
Brief Reports

Life Stress, Social Support, and Locus of Control During Early Adolescence: Interactive Effects¹

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Examined the relationships between negative events, locus of control, social support, and psychological adjustment in an early adolescent sample. Of interest were the potential stress-buffering effects of social support and the conjunctive effects of social support and locus of control upon adjustment. Family support was positively related to adjustment in several domains, whereas school support was only related to school competence. Peer support was positively related to peer competence and anxiety, and negatively related to school competence. Examination of the buffering hypothesis suggested that both family and school support served to moderate the relationship between negative events and school competence. Conjunctive effects were also detected in that school support buffered number of negative events best for those individuals with an internal locus of control for successes.

After infancy, the preadolescent through early adolescent years are characterized as the period of most rapid biological, cognitive, and social growth

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(Lipsitz, 1972). In light of this, it is not surprising that Coddington's normative studies (1972a, 1972b) found that life stress increased with age throughout childhood, peaking most dramatically between the ages of 12 to 14. Yet, research addressing the effects of stressful life events before college age is rare and most of this has focused on either latency-aged children or older adolescents (Swearingen & Cohen, 1985b). The purpose of the present study was to better determine the relationship between stressful life events and psychological adjustment during early adolescence with a specific emphasis on the examination of the conjunctive effects of social support and locus of control as moderators of this relationship. A secondary goal was to explore whether such moderating relationships are, in part, dependent upon a "match" between the social and personal resources proposed as moderators and the specific aspect of adjustment examined.

Relatively few studies have examined the relationship between social support or locus of control and adjustment in child or adolescent populations, fewer still have explored the role of social support or locus of control as a stress buffer, and none have examined the role of locus of control in conjunction with social support. Those studies that have been conducted suggest that social support is positively related to adjustment and serves to buffer life stress (Dubow & Tisak, 1989; Sandler, Miller, Short, & Wolchik, 1989; Wolchik, Ruehlman, Braver, & Sandler, 1989), although some notable exceptions exist, especially when peer support is specifically examined (cf. Cauce, Felner, & Primavera, 1982; Wolchik et al., 1989). An internal locus of control has also been found to be positively related to adjustment and there is some support for its effects as a stress buffer (Findley & Cooper, 1983; Siddique & D'Arcy, 1984; Wiegel, Wertlieb, & Feldstein, 1989). However, while such results are promising, the magnitude of relationships reported have been disappointingly small, leading some researchers to believe that it may be a combination of such factors that is most important.

According to Roos and Cohen (1987), "One glaring weakness in the empirical literature is the relative failure to include both social support and personality variables in a model of life stress adjustment" (p. 576). They noted that recent theory and research suggests that it is the interaction between personal and environmental characteristics that may best explain an individual's reaction to negative life events. For example, individuals may not be able to effectively take advantage of social support while experiencing a stressful event unless they are personally disposed to view such events as controllable. Vinokur and Seltzer (1975) have suggested that people with an internal locus of control are less apt to accept negative events as factors outside of their control. As such, they are more likely to

take action and utilize their supportive networks to alleviate such stressors. Indeed, those studies within the adult literature that have examined the interactive effects of social support and a personality factor have generally focused on variables that indicate instrumentality, such as locus of control, hardiness, and masculinity. Such studies have suggested that social support most effectively buffers the effects of life stress for individuals with an instrumental disposition (Kobasa, Maddi, & Courington, 1981; Roos & Cohen, 1987; Smith, Smoll, & Ptacek, 1989).

Alternatively, others have suggested that stress-buffering effects occur only when the personality style is appropriately matched to the type of stress or area of adjustment examined (S. Cohen & Edwards, 1989; Swindle, Heller, & Lakey, 1988). For example, S. Cohen and Edwards (1989) stated that elevated "(locus of) control in a specific domain (e.g., academics) is more likely to operate as a buffer in that domain" (p. 239). In a similar vein, it has been suggested that school personnel and peers may serve as support specialists, although family members have been considered support "generalists" (Bogat, Caldwell, Rogosch, & Kreigler, 1985). This schema received some support in terms of a simple effects model in childhood (Cauce, Reid, Landesman, & Gonzales, 1990), but has yet to be examined in a stress-buffering paradigm or during adolescence.

Given the lack of well-established relationships between social support, locus of control, life stress, and adjustment in this age group, we examined the simple relationships between these variables and adjustment in addition to stress-buffering and conjunctive effects. In line with previous research, we expected social support and a more internal locus of control to be positively related to adjustment and negative events to be negatively related to adjustment. We also expected social support to buffer the effects of negative life events. Drawing from the adult literature, we expected the buffering effects of social support to be strongest for those individuals with an internal locus of control. If simple or moderating effects exist predominantly within similar domains (e.g., school support serves as a buffer for school competence but not peer competence) support for the matching model will be attained.

In the examination of the interaction between life stress and social support, distinctions have been made between moderator and mediator variables. A variable can be said to function as a moderator if it either affects the direction *or* strength of the relationship between a simple predictor and the criterion (Baron & Kenny, 1986). Buffering effects refer to a specific pattern of moderation. In this study we conclude that buffering effects exist only if (a) the interaction between social support and negative events significantly increases the amount of variance accounted for in measures of adjustment *and* (b) the form of the relationship is

such that the slope of the regression of adjustment on stress is higher for adolescents with high support than it is for adolescents with lower levels of support.

More recently, a further distinction has been drawn between conjunctive and disjunctive effects when examining the role of personality and environmental variables and how they *jointly* affect the relationship between life stress and adjustment (see Smith et al., 1989). In the most simple case, conjunctive effects could be said to exist if the relationship between the hypothesized stress buffer (usually social support) and life events is most noteworthy when a third variable (in this case, locus of control) is taken into account. In this study we conclude that a conjunctive effect exists only if (a) the three-way interaction adds unique variance to the prediction of adjustment after all one- and two-way interactions have been controlled *and* (b) the form or pattern of the effect is such that social support evidences buffering effects more dramatically for individuals with a more internal locus of control.

METHOD

Participants and Procedures

Participants were drawn from a sample of all sixth and eighth graders in two private suburban schools in the Northeast. After obtaining informed consent from parents and adolescents, 120 students (48% female) comprised the final sample, which represented approximately 80% of the parents/students contacted. Students were predominantly middle to upper-middle class and white. Paper-and-pencil measures were administered to students in their school by a graduate and advanced undergraduate student trained in all procedures.

Measures

Life Stress. To measure recent (within the last 6 months) stressful life changes, the Junior High Life Experience Survey (JHLES; Swearingen & Cohen, 1985a) was administered. The JHLES is a 39-item self-report scale developed specifically for use with young adolescents and used in numerous studies with this age group. We used a simple count of negative events (unit scores) in our analyses, as Swearingen and Cohen (1985b) found this the most efficient scoring strategy for life stress.

Social Support. Participants completed a modified version of the Social Support Rating Scale (SSRS; Cauce, et al., 1982) which lists 13 potential sources of support. These sources fall into three main subscales established via factor analysis: peer support (which includes similar-aged friends), family support (including support from adult relatives like mother, father, and grandparents), and school support (which includes school personnel such as teachers and coaches). Students rated their perception of helpfulness of each support source on a 5-point scale and subscale scores were derived by summing across all providers within each support category.

Locus of Control. This construct was measured using the Intellectual Achievement Responsibility Scale (IAR; Crandall, Katovsky, & Crandall, 1965). The IAR is a 35-item measure in which students report whether a hypothetical success or failure situation was due to their own qualities or to some outside force. Sample items are: "Suppose you study to become a teacher, scientist, or doctor and you fail. Do you think this would happen — a. because you didn't work hard enough, or b. because you needed help and other people didn't give it to you" and "When you do well on a test at school, is it more likely to be — a. because you studied for it, or b. because the test was easy." The IAR yields separate locus of control indices for success situations (IAR+, the second sample) and failure situations (IAR-, first sample). All items relate to school or academic situations. Although our initial interest was in generalized beliefs about control contingencies, we chose this measure rather than a more Rotter-like scale because of its simple language and suitability for group administration to an early adolescent sample. It is unclear whether control beliefs about school situations should be related to other domains of adjustment, a question that is addressed by this study.

Psychological Adjustment. Two widely used self-report measures were administered to assess general psychological adjustment: the Perceived Social Competence Scale for Children (PCSC; Harter, 1982, now called the Self-Perception Profile for Children) and the State Anxiety Inventory for Children (SAI; Spielberger, 1973). The SAI contains 20 items and was employed as a measure of general negative affect since most studies do not indicate good discrimination between anxiety, depression, and other dysphoric states among normal populations of children and adolescents (Wolfe et al., 1987). The PCSC taps domain-specific areas of perceived competence and yield scores on four subscales: Perceived school competence, perceived peer competence, perceived physical competence, and perceived general competence. The general competence scale is similar to other general self-worth or self-esteem measures. Previous studies have suggested that both peer and school competence are related

to peer measures of these constructs. School competence has been found to be highly related to both grades in school and to achievement test scores (Cauce, 1986).

RESULTS AND DISCUSSION

In the initial phase of analysis, we examined means and standard deviations for all measures and found that they were similar to those obtained in previous studies of normal young adolescents. The mean number of negative events reported was 3.33, with about 20% of the sample reporting 6 or more negative events within the last 6 months. We also examined the internal reliabilities of measures using Cronbach's alpha and found that they were all adequate, ranging from a low of .65 on locus of control for successes to .86 on family support. Sex and grade differences, along with their interaction, were also examined and few differences were obtained. Boys reported higher levels of physical competence, $t(120) = 7.56, p < .01$, than girls. Eighth-grade girls reported lower levels of general competence than sixth-grade girls, whereas eighth-grade boys reported higher levels of general competence than sixth-grade boys, $F = 5.33, p < .05$. These few differences are consistent with previous research in the area.

Correlations between predictor variables (e.g., negative events, social support, and locus of control) were next examined, since theory suggests that conjunctive effects are best detected when different classes of predictor variables are uncorrelated with each other. These analyses indicated that measures of locus of control were uncorrelated with measures of social support (r s ranged from $-.10$ to $.06$, all p s = ns) and that neither locus of control nor support measures were correlated with negative events (r s ranged from $-.13$ to $.14$, all p s = ns).

To examine the direct relationships between predictor variables and adjustment simple correlations were examined. These are reported in Table I. As this table indicates, negative events were significantly correlated with anxiety and school competence in the expected direction, suggesting that adolescents experiencing more negative events also report more anxiety and lower levels of school competence. Relationships between negative events and other types of competence were not significant.

Social support analyses also yielded a mixed pattern of results. In line with previous studies and the generalist notion, family support evidenced the most consistent and strongest relationships with adjustment, correlating significantly and in the expected direction with general, peer, and physical competence. In keeping with the specialist notion, school support was

Table I. Correlations Between Psychological Adjustment and Negative Events, Social Support, and Locus of Control

Variable ^a	Anxiety	Competence			
		General	School	Peer	Physical
Negative events	.27 ^c	-.13	-.26 ^b	.00	.07
IAR+	-.15 ^b	.20 ^b	.23 ^c	.05	.20 ^b
IAR-	-.06	.01	.07	.04	-.08
Family support	-.05	.23 ^c	.04	.32 ^c	.23 ^c
Peer support	.18 ^b	-.08	-.21 ^b	.19 ^b	.08
School support	-.04	-.06	.17 ^b	-.01	-.05

^a IAR+ = Locus of Control for Successes, IAR- = Locus of Control for Failures.

^b $p < .05$.

^c $p < .01$.

found to correlate only with school competence. In this same vein, peer support was positively correlated with peer competence, but, it was also positively related to anxiety and negatively correlated with school competence. The direction of the relationships with school competence and anxiety, while opposite to those expected, are consistent with other studies that have found support from peers to have negative as well as positive relationships to adjustment (Cauce & Srebnik, 1989).

As expected, higher scores on the locus of control scale for success, which are indicative of a more internal locus of control, were related to more positive adjustment in terms of anxiety, and general, school, and physical competence. In contrast, locus of control for failures was unrelated to all measures of adjustment. Such findings suggest that whereas taking personal responsibility for successes is adaptive, taking personal responsibility for failures is not. This is consistent with suggestions that it is not helpful for children to make internal, stable, and global attributions about failure experiences (Cicchetti & Schneider-Rosen, 1984).

Stress-buffering and conjunctive effects were examined using hierarchical multiple regressions. In these regressions, the simple effects of all predictor variables were entered into the first step of the hierarchy. All two-way interactions were examined next (e.g., Negative Events \times Family Support), followed by an examination of all three-way interactions (e.g., Negative Events \times Family Support \times Locus of Control for Successes). A full-model least-squares solution was adopted and effects are only presented and discussed when they contributed a significant amount of unique variance. That is, all effects were examined when entered in the *last* step of their respective hierarchy. In all regressions we included

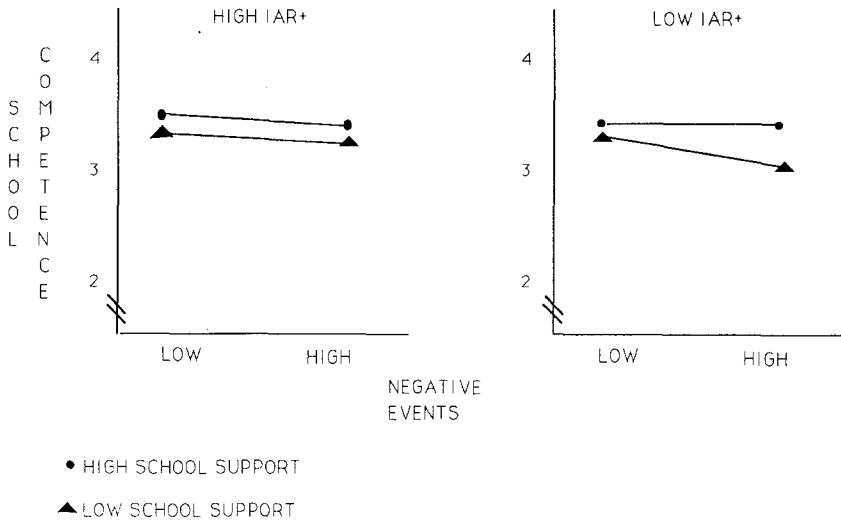


Fig. 1. Three-way interaction between negative events, locus of control for successes, and school competence.

a test of the parallelism of regression planes for gender and sex, but no significant effects were detected. As such, results presented are for the entire sample.

No significant two- or three-way interaction effects were evident in the analyses where peer competence, physical competence, global competence, or anxiety served as the criterion. When school competence was the criterion, two-way interactions between family support by negative events and school support by negative events both accounted for significant amounts of unique variance ($\Delta F = 4.24$, $\Delta r^2 = .14$, $p < .05$; $\Delta F = 5.29$, $\Delta r^2 = .13$, $p < .05$, respectively). The latter interaction was further qualified by a three-way interaction between negative events, school support, and locus of control for successes ($\Delta F = 4.91$, $\Delta r^2 = .09$, $p < .05$). As such, family and school support met the first criteria for a simple stress-buffering effect, and school support in combination with locus of control for successes met the first criteria for a conjunctive effect in that both contributed significantly and uniquely to school competence.

To determine whether they met the second criteria, which implies a particular "form" to the relationship, two- and three-way interactions were plotted by a technique suggested by Cohen and Cohen (1983) where separate equations are solved based on scores 1 standard deviation above and below the mean for predictor variables. Figure 1 illustrates the three-way

interaction between school support, locus of control for success, and negative events. As this figure suggests, the form of the interaction is in keeping with the conjunctive hypothesis. The effects of school support as a stress buffer are most pronounced for adolescents with a more internal locus of control for success (e.g., high IAR+).

The two-way interaction between the family support and negative events was similar in form to the diagram on the right side of Fig. 1. In this case, the interaction was such that adolescents with higher levels of family support did not evidence lower school competence even when experiencing a relatively high number of negative events. Those with lesser family support did evidence lowered school competence when stress was high. As such, the form of the interaction was in keeping with the stress-buffering hypothesis.

CONCLUSIONS

As is so often the case in the life events and social support literature with children or adolescents, analyses suggested a somewhat mixed pattern of results and the magnitude of relationships found were modest, even when interactive effects were examined. Family support and internal locus of control for school successes came closest to demonstrating a generalized pattern of positive effects. Family support was correlated positively with general, peer, and physical competence and it also served to buffer the effects of negative events upon school competence. Locus of control for successes was positively related with general, school, and physical competence, and negatively related to anxiety. This is in stark contrast to the more domain-specific positive effects evidenced by school and peer support. Peer support was only positively related to peer competence, albeit negative relationships with adjustment, as noted previously, were also in evidence. School support was only related with school competence. It also buffered the effects of negative events upon school competence both directly and in conjunction with locus of control for successes, the only conjunctive effect detected.

The nature of this conjunctive effect further underscores the specificity of those relationships that were found. In this instance, *school* support was found to serve as a stress buffer upon school competence for adolescents with a more internal locus of control for school-related situations. This finding is similar to that of Sarason, Levine, Basham, and Sarason (1983) who, using an innovative laboratory design, found that college students with low perceived social support and an external locus of control performed most poorly (in terms of persistence and cognitive interference) on an insoluble

problem. These studies in combination lend some credence to the oft-noted phenomenon observed by parents, teachers, and child clinicians, that concentration, and hence, school performance, is particularly sensitive to disturbances in the lives of children and adolescents. Indeed, impaired school performance is implicated in the early stages of various manifestations of childhood maladjustment, including depression, conduct disorders, and antisocial aggression (Achenbach, 1982). The fact that school support may be beneficial in buffering the negative effects of life stress upon school competence, whether alone or in conjunction with locus of control, should also encourage those working on prevention programs that mobilize school personnel as sources of support for children in stress.

In sum, this study provides some support for models suggesting that social support is most effective in buffering stress in conjunction with an instrumental personality style. Some support was also provided for models stressing that there should be a match between resources and areas of adjustment examined. Yet, conclusions are limited by the less than consistent pattern of results, by the self-report and cross-sectional nature of all the data, and by the homogeneous nature of the population. More conclusive evidence awaits replication, especially from studies using prospective designs and measurements of various aspects of adjustment from multiple perspectives (e.g., parent, peer, or teacher reports in addition to self-report) on at least two points in time. In addition, a better test of the matching hypothesis could be achieved by utilizing measures of different types of stress and a more varied array of personal resources.

It is clear that social support is not the elixir that cures all that ails you, whether alone or in combination with other potent potables. What we still need is a better understanding of what types of support, in combination with which personal resources, affect what types of stress upon which aspects of adjustment.

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