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Socioenvironmental Experiences, Self-Esteem, and Emotional/Behavioral Problems in Early Adolescence[1]

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Tested the role of self-esteem as a mediator of relationships between socioenvironmental experiences and emotional/behavioral problems using a sample of 215 young adolescents (Grades 7–9). Socioenvironmental experiences were assessed using self-report questionnaire measures of social support and major and minor stressful events. Self-esteem was assessed using a self-report questionnaire, an interview, and a parent-report questionnaire. Emotional/behavioral problems were assessed using self-report, parent-report and teacher-report questionnaires. Utilizing structural equation modeling, the data were used to test a model in which self-esteem mediated the relationship between socioenvironmental experiences and emotional/behavioral problems. The hypothesized model provided a reasonably good fit to the data (normed fit index = .90). However, an alternative model which also allowed for direct effects of socioenvironmental experiences on emotional/behavioral problems produced a significant improvement in model fit. In this model, socio-environmental

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experiences had significant effects on emotional problems via both direct effects and indirect effects that indicated a mediating role for self-esteem. Only direct effects of socioenvironmental experiences were evident for behavioral problems.

KEY WORDS: self-esteem; social support; stressful events; early adolescence.

Both transactional (Sameroff & Chandler, 1975) and ecological (Bronfenbrenner, 1979) models emphasize the importance of socioenvironmental influences on developmental trajectories to health and disorder. According to these models, youths who are faced with significant levels of hazardous environmental conditions and those who experience difficulty in their interactions with others are at increased risk for a wide range of maladaptive outcomes, including psychopathology, academic failure, delinquent behavior, and substance abuse (Felner & Felner, 1989; Seidman, 1987). A substantial empirical literature, including several recent prospective studies (Compas, Howell, Phares, Williams, & Giunta, 1989; DuBois, Felner, Brand, Adan, & Evans, 1992; DuBois, Felner, Meares, & Krier, 1994; Hirsch & DuBois, 1992; Newcomb & Bentler, 1988; Nolen-Hoeksema, Girgus, & Seligman, 1992; Wills, 1986), has provided important support for this viewpoint. In this work, environmental conditions, such as elevated levels of stress and socioeconomic disadvantage, as well as more transactionally oriented dimensions of socioenvironmental experiences, such as social support, have been found to have significant patterns of association with adaptational outcomes during childhood and adolescence (for reviews see Compas, 1987a, 1987b; Johnson, 1986; Luthar & Zigler, 1991).

Much less clear at this point, however, are the mechanisms and processes that account for these well-documented linkages between socioenvironmental experiences and adjustment outcomes. This is an important issue, not only for further advancement of our understanding of transactional and ecological influences on adaptation but also as a necessary step toward the development of empirically informed interventions to prevent disorder and promote healthier outcomes among youth. As Cowen (1980) and others (e.g., Felner & Felner, 1989) have emphasized, a well-articulated understanding of processes and conditions that are potential targets for intervention is an essential precondition for the development of programs and policy initiatives that are effective in addressing the needs of children and youth.

In the preliminary attention that has been given to the issue of identifying processes underlying linkages between socioenvironmental conditions and adjustment outcomes, several investigators (e.g., Harter,

1985, 1987; Rutter, 1987; Sandler, Miller, Short, & Wolchik, 1989; Simons & Robertson, 1989) have hypothesized that effects of socioenvironmental experiences on child and adolescent adjustment may be mediated, at least in part, through the impact that they have on self-esteem. Sandler et al. (1989), for example, described several mechanisms whereby social support may enhance self-esteem or protect against decreases in self-esteem under stress. They note the esteem-building experiences that supportive relationships can provide to youths, as well as the positive influence that a sense of being accepted by others can have on feelings on self-worth. In the conceptual model that they propose, effects of social support on self-esteem are viewed as an "intervening process" through which social support can reduce the likelihood of maladjustment in the form of emotional distress or deviant behavior (Sandler et al., 1989). Self-esteem also has been viewed as important for understanding linkages between stressful events and maladjustment. Abramson, Metalsky, and Alloy (1989), in arguing for their hopelessness theory of depression, emphasized that negative life events may foster negative inferences about the self, with negative views of the self then serving as a relatively more proximal contributory cause of depressive symptoms. Other investigators (Felner et al., in press; Sandler et al. 1989) have noted that stressful events may decrease self-esteem by disrupting esteem-supporting role relations and/or preventing youth from having access to competency-enhancing opportunities and resources. Thus, as with social support, there are several plausible mechanisms whereby self-esteem may mediate associations between stress and maladjustment.

Consistent with these viewpoints, numerous studies of child and adolescent samples have documented that both social support and environmental stress have significant linkages with self-esteem (Brutsaert, 1990; Cauce, Felner, & Primavera, 1982; Dubow & Ullman, 1989; Felner et al., in press; Greenberg, Siegel, & Leitch, 1983; Harter, 1985; Harter, Marold, & Whitesell, 1992; Hirsch & Rapkin, 1987; Kanner, Feldman, Weinberger, & Ford, 1987; Rowlison & Felner, 1988). Significant associations have, in turn, also been found to exist between lower levels of self-esteem and several of the same negative adjustment outcomes that have been linked to socioenvironmental experiences, including depressive affect and symptomatology (DuBois, Felner, Bartels, & Silverman, 1993; Harter, 1985; Reinherz et al., 1989), conduct problems/delinquent behavior (Cole, Chan, & Lytton, 1989; Rosenberg & Rosenberg, 1978; Rosenberg, Schooler, & Schoenbach, 1989), academic difficulties (Coopersmith, 1967; Pottebaum, Keith, & Ehly, 1986; Skaalvik & Hagtvet, 1990), and drug and alcohol use (Dielman, Leech, Lorenger, & Horvath, 1984; Norem-Hebeisen, Johnson, Anderson, & Johnson, 1984). Although these patterns of findings across studies are consistent with a

socioenvironmental experiences/self-esteem/adjustment pathway, they do not provide an adequate basis for evaluating the hypothesized mediational chain (cf. Baron & Kenny, 1986). The findings of most studies, for example, address only a portion of the suggested mediational pathway (i.e., either linkages between socioenvironmental conditions and self-esteem or those between self-esteem and various domains of adjustment). Further, only a few studies (Aber, Seidman, Allen, Mitchell, & Garfinkel, 1994; Harter, 1985; Simons & Robertson, 1989; Wells & Rankin, 1983) have carried out the types of analyses, such as structural equation modeling, that are essential to an adequate test of mediation (cf. Baron & Kenny, 1986).

Employing path-analytic techniques, Harter (1985) investigated the potential role of global self-worth as a mediator of the effects of social support on mood-affect among a sample of middle school students. Consistent with a mediating role for self-esteem, Harter (1985) found that a model that included the hypothesized chain of mediational effects provided a superior fit in comparison to an alternative model which did not include this pathway. In another study that used path analysis, Simons and Robertson (1989) investigated self-esteem as a mediator of linkages between parental variables and adolescent drug use. In this research, findings indicated a negative effect of parental rejection on self-esteem and, in turn, an association between lower levels of self-esteem and drug use. In a large-scale study of urban adolescents, Aber et al. (1994) found support for a path model in which the effects of poverty-related risk factors (e.g., negative life events) on psychological symptoms were mediated in part by their intermediary negative influences on self-esteem. Finally, Wells and Rankin (1983) investigated a model in which self-esteem served as a mediator between social experiences and delinquent behavior during adolescence. Path analyses in this study indicated effects of social experiences (e.g., family relations) on self-esteem, but an absence of significant effects of self-esteem on delinquent behavior.

Collectively, the results of the above studies provide at least some initial empirical support for self-esteem as a mediator of the effects of socioenvironmental experiences on child and adolescent adjustment. However, there are also several significant limitations to this work. One noteworthy issue is the relative lack of attention to mediational linkages involving stressful events in comparison to social support and other relationship factors. This is a significant omission, given that both major and minor stressful events have been among the strongest socioenvironmental correlates of adjustment in prior work with child and adolescent populations. Further, although all the studies utilized path-analytic techniques

that are appropriate for testing mediational pathways, none of the investigations made use of latent-variable structural modeling techniques in which multiple indicators of constructs are employed. When testing mediational pathways, latent-variable modeling procedures offer the important advantage of addressing possible bias that may be introduced by measurement error (Baron & Kenny, 1986). Finally, although three of the four studies found significant effects for each individual link in the hypothesized socioenvironmental experiences/self-esteem/adjustment mediational pathway, these investigations failed to evaluate the significance or magnitude of the overall mediational chain (i.e., the indirect effect of socioenvironmental experiences on adjustment that occurs via an intermediate effect on self-esteem). This is an important issue, since it is possible even when each effect in a mediational chain is statistically significant for the indirect effect linking the most distal variable in the chain to the outcome variable to be nonsignificant or to be so small as to be of little substantive importance (cf. Baron & Kenny, 1986). In the present context, this might occur if either the estimated effects of socioenvironmental experiences on self-esteem or those linking self-esteem to adjustment outcomes were relatively small in absolute magnitude.

The present research utilized structural equation modeling to test the role of self-esteem as a mediator of relationships between socioenvironmental experiences and emotional/behavioral problems during early adolescence. To allow for the use of latent variable modeling procedures, multiple measures of socioenvironmental experiences, self-esteem, and emotional/behavioral problems were obtained. In addition to self-report questionnaire measures of each construct, interview and parent-report ratings of self-esteem and teacher and parent ratings of emotional/behavioral problems were obtained in order to address method variance as a source of error in structural modeling analyses (Bollen, 1989). Another important concern addressed in the design of the study was the need for a more comprehensive assessment of socioenvironmental experiences that may have important mediational linkages with self-esteem. Specifically, in addition to assessing social support, which has already received some consideration in prior work of this nature, measures of major and minor stressful events were also obtained. A final important aim of the study was to explore whether self-esteem-mediated linkages with adjustment outcomes vary across specific types and sources of social support and stressful events. To address this aim, structural modeling analyses included tests for specific effects of different sources of social support (i.e., peer, family, and

school personnel) and types of stressful events (i.e., major and minor events).

METHOD

Sample

The sample for the present study comprised 215 seventh- through ninth-grade students who attended a public junior high school in a Midwestern community (population 70,000) that is the site of a major state university. To insure the availability of teacher-rating data for all participants in the study, the pool of possible participants was limited to those students who had classes with one or more of the teachers who agreed to provide behavior ratings for the study. Overall, nine teachers agreed to provide behavior ratings; these teachers taught required core subject area classes (e.g., English) that encompassed the entire range of student ability levels at each grade level (excluding learning-disabled students in self-contained classrooms). The resulting pool of potential participants taken from these classes accounted for approximately one third of the school's total enrollment of nearly 1,100 students and included roughly the same number of students at each grade level. Each of these students was invited to participate in the study. The necessary student and parent consent to participate in the study was obtained from 225 of these students, resulting in a consent rate of approximately 60%. Ten participants whose parents did not return a completed parent questionnaire are not included in the present study. The resulting sample of 215 youths consisted of approximately equal numbers of boys (n = 104; 48.4%) and girls (n = 111; 51.6%) and the following numbers of students at each grade level: 7th (n = 71; 33.0%), 8th (n = 92; 42.8%), and 9th (n = 52; 24.2%). In terms of racial/ethnic background, the sample included 180 white students (83.7%), 26 African American students (12.1%), and 9 students from other racial/ethnic groups (4.2%). Youths who attended the participating school came from a wide range of socioeconomic backgrounds, including both lower- and middle- to upper middle-income families; as estimated by the number of students participating in the Federal subsidized lunch program, approximately 20% of the students in the school came from low-income families. According to the same criterion, 14.4% (n = 31) of the students in the sample came from low-income families, a figure that is somewhat lower but not markedly different from the rate found for the overall population of the school.

Procedure

Self-report measures were administered in a group setting at the participating school. Measures were administered in two separate sessions that occurred 2 weeks apart. To ensure that reading level did not impede students' ability to complete the measures, the instructions and individual items for each instrument were read aloud while students read along silently. Students did not place their names on the questionnaires and were assured of the confidentiality of their responses. Each student was also individually interviewed for the purpose of assessing self-esteem. Most of the interviews took place in private rooms at the site of the participating school; a small number of interviews were conducted in the university research laboratory of the first author. Interviews took place following the two questionnaire sessions, usually within 2 weeks of the date of the second questionnaire session. Interviews were conducted by the first author as well as three graduate students in a doctoral-level clinical psychology training program and two undergraduate psychology students. All interviewers received appropriate training in the administration of the interview measure prior to conducting interviews for the study. Finally, as noted above, parents provided ratings of each youth's self-esteem and both teachers and parents provided ratings of emotional and behavioral problems. For a majority of the sample (n = 185; 86.0%), parent-report questionnaires were completed by mothers. Fathers (n = 26; 12.1%) and legal guardians (n = 4; 1.9%) provided parent ratings for the remainder of the sample. No significant differences were found between ratings provided by mothers and other parental figures on any of the measures used in the present study.

Measures

Self-Esteem

Self-esteem was assessed using a self-report questionnaire measure, a structured interview, and a parent-report measure. The Self-Esteem Questionnaire (SEQ; DuBois, Felner, Brand, Phillips, & Lease, 1993) served as the self-report measure of self-esteem. The SEQ consists of 42 items, each of which is rated on a 4-point scale ranging from *strongly disagree* to *strongly agree.* The measure yields separate scale scores for five content-specific domains of self-evaluation (peers, family, school,

body-image, and sports/athletics), as well as global perceptions of self-worth. Only the global self-esteem scale was utilized in the present study. This scale consists of 8 items which assess overall perceptions of self-worth (e.g., "I am happy with myself as a person"). The scale score is derived as the sum of the 8 items, with each item scored from 1 to 4 in the direction of higher self-esteem. Scores on the scale thus have a possible range of 8 to 32. A validation study (DuBois et al., 1993) utilizing data from the present sample and a larger, demographically diverse sample of young adolescents (N = 1,800) indicated that scores on the global self-esteem scale possess excellent internal consistency (coefficient alpha of .86) and have strong test–retest reliability (2-week test–retest correlation = .81). Additional findings indicated support for the convergent and discriminant validity of the scale, including correlations of .80 and .46, respectively, with the interview and parent-report measures of global self-esteem that are utilized in the present research, and the absence of an association with ratings of social desirability bias (r = .07, *ns*).

The additional measures of self-esteem used in the present study were the Self-Esteem Interview for Young Adolescents (SEIYA; DuBois, 1993a) and the Child Self-Esteem Questionnaire (CSEQ; DuBois, 1993b). The SEIYA is administered in a one-on-one interview format in which the youth responds to each item either verbally or by pointing to the appropriate choice on a card that lists available response options. The SEIYA assesses self-esteem, self-concept, and self-standards. The portion of the interview assessing self-esteem comprises a total of 42 items. These items are identical in content to those found on the SEQ and utilize the same 4-point agree–disagree response scale. The CSEQ is a parent-report measure in which the parent is asked to rate the child's or adolescent's self-esteem. The 42 items on the CSEQ parallel those found on the SEQ, with the wording of each item changed to make it appropriate for parental rating (e.g., the SEQ item "I feel that I do not have much to be proud of" is changed to "This child feels that he/she does not have much to be proud of"). Items on the CSEQ are rated on the same 4-point agree–disagree scale utilized for the SEQ. As with the SEQ, only the global self-esteem scores on the SEIYA and CSEQ are used in the present study. These scores demonstrated strong internal consistency for the present sample (coefficient alphas of .89 and .88 for SEIYA and CSEQ global self-esteem scales, respectively). Further, as noted above, global self-esteem scores on each measure were correlated significantly with self-report ratings of global self-esteem on the SEQ.

Socioenvironmental Experiences

Socioenvironmental experiences were assessed using self-report measures of perceived social support, daily stressors, and major events. Social support was assessed using a modified version of the Perceived Social Support Scale (Procidino & Heller, 1983). The modified version of the measure consists of 30 items and yields separate scores for levels of perceived social support received from family members, peer friends, and school personnel, respectively (Felner, 1993a). Each item is a declarative statement (e.g., "My friends notice and help me when I need them to") which the respondent is asked to rate on a 3-point scale (*no, sometimes, yes*). Each scale score is derived by summing the 10 items that refer to that source of support (i.e., friends, family, or school personnel), with each item scored 0 to 2 in the direction of higher support. Scores on each scale thus range from 0 (no perceived support) to 20 (maximum perceived support). Prior research has provided support for the internal reliability and construct validity of scores on this measure (Felner, 1993a). For the present sample, each scale score demonstrated excellent internal consistency (coefficient alpha > .85). To also obtain estimates of test–retest reliability, the measure was administered to a portion of the present sample (n = 52) at both questionnaire sessions. Each scale demonstrated adequate test–retest reliability for this 2-week period (test–retest rs ranged from .70 to .87).

Daily stressors were assessed using a modified version of the Daily Hassles Questionnaire (Rowlison & Felner, 1988). The Daily Hassles Questionnaire is a well-validated measure for older children and adolescents that is patterned after the original Daily Hassles Scale (Kanner, Coyne, Schaefer, & Lazarus, 1981). The items for the scale were developed through extensive pilot work and are intended to represent the typical, day-to-day concerns of school-age children and adolescents (e.g., "conflicts with teachers" or "having a sick parent"). The measure has been shown to have excellent internal reliability (coefficient alpha = .95) and has yielded findings supportive of its construct validity (Rowlison & Felner, 1988). The present study utilized a revised version of the original measure that incorporated the results of further validation research (Felner, 1993b). Several new items were added to the measure, for example, based on the responses of participants in the original validation sample to an open-ended probe that asked them to list the three biggest hassles they had experienced recently. In addition, several of the original items on the measure were either reworded or eliminated for the purpose of reducing possible confounding with psychological symptoms. Finally, other items were added or reworded to facilitate the use of the instrument for assessing daily

stressors relating to specific content domains (i.e., peers, family, school, physical appearance/health, and sports/athletics). The revised version of the measure consists of a total of 106 items, including the following number of items relating to each of the targeted domains: peers (18 items; e.g., "friends living far away"), family (21 items; e.g., "parent/guardian being away from home a lot"), school (33 items; e.g., "being teased by other students about how you do on school work"), physical appearance/health (19 items; e.g., "weight change") and sports/athletics (15 items, e.g., "making mistakes when you participate in sports"). For each item, the adolescent is instructed to indicate whether the event or situation occurred during the past month and, if it did, to rate the extent to which it was a hassle using a 4-point rating scale ranging from *not at all a hassle* (0) to *a very big hassle* (3).

For the purposes of the present study, we utilized a total score on the measure that reflected the aggregate level of daily stressors across all domains. To reduce potential confounding with adjustment, we excluded several items that may be indicators of emotional or behavioral symptoms. A total of 9 items were excluded for this reason; 3 of the excluded items were related to the family domain (e.g., "arguments with parents/guardian"), 3 were related to school (e.g., "getting in trouble at school"), 2 were related to peers (e.g., "being in a gang"), and the remaining item was related to physical appearance/health (e.g., "weight change"). The aggregate index of daily stressors was obtained by summing the ratings for the remaining 97 items on the measure; daily stressors that were not endorsed (i.e., had not occurred in the past month) were assigned scores of 0. For the present sample, this score demonstrated excellent internal reliability (coefficient alpha = .93). As was done for the measure of perceived social support, test–retest reliability was assessed by administering the measure to a portion of the sample (n = 71) at each of the two questionnaire sessions. Among these youths, a 2-week test–retest correlation of r = .74 was obtained for the total score on the measure that is used in the present study.

A modified version of the Life Events Checklist (Johnson & McCutcheon, 1980) was employed to assess the occurrence of major life events. The original measure consists of 46 major life events that are frequently experienced by older children and adolescents. The respondent is asked to indicate whether each event has occurred in the previous year and, if it has, to appraise the event as good or bad and rate its degree of impact on a 4-point scale. For the present study, a modified form of the original measure was developed in order to reflect the results

of additional validation research (Felner, 1993b) and to insure that the instrument included a representative set of events relating to each of the same major content areas that were assessed on the measure of daily stressors (i.e., peers, family, school, physical appearance/health, and sports/athletics). The revised version of the measure consists of a total of 73 events, including the following number of events relating to each of the targeted domains: peers (15 events; e.g., "losing your best friend"), family (20 events; e.g., "parents getting divorced or separated"), school (16 events; e.g., "changing to a new school"), physical appearance/health (10 events; e.g., "getting glasses") and sports/athletics (12 events, e.g., "failing to make an athletic team"). In the present study, a simple frequency count of the number of events that were endorsed and rated as bad in their impact was utilized. As was done for daily stressors, several events that were potentially confounded in their content with either emotional or behavioral adjustment were excluded from consideration. A total of 10 events were excluded for this reason; 3 of the events excluded were school-related (e.g., "getting suspended"), 3 events were peer-related (e.g., "joining a gang"), 2 events were related to physical health/appearance (gaining or losing more than 15 pounds), 1 event was family-related ("increase in number of arguments with your parent/guardian"), and the remaining event was related to sports/athletics ("not being allowed to play on a sports team because of grades or behavior"). As was done for measures of social support and daily stressors, a portion of the present sample (n = 43) completed the events checklist at both questionnaire sessions in order to assess test–retest reliability. For these youths, there was a correlation of r = .73 between the total number of negative events reported at the two questionnaire sessions. This finding is comparable to the 2-week test–retest correlation of r = .72 that Brand and Johnson (1982) reported for total number of negative events when employing the original version of the measure.

Emotional/Behavioral Problems

The self-report, parent-report, and teacher-report versions of the Achenbach behavior checklist were used to assess emotional/behavioral problems (Achenbach, 1991a, 1991b, 1991c). These checklists are well-validated measures of emotional and behavioral problems and have been utilized extensively in previous research. Each measure yields two "broad band" Internalizing and Externalizing scales, and eight "narrow band" or

syndrome scales: Withdrawn, Somatic Complaints, Anxious/Depressed, Social Problems, Thought Problems, Attention Problems, Delinquent Behavior, and Aggressive Behavior. For the purposes of the present study, only the Internalizing and Externalizing scales are utilized. These scales are used as indicators of emotional and behavioral problems, respectively, in structural modeling analyses.

RESULTS

Preliminary Analyses

Preliminary analyses examined the distributional properties of measures and tested for differences as a function of demographic characteristics. An inspection of skew and kurtosis estimates, presented in Table I, indicated that several measures were nonnormally distributed. In view of this finding, it might have been preferable in our structural modeling analyses to use an estimator that does not require multivariate normal data (e.g., Browne, 1984). However, due to the computationally intensive nature of such procedures, it can be impractical to employ them with models of the size that are estimated in the present study (Bentler, 1989; Bollen, 1989). Further, it is not clear at this point whether such procedures offer significant advantages when only moderate nonnormality is present (Bollen, 1989), as seems to be the case for the present data. Given these considerations, we instead utilized the maximum likelihood estimator in our structural modeling analyses. Although this estimator strictly assumes a multivariate normal distribution, it has been shown to be quite robust over violations of this assumption (Mooijaart & Bentler, 1991; Satorra & Bentler, 1986).

Both point-biserial correlations and Pearson product-moment correlations were used to test for differences on measures as a function of demographic characteristics. Point-biserial correlations were used to test for differences associated with gender, race, and family low-income status, since each of these demographic variables was coded in a dichotomous format (i.e., boy/girl, white/nonwhite, and participant/nonparticipant in the subsidized school lunch program, respectively). The point-biserial correlation is mathematically identical to the t test, but unlike the t test has the advantage of being able to indicate the amount of variance that is accounted for between groups when it is squared (e.g., Guilford, 1965, pp. 322-325). Pearson correlations were used to test for associations involving age, since there was a range of possible values for this demographic variable. As shown in Table I, levels of seven variables differed significantly as a function of one or more

Table I. Summary of Variable Characteristics and Correlations with Demographic Variables (N = 215)

Variable	M	SD	Skew	Kurtosis	Demographic Characteristics			
					Gender[ab]	Race[ac]	Low-income[ad]	Age[e]
Peer social support	15.84	4.01	-1.31	1.46	.14[f]	-.04	-.13	.18[g]
Family social support	15.07	4.20	-0.85	-0.13	-.02	.02	.01	-.04
School personnel social support	10.81	4.86	-0.29	-0.58	.11	-.01	-.01	-.11
Daily stressors	23.49	19.94	2.19	8.85	.06	.05	.09	.02
Negative major events	5.26	3.08	0.74	0.62	.14[f]	-.07	.05	-.05
Self-esteem (self-report)	24.30	4.24	-0.51	1.05	-.12	-.03	-.07	.03
Self-esteem (interview)	24.69	3.41	-0.11	1.88	-.05	-.05	-.11	-.01
Self-esteem (parent-report)	24.60	3.59	0.17	-0.07	.05	.05	-.15[f]	-.03
Emotional problems (self-report)	11.10	8.29	1.40	2.83	.24[h]	.15[f]	.15[f]	-.09
Emotional problems (parent-report)	6.55	6.48	1.76	3.41	.06	-.09	.02	.09
Emotional problems (teacher-report)	5.70	5.70	1.24	1.22	-.06	-.05	.10	.21[g]
Behavioral problems (self-report)	12.12	7.03	1.02	1.41	-.01	.08	.11	-.01
Behavioral problems (parent-report)	8.00	8.19	1.94	4.90	-.13	-.03	.18[g]	.04
Behavioral problems (teacher-report)	6.23	9.74	2.35	6.32	-.22[g]	.02	.18[g]	.04

[a] Point-biserial correlation.

[b] 0 = Boy; 1 = girl.

[c] 0 = White; 1 = non-white.

[d] 0 = Did not participate in subsidized lunch program; 1 = participated in the lunch program.

[e] Pearson product-moment correlation.

[f] $p < .05$.

[g] $p < .01$.

[h] $p < .001$.

of the demographic characteristics. All of these differences were small, with the largest accounting for approximately 6% of the variance in the measure with which it was associated. Nevertheless, to insure that demographic characteristics did not bias the findings of the structural modeling analyses, all measures were residualized on demographic variables prior to conducting these analyses.

Measurement Model

The first step in the structural modeling analyses was to establish a measurement model that provided an adequate fit to the data.[3] A measurement model specifies the relations between measured, or observed variables and the latent constructs that they are intended to assess (Pedhazur, 1982). Latent constructs are also referred to as latent variables and as factors. For the present study, the hypothesized measurement model proposed five latent constructs: social support, stressful events, self-esteem, emotional problems, and behavioral problems. The observed variables hypothesized to load on each latent construct in this model are indicated in Figure 1. To evaluate the adequacy of the proposed measurement model, an initial confirmatory factor analysis (CFA) was run which (a) allowed all factors, or latent constructs to correlate freely; (b) fixed all factor variances at unity; and (c) freed all hypothesized factor loadings and constrained all others at zero. As shown in Table II, this initial model did not adequately fit the data, $\chi^2(67) = 304.39$, $p < .001$. However, the comparative fit index (CFI; Bentler, 1990) and normed fit index (NFI; Bentler & Bonett, 1980) were both large enough (.78 and .73, respectively) to suggest that modifications to the model would yield an acceptable fit. By examining Lagrange multiplier modification indices (Bentler & Chou, 1986), correlations among 11 pairs of measured-variable residuals were added to the model. With these modifications, the model provided an adequate fit to the data, χ^2 (56) = 63.55, p = .23; CFI = .99; NFI = .94. As shown in Figure 1, all hypothesized factor loadings were significant for this model. Further, as expected, significant correlations were evident among all latent constructs (see lower triangle of Table III). To examine whether the addition of the correlated pairs of measured-variable residuals had altered the fundamental pattern of association among latent constructs, the correlations among latent factors for the initial and final CFA model were compared (cf. Newcomb & Bentler, 1988). As shown in Table III, the two sets of correlations were highly similar (r = .99) and thus indicated that the modifications had not altered this fundamental feature of the model.

[3]All structural-model analyses were run using version 3.0 of the EQS computer program (Bentler, 1989).

Table II. Summary of Model-Fit Statistics[a]

Model	χ^2	*df*	*p*	CFI	NFI
Null[b]	1144.15	91	<.001	.00	.00
Initial CFA[c]	304.39	67	<.001	.78	.73
Final CFA[d]	63.55	56	.23	.99	.94
Mediated Effects[e]	111.56	60	<.001	.95	.90
Mediated and Direct Effects[f]	63.55	56	.23	.99	.94
Direct Effects	141.51	58	<.001	.92	.88

[a] CFA = confirmatory factor analysis; NFI = normed fit index; CFI = comparative fit index.
[b] The null model is of no substantive interest, but is included in order to provide a baseline against which to evaluate the model-fit indices that were obtained for the hypothesized models.
[c] This model is depicted in Figure 1.
[d] Includes 11 added correlations between pairs of residual variables.
[e] This model is depicted in Figure 2.
[f] This model is depicted in Figure 3.

Structural Models

Having established that our proposed measurement model, with minor modifications, provided a good fit to the data, we next investigated structural models of the relationships between the latent factors. In these analyses, we hypothesized structural, or path, models that included unidirectional influences among the various latent constructs.[4] Given our focal concern with evaluating the role of self-esteem as a mediator of linkages between socioenvironmental experiences and adjustment outcomes, we first investigated a model in which this type of mediational chain was hypothesized to be present. In this model, which we refer to as the Mediated Ef-

[4]When testing the adequacy of the hypothesized measurement model, the variance of each latent factor was constrained to be equal to 1 in order to avoid indeterminancies in the scaling of each factor and to insure that the parameters in the model would be identified (cf. Bollen, 1989). A different approach to resolving these issues was required in structural modeling analyses, since it is not possible when estimating structural models to fix the variance of any of the latent factors that are treated as endogenous, or dependent variables (endogenous variables are variables that have prior causes specified in the model). To achieve identification and to avoid indeterminancies of scaling in these analyses, we followed the usual procedure of constraining one of the measured variables associated with each endogenous latent factor to have a loading equal to 1 (cf. Bollen, 1989). In the models we investigated, we used this approach with each of the latent factors that were specified to be endogenous variables (i.e., global self-esteem, emotional problems, and behavioral problems). The remaining latent factors, social support and stressful events, were specified to be exogenous variables (i.e., they did not have prior causes specified in the models). For these latent factors, we continued to use our earlier approach of fixing the variance of each factor to be equal to 1.

Table III. Factor Intercorrelations for the Initial (Upper Triangle) and Final (Lower Triangle) Confirmatory Factor Analysis Models[a]

Factor	1	2	3	4	5
1. Social Support	—	−.73	.59	−.56	−.36
2. Stressful Events	−.63	—	−.55	.69	.63
3. Global Self-Esteem	.53	−.54	—	−.66	−.32
4. Internalizing Problems	−.51	.67	−.65	—	.72
5. Externalizing Problems	−.31	.62	−.32	.52	—

[a] All correlations are significant at $p < .001$.

fects Model, both social support and stressful events were hypothesized to have effects on self-esteem; self-esteem, in turn, was hypothesized to have effects on emotional and behavioral problems. As shown in Figure 2, each of the path coefficients in the model was significant and in the expected direction. As noted previously, when investigating mediated models it is also important to examine the magnitude and significance of the indirect effects that initial variables in the mediational chain have on the most distal variables in the chain. In the present context, the indirect effects of interest are the effects of social support and stressful events on emotional and behavioral problems that occur via a mediational linkage with self-esteem. As indicated in Table IV, all of these indirect effects were significant and thus reflected support for the hypothesized socioenvironmental experiences/self-esteem/adjustment mediational pathway.

As shown in Table II, the comparative fit index and normed fit index for the Mediated Effects Model were .95 and .90, respectively, and thus indicated that this model provided a reasonably good overall fit to the data. However, given that the chi-square model-fit statistic for this model was significant ($p < .001$), it did not appear to provide an entirely adequate fit to the data. Based on this finding, we investigated an alternative model in which social support and stressful events were allowed to also have direct effects on emotional and behavioral problems. This model, which we refer to as the Mediated and Direct Effects Model, included all of the hypothesized effects that were reflected in the original structural model as well as additional, direct effects of social support and stressful events on emotional and behavioral problems. The fit statistics for this model, shown in Table II, indicated a substantial improvement over the Mediated Effects Model, including a statistically significant change in the chi-square fit statistic, difference $\chi^2(4) = 48.01$, $p < .001$. The chi-square fit statistic for the revised model was no longer significant ($p = .23$) and thus was consistent with the other fit indices in indicating an adequate fit to the data. In this model, the path coefficients representing direct effects of stressful events on emotional and behavioral problems were significant and, as expected, indicated that higher levels of stressful events were associated

Table IV. Direct and Indirect Effects of Socioenvironmental Experiences on Emotional and Behavioral Problems[a]

Model	Emotional Problems		Behavioral Problems	
	Direct effects	Indirect effects	Direct effects	Indirect effects
Mediated Effects Model				
Social Support	—	−.24[c]	—	−.12[b]
Stressful Events	—	.20[c]	—	.10[b]
Mediated and Direct Effects Model				
Social Support	−.01	−.12[b]	.14	−.004
Stressful Events	.45[d]	.13[c]	.56[d]	.004

[a] Effects are presented in standardized form; significance levels were determined by critical ratios on unstandardized effects.
[b] $p < .05$.
[c] $p < .01$.
[d] $p < .001$.

with heightened problems in each domain (see Figure 3). By contrast, neither of the path coefficients representing direct effects of social support on emotional and behavioral problems were significant.

As we did for the original structural model, we also investigated the extent to which socioenvironmental experiences had significant effects on emotional problems that occurred via a mediational linkage with self-esteem. As shown in Table IV, the indirect effects linking social support and stressful events to emotional problems via self-esteem continued to reach significance. By contrast, the indirect effects of socioenvironmental experiences on behavioral problems no longer reached significance. This latter finding reflects the fact that the path coefficient representing the effect of self-esteem on behavioral problems was no longer significant in the revised model (standardized parameter estimate = −.01).

As the next step in our structural modeling analyses, we investigated a model in which social support and stressful events had only direct effects on emotional and behavioral problems. This model, which we refer to as the Direct Effects Model, was identical to the Mediated and Direct Effects Model investigated above with the exception that the effects of social support and stressful events on self-esteem were now constrained to be equal to zero. Our aim in testing this model was to investigate the degree to which it was important, in terms of overall model fit, to allow for self-esteem mediated linkages between socioenvironmental experiences and emotional and behavioral problems even after direct effects of socioenvironmental

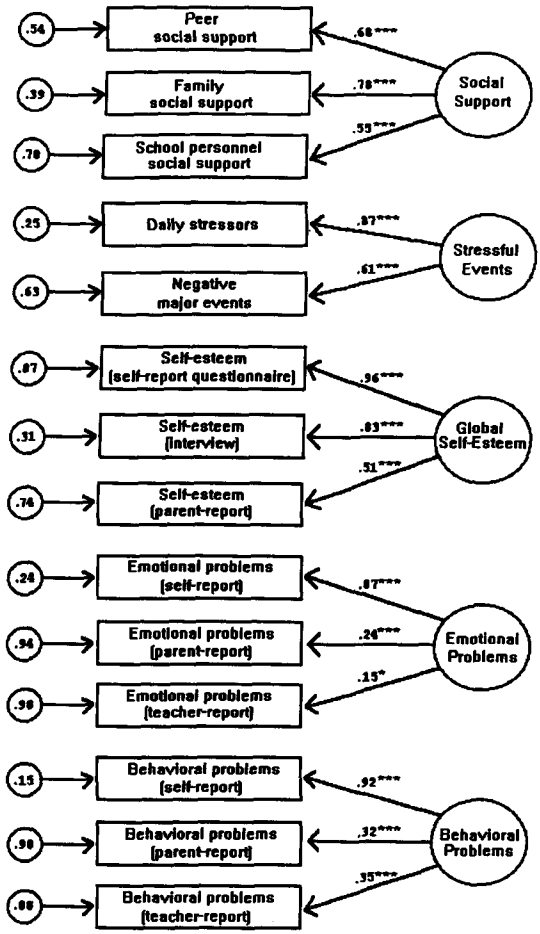

Fig. 1. Final confirmatory factor analysis model. Large circles represent latent constructs, rectangles are measured variables, and small circles are residual variances. Factor loadings are standardized and significance levels were determined by critical ratios on unstandardized coefficients, $*p < .05$; $***p < .001$. Not depicted in the figure are two- headed arrows — correlations — joining each possible pair of factors. Estimates of these correlations are given in Table III.

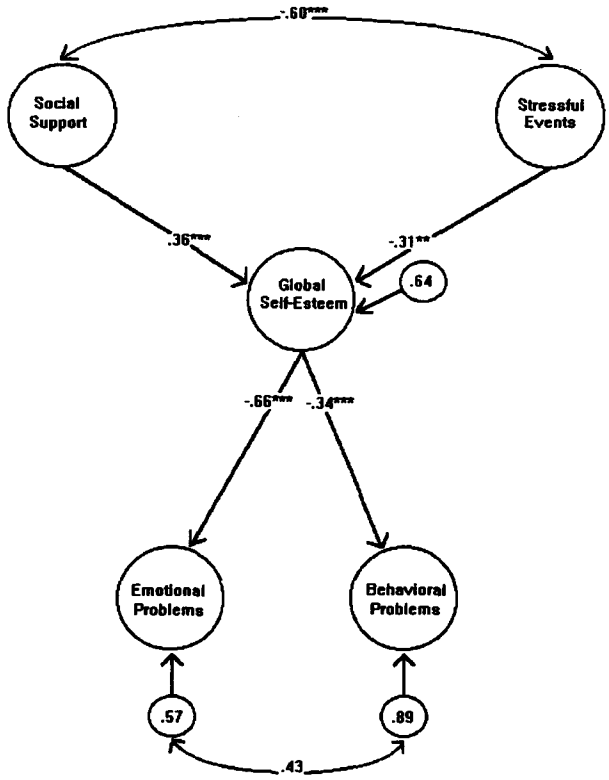

Fig. 2. Mediated Effects Model. Large circles represent latent constructs and small circles with numbers reflect residual variances. Path coefficients are standardized and significance levels were determined by critical ratios on unstandardized coefficients, $^{**}p < .01$; $^{***}p < .001$.

experiences on these domains of adjustment were taken into account. As shown in Table II, the fit of the Direct Effects Model was inadequate, $\chi^2(58) = 141.51$, $p < .001$, and represented a significant reduction in model-fit in comparison to the Mediated and Direct Effects Model, difference $\chi^2(2) = 77.96$, $p < .001$. These findings, in combination with the relatively inferior fit of the Mediated Effects Model that was established previously, indicated that a satisfactory model fit could be obtained only when we allowed for both direct and self-esteem mediated linkages between socioenvironmental experiences and emotional/behavioral problems.

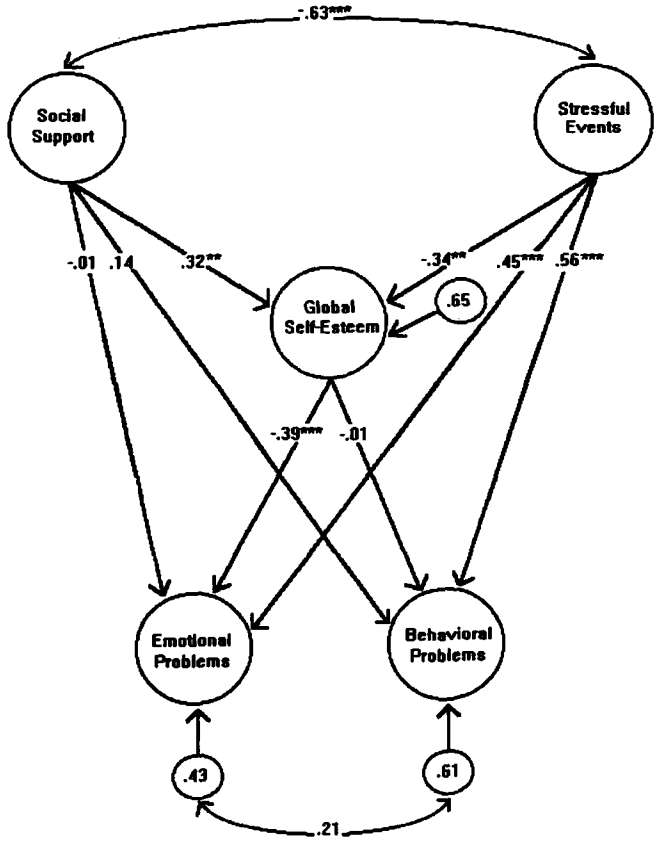

Fig. 3. Mediated and Direct Effects Model. Large circles represent latent constructs and small circles with numbers reflect residual variances. Path coefficients are standardized and significance levels were determined by critical ratios on unstandardized coefficients, $^{**}p < .01$; $^{***}p < .001$.

The models investigated above are concerned with general effects of social support and stressful events on self-esteem and emotional/behavioral problems. As noted previously, an additional concern of the study was to test for specific effects of different sources of social support (i.e., peer, family, and school personnel) and types of stressful events (i.e., major and minor events) that may not be captured by composite indices of experiences relating to these domains. To explore this possibility, we examined whether the fit of the Mediated and Direct Effects Model could be improved by adding specific effects of our observed measures of social support and stressful events on either self-esteem or emotional or behavioral problems.

Based upon an examination of Lagrange multiplier modification indices, it was determined that only 1 of the 15 possible specific effects of social support and stress variables added significantly to the overall fit of the model. This effect indicated a positive path coefficient between peer support and behavioral problems (standardized parameter coefficient = .26). Adding this effect to the model produced only a marginal improvement in overall model-fit, difference $\chi^2(1) = 9.35, p < .01$.

DISCUSSION

The findings of this investigation provide support for a mediational role of self-esteem in linkages between socioenvironmental experiences and adjustment. In addition to replicating Harter's (1985) finding of a self-esteem-mediated linkage between social support and emotional adjustment, our results suggest that processes involving self-esteem also may be implicated in the effects that stressful events have on the emotional functioning of youth. This latter finding is consistent with the view expressed by Abramson et al. (1989) that inferring negative characteristics about the self is one of the processes by which stressful events may precipitate symptoms of depression and hopelessness. As suggested by these authors, it may be helpful in future work to attempt to classify events according to the degree to which they are likely to foster negative views of the self. In the present study, major and minor stressful events did not exhibit differential patterns of association with self-esteem. Nevertheless, there are several other potentially important dimensions on which events could be classified in order to further explore this issue. One approach would be to distinguish between events according to the attributions youths make about their causes (cf. Abramson et al., 1989). For example, negative events may be especially likely to result in lowered self-esteem when youths view themselves as responsible for the occurrence of the events. From a developmental perspective, it seems plausible that the impact of life events on self-esteem also may depend on the degree to which events have implications for the developmental tasks that are most salient to the child or adolescent (cf. Garber, 1984). Finally, the work of Hammen and colleagues (see Hammen, 1992; Hammen & Goodman-Brown, 1990) suggests that linkages between stressful events and self-esteem may be influenced by differences in the meaning and personal significance that they have for individual children and youth, such as the degree to which an event is related to a domain of adaptation (e.g., academic achievement) that is particularly important to the child. Although these issues are not yet understood adequately, the stressful events/self-esteem/emotional adjustment mediational pathway that

is suggested by the findings of the present study will hopefully serve to encourage further work in this area.

Similar attention should be given to refining our understanding of linkages between social support and self-esteem. As noted above, our results replicate Harter's (1985) finding of a self-esteem-mediated linkage between social support and emotional adjustment among the early adolescent age group. The lack of evidence for a direct effect of social support on emotional adjustment when taking into account this type of mediational linkage is also noteworthy and suggests that intermediary effects on self-esteem may be one of the primary mechanisms through which social support influences emotional adaptation. As with stressful events, it may be useful in future work to examine whether certain types of social support enhance self-esteem more so than others. In prior theoretical formulations that have emphasized the social origins of self-esteem (Cooley, 1902; Mead, 1934; Rosenberg, 1979), particular importance has been attached to the ways in which self-esteem may be influenced by the views that others are perceived to have of oneself. This perspective suggests that self-esteem-mediated linkages with adaptation may be especially salient for supportive exchanges that provide youths with explicit positive feedback and validation. Mediating processes involving self-esteem also may be important for understanding the benefits of more task-oriented forms of support. For example, these types of interactions may facilitate the development of competencies (e.g., academic skills) that help youths to sustain positive views of themselves. Although evidence for differential effects on self-esteem for social support obtained from various sources (i.e., peer, family members, school personnel) was not found in the present study, this issue also should receive further consideration given the preliminary nature of work addressing this question.

Our results are more equivocal with regard to the issue of whether self-esteem serves as a mediator of linkages between socioenvironmental experiences and behavioral forms of maladaptation. Although the self-esteem-mediated pathways linking social support and stressful events to behavioral problems were significant in the initial structural model we investigated, these effects were relatively weak compared to those obtained for emotional problems. Further, when we expanded the model to include direct effects of social support and stressful events, self-esteem-mediated effects on behavioral problems were no longer evident. The primary reason for attenuation of the mediational pathways in the revised model was that the effect of global self-esteem on behavioral problems was no longer significant when the direct effects of social support and stressful events on behavioral problems were taken into account. It will be recalled that Wells and Rankin (1983) also failed to find significant effects of self-esteem on problem behavior when investigating a similar mediational model. These

authors suggested that controlling for "causally prior" variables, such as indicators of socioenvironmental experiences, may serve to reduce the magnitude of the association between self-esteem and delinquency/problem behavior. In any event, the currently available findings suggest that mediational processes involving self-esteem may not be of central importance for understanding the effects of socioenvironmental experiences on externalizing forms of maladjustment.

Turning to possible applied implications, the findings of this study are consistent with prior work (Rutter, 1987) in suggesting that mediational linkages involving self-esteem may be important for our understanding of the processes through which environmentally oriented intervention efforts promote health and/or prevent disorder. This issue may have relevance to both program evaluation and design concerns. Illustratively, program evaluations may be enhanced by greater attention to the effects of various program elements on self-esteem and the potential for these types of effects to serve, in turn, as mediators of more distal targeted outcomes of the intervention. In terms of program design, it may prove fruitful to consider additions or modifications to the scope and content of environmentally focused interventions that would increase their potential to foster self-esteem. Based on available findings, it appears that it may be most useful for intervention programs that target emotional adaptation and health to attend to the above issues.

Several limitations of the present study also should be noted. Clearly, given the cross-sectional design of the investigation, our findings do not adequately establish the presence or directionality of the hypothesized patterns of causal linkage between socioenvironmental experiences, self-esteem, and adaptation. Illustratively, relations among these factors also may reflect reciprocal effects of child characteristics (i.e., self-esteem and/or emotional/behavioral problems) on social and environmental experiences (cf. DuBois et al., 1992). Another threat to the causal implications of the present findings is common method variance that may be associated with the self-report data that contributed to our assessment of all variables in the models tested. Although the use of supplementary interview, teacher-report, and parent-report measures helped to address this concern, method variance still may have served to artificially inflate associations found among constructs. Both longitudinal investigations and controlled intervention studies are needed to address these issues related to causal inference more fully in future research.

Turning to other limitations of the present research, it also should be noted that other potentially important mediators of linkages between socioenvironmental experiences and adaptation among youth (e.g.,

problem-solving skills) were not examined. Given that mediational linkages involving self-esteem accounted for only a portion of the overall association between socioenvironmental variables and ratings of adjustment, it seems clear that it will not be possible to fully account for this linkage without considering additional types of mediational pathways. Finally, in view of our relatively small sample and the lack of much prior work addressing similar concerns, it should be emphasized that the present findings require replication. In addition to extending the current work through the use of a longitudinal design as suggested above, it would also be useful to examine mediational linkages involving a broader array of possible socioenvironmental variables. Such variables might include other types of contextual factors associated with the immediate experiences of youths in primary developmental settings (e.g., involvements in extracurricular activities and programs) as well as relatively more distal environmental factors such as socioeconomic conditions in the youth's home and surrounding neighborhood or community.

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