictor variable, after accounting for all other predictors in the equation. We had no strong theoretical rationale for entering the predictors in a particular order in a hierarchical model. However, we re-ran the prospective analyses, using a hierarchical order of entry in which prior behavior problems were entered in the regression equations first, followed by adolescent stress, followed by a block of parent stress and symptom variables. These reanalyses did not result in any changes in the pattern of significant predictors.

dictor along with Time 2 adolescent stressful events, Time 2 mothers' and fathers' daily hassles, and Time 2 mothers' and fathers' symptoms as predictors ($df = 132$). The findings were similar to those found in the aforementioned cross-sectional analyses. For total behavior problems at Time 2, Time 1 total behavior problems ($sr^2 = .193$) and Time 2 adolescent stressful events ($sr^2 = .110$) were significant predictors. With Time 2 internalizing behavior problems as the criterion, Time 1 internalizing behavior problems ($sr^2 = .180$) and Time 2 adolescent stressful events ($sr^2 = .108$) were significant predictors. YSR externalizing behavior problems at Time 2 were predicted by YSR externalizing behavior problems at Time 1 ($sr^2 = .295$) and adolescent stressful events at Time 2 ($sr^2 = .050$).

Prospective analyses were run with Time 2 YSR total, internalizing, and externalizing behavior problems as the criteria, and the appropriate Time 1 YSR variable and Time 1 adolescent stressful events, mothers' and fathers' daily hassles, and mothers' and fathers' symptoms as predictors ($df = 135$). Time 2 total YSR problems were predicted by Time 1 YSR total behavior problems ($sr^2 = .281$) and Time 1 adolescent stressful events ($sr^2 = .026$). Time 2 internalizing problems were predicted by Time 1 internalizing problems ($sr^2 = .242$), and the effect for Time 1 adolescent stressful events approached significance ($sr^2 = .015, p = .052$). Time 2 externalizing behavior problems were predicted by Time 1 externalizing problems ($sr^2 = .379$) and Time 1 adolescent stressful events ($sr^2 = .019$).

Finally, separate scores for major and daily adolescent stressful events on the APES were entered as predictors along with mothers' and fathers' daily hassles, and mothers' and fathers' symptoms as predictors and YSR total behavior problems as the criterion variable, in four regression analyses (cross-sectional at Time 1, $df = 140$; cross-sectional at Time 2, $df = 134$; within Time 2 controlling for Time 1, $df = 131$; and prospective from Time 1 to Time 2, $df = 134$). Because the findings are straightforward, these analyses are not presented in a table. Adolescent daily but not major stressful events were significant in predicting total behavior problems on the YSR in all of the analyses. Adolescent daily stressful events accounted for 3.3% and 11.7% of the variance in total behavior problems in the cross-sectional analyses at Time 1 and Time 2, respectively. In the analysis within Time 2 after controlling for YSR total behavior problems at Time 1, daily stressors accounted for 3% of the variance. Finally, daily stressors at Time 1 predicted 2% of the variance in the Time 2 YSR total behavior problems, after controlling for Time 1 total behavior problems.

Prediction of CBCL. The cross-sectional and prospective regression analyses predicting the CBCL are summarized in Table 4. As in Table 3, the percentage of variance accounted for by each of the predictor variables (prior CBCL score, adolescent stressful events on the APES, mothers' and fathers' daily hassles, and mothers' and fathers' symptoms on the SCL-90-R) is reported after controlling for all other variables in the model, followed by the total percentage of variance accounted for when all variables were entered in the equation.

Cross-sectional regression analyses at Time 1 were run with CBCL total, internalizing, and externalizing behavior problems as the criterion variables and Time 1 adolescent stressful events, mothers' and fathers' daily hassles, and mothers' and fathers' symptoms as the predictors ($df = 139$). Only mothers' symp-

toms were significantly related to CBCL total and internalizing behavior problems, $sr^2 = .044$ and $sr^2 = .075$, respectively. The overall equation predicting externalizing problems was not significant after controlling for error. The same set of cross-sectional analyses was run at Time 2 ($df = 122$), and again only mothers' symptoms were a significant predictor, in this case accounting for 3.4% and 4.8% of the variance in total and internalizing behavior problems, respectively. Again, the equation predicting externalizing behavior problems was not significant after controlling for error.

The analyses with Time 2 CBCL total, internalizing, and externalizing behavior problems as the criteria were repeated, with Time 1 levels of the appropriate CBCL variable and Time 2 adolescent stressful events, Time 2 mothers' and fathers' daily hassles, and Time 2 mothers' and fathers' symptoms as the predictors ($df = 110$). Time 2 CBCL total behavior problems were predicted by only Time 1 CBCL total problems ($sr^2 = .303$). Time 2 CBCL internalizing problems were predicted by Time 1 CBCL internalizing problems ($sr^2 = .259$) and Time 2 mothers' symptoms ($sr^2 = .033$). Similarly, Time 2 externalizing problems were predicted by Time 1 externalizing problems ($sr^2 = .365$) and Time 2 mothers' symptoms ($sr^2 = .030$).

Prospective analyses were run with Time 2 CBCL total, internalizing, and externalizing behavior problems as the criteria, and the appropriate Time 1 CBCL variable, Time 1 adolescent stressful events, Time 1 mothers' and fathers' daily hassles, and Time 1 mothers' and fathers' symptoms as predictors ($df = 89$). Only Time 1 levels of total behavior problems were predictive of Time 2 total behavior problems ($sr^2 = .469$). Similarly, Time 1 internalizing ($sr^2 = .410$) and Time 1 externalizing ($sr^2 = .551$) behavior problems were the only significant predictors of Time 2 internalizing and externalizing behavior problems, respectively.

None of these findings changed when adolescent major and daily stressful events on the APES were entered separately as predictors, with the exception of a significant relation between adolescents' major stressful events and total behavior problems on the CBCL in the cross-sectional analyses at Time 1 ($sr^2 = .047$).

Because the potential effects of missing data are considerable in analyses such as these, all regression analyses were rerun using pairwise deletion in which subjects were retained in the analyses even if complete data were not available from mothers or fathers. None of the results with the YSR as the criterion variable were changed. In the cross-sectional analyses at Time 2 with the CBCL as the criterion, the original findings for mothers' symptoms on the SCL-90-R to predict CBCL total behavior problems ($sr^2 = .034, p = .028$) and CBCL internalizing problems ($sr^2 = .048, p = .007$) were no longer significant (respectively, CBCL total behavior problems, $sr^2 = .020, p = .089$, and CBCL internalizing problems, $sr^2 = .019, p = .086$). In the analyses at Time 2, controlling for Time 1 behavior problems, mothers' symptoms on the SCL-90-R were no longer a significant predictor of CBCL externalizing or internalizing behavior problems. To further examine possible effects of missing data, a dummy variable was created for each subject to indicate the "tendency to have missing data" on any of the measures completed by mothers, fathers, or adolescents (Cohen & Cohen, 1983). This dummy variable was then included in all of the

Table 4
Simultaneous Multiple Regression Analyses to Predict Mothers' Reports of Adolescents' Emotional/Behavioral Problems on CBCL

	Incremental R^2 controlling for all other predictors						
Variable	Time 1 CBCL	Mothers' hassles	Mothers' symptoms	Fathers' hassles	Fathers' symptoms	Adolescents' stress (APES)	Overall R^2
Time 1 behavior problems							
Total	N/A	—	.044	—	—	—	.166
Internalizing	N/A	—	.075	—	—	—	.222
Externalizing	N/A	—	—	—	—	—	—
Time 2 behavior problems							
Total	N/A	—	.034	—	—	—	.123
Internalizing	N/A	—	.048	—	—	—	.226
Externalizing	N/A	—	—	—	—	—	—
Time 2 behavior problems (controlling for Time 1 behavior problems)							
Total	.303	—	—	—	—	—	.476
Internalizing	.259	—	.033	—	—	—	.521
Externalizing	.365	—	.030	—	—	—	.511
Time 2 behavior problems (predicted from Time 1 variables)							
Total	.469	—	—	—	—	—	.570
Internalizing	.410	—	—	—	—	—	.588
Externalizing	.551	—	—	—	—	—	.619

Note. Only significant overall R^2 ($p < .05$) after Bonferroni correction is noted. Only statistically significant ($p < .05$) increments once other variables were controlled for are noted. Dashes indicate nonsignificant values ($p > .05$), and N/A indicates predictor was not applicable. CBCL = Child Behavior Checklist; APES = Adolescent Perceived Events Scale.

regression analyses, means were used for "plugging," and pairwise deletion was used. No significant effects for missing data were found in any of these analyses. When separate dummy coded variables were created to represent missing data for each of the measures completed by mothers, fathers, or adolescents, there were several significant effects for missing data from mothers and fathers in the analyses predicting the YSR. However, all of the variables that were significant predictors in the original regression analyses remained significant even after accounting for missing data.

Prediction of adolescent stress. The preceding analyses focused on the prediction of adolescent emotional/behavioral problems. A final set of prospective regression analyses was conducted with adolescent total stressful events, major events, and daily stressful events on the APES at Time 2 as the criterion variables. These results are not presented in a table. Nine regressions were run with either Time 1 YSR total, internalizing, or externalizing behavior problems as a predictor, along with the appropriate Time 1 adolescent stressful events variable and Time 1 mothers' and fathers' daily hassles and Time 1 mothers' and fathers' symptoms as predictors ($df = 135$).

With total adolescent stressful events at Time 2 as the criterion, both total adolescent stressful events at Time 1 ($sr^2 = .309$) and YSR total problems at Time 1 ($sr^2 = .020$) were significant predictors. When internalizing and externalizing problems were analyzed separately, internalizing problems at Time 1 were a significant predictor of total stressful events at Time 2 ($sr^2 = .017$), and the effect for externalizing problems approached significance ($p = .098$). When Time 2 adolescent ma-

jor stressful events were the criterion variable, only Time 1 major events emerged as a significant predictor; neither total, internalizing, nor externalizing behavior problems on the YSR at Time 1 were significant predictors. When adolescent daily stressful events at Time 2 were the criterion, Time 1 adolescent daily stressful events ($sr^2 = .249$), Time 1 total behavior problems ($sr^2 = .038$), and Time 1 fathers' symptoms ($sr^2 = .017$) were all significant predictors. Similarly, Time 1 internalizing behavior problems ($sr^2 = .036$) and Time 1 externalizing behavior problems ($sr^2 = .025$) were both significant predictors of Time 2 adolescent daily stressful events when analyzed separately, and Time 1 fathers' symptoms explained approximately 2% of the variance in Time 2 adolescent daily stressful events in each of these analyses.

Again using adolescent total, major, and daily stressful events at Time 2 as the criteria, nine regression analyses were run. Time 1 total, internalizing, and externalizing problems on the CBCL; Time 1 levels of the appropriate adolescent stressful events variable; Time 1 mothers' and fathers' daily hassles; and Time 1 mothers' and fathers' symptoms served as the predictors ($df = 88$). Only total adolescent stressful events on the APES at Time 1 were a significant predictor of total adolescent stressful events at Time 2. Similarly, major and daily adolescent stressful events at Time 2 were predicted only by Time 1 major and daily adolescent stressful events, respectively.

Discussion

Our findings indicate that young adolescents' stressful life experiences as well as their parents' stressful events and psycholog-

ical symptoms are factors associated with increases in adolescent emotional/behavioral problems. The fact that adolescents' stressful events predicted their reports of maladjustment even after controlling for prior levels of emotional/behavioral problems underscores the utility of stressful events as an important component of a comprehensive model of risk in this age group.

The cross-sectional relations between adolescents' self-reported stressful events and their self-reports of emotional/behavioral problems, as well as the association of adolescent stressful events with emotional/behavioral problems at follow-up after controlling for initial levels of problems, are consistent with findings reported by Cohen et al. (1987) and Glyshaw et al. (1988) in studies of young adolescents. The present findings indicate that, as in these other studies, stressors are associated with internalizing problems (e.g., anxiety and depression). In addition, stressful events were associated with externalizing behavior problems in the present sample, although stressors accounted for approximately twice as much unique variance in internalizing problems as in externalizing problems.

Unlike that found in most previous prospective studies of young adolescents (Cohen et al., 1987; Gersten et al., 1977; Swearingen & Cohen, 1985a), a significant relation was found between self-reported stressful events and subsequent emotional/behavioral problems after controlling for prior maladjustment. Although the percentage of variance explained (2%) in subsequent emotional/behavioral problems was small, these findings indicate that stressful events play a role in older children and young adolescents similar to the role they play in older adolescents and adults. The difference between our findings and those of most prior studies of young adolescents may be due to at least two factors. First, prior studies examined only internalizing problems, and our analyses suggest that the longitudinal effects of stress may be stronger for externalizing types of behavior problems. Second, prior studies have examined the role of major life events as sources of stress, whereas our study investigated both major and daily events. Our findings indicate that daily stressful events may play a more important role than major life events as a source of risk for emotional/behavioral problems in adolescents.

Our findings also support the prospective relation between emotional/behavioral problems and later stressful events reported by Cohen et al. (1987), Glyshaw et al. (1988), and Swearingen and Cohen (1985a). However, in the present analyses, this association was significant for daily stressors but not for major events. Thus, the association between daily stress and maladjustment seems to be reciprocal, with stress predicting later emotional/behavioral problems and problems predicting later stress. This agrees with findings from a sample of older adolescents (Compas, Wagner, Slavin, & Vannatta, 1986), suggesting that daily stressors are best conceptualized as both an independent and a dependent variable.

Fathers' stressful events and symptoms are often not assessed in studies of risk factors in children and adolescents, but the present data suggest that this may be a critical oversight. Fathers' self-reported psychological symptoms were associated with adolescents' self-reports of total and internalizing behavior problems in the cross-sectional analyses. Fathers' daily hassles were also related to adolescents' reports of daily stress in the prospective analyses. These results are consistent with previous

structural equation analyses conducted with only two-parent families from this sample at Time 1 (Compas, Howell, Phares, Williams, & Ledoux, 1989). However, in the present study, fathers' symptoms were no longer significant in the follow-up analyses after controlling for prior levels of emotional/behavioral problems or in the prospective analyses from Time 1 to Time 2.

Mothers' reports of their children's emotional/behavioral problems were not associated with children's self-reported stressful events. Instead, mothers' ratings of their children's maladjustment were significantly related only to mothers' self-reported psychological symptoms, both in the cross-sectional analyses and in the analyses controlling for initial emotional/behavioral problems. Furthermore, mothers' symptoms were not a significant predictor in the prospective analyses from Time 1 to Time 2. These findings are similar to those reported by Holahan and Moos (1987) and Hammen et al. (1987) and suggest that the role of mothers' symptoms as a risk factor for their children's maladjustment appears to be rather immediate.

The different findings obtained for mothers' reports and adolescents' self-reports of emotional/behavioral problems reflect both the problem of common method variance in the predictor and criterion variables and differences in children's and parents' perspectives on child maladjustment. When single informants are used to assess both stress and symptoms, the association between these variables may be due to the common method used to obtain these data. Some authors have argued for the need to obtain more objective indicators of child and adolescent emotional/behavioral problems to address this problem. However, the modest correspondence among various informants on child emotional/behavioral problems (Achenbach, McConaughy, & Howell, 1987) indicates that there is no single true indicator of child maladjustment. These measures represent parents' and children's *perspectives* on child problems. The task confronting risk researchers is to define a useful set of predictors of *each* of the various perspectives on child and adolescent emotional/behavioral problems that are clinically important.

Future research needs to address several issues. First, the association between risk factors and child and adolescent emotional/behavioral problems needs to be assessed over a shorter period of time that may be more sensitive to the effects of stressful events and parents' symptoms. Second, fathers' reports of their children's emotional/behavioral problems need to be obtained to identify factors associated with increased risk for these problems. Third, factors associated with individual differences in vulnerability to various types of stress need to be examined to obtain a comprehensive picture of stress processes in children and adolescents (e.g., Masten & Garmezy, 1985).

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