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## Vulnerability and Resilience: A Study of High-Risk Adolescents

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### Abstract

Factors that allow children to maintain socially competent behaviors despite stress were examined among 144 inner-city ninth-grade students with a mean age of 15.3 years. Stress was operationalized by scores on a negative life events scale, and definitions of social competence were based on peer ratings, teacher ratings, and school grades. Moderator variables examined included intelligence, internal locus of control, social skills, ego development, and positive life events. Following theoretical models by Garmezy and Rutter, distinctions were made between compensatory factors (which are directly related to competence) and protective/vulnerability factors (which interact with stress in influencing competence). Ego development was found to be compensatory against stress. Internality and social skills proved to be protective factors, while intelligence and positive events were involved in vulnerability processes. This study also revealed that children labeled as resilient were significantly more depressed and anxious than were competent children from low stress backgrounds.

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Faced with life stresses, many children develop psychological difficulties, while others function well. Children in the latter group, labeled “resilient” or “stress resistant,” defy expectation by developing into well-adapted individuals. The primary aim of this investigation was to explore variables that promote resilience, that is, that allow children to remain competent despite exposure to stressful life experiences.

The phenomenon of resilience was examined among inner-city adolescents. Much of the previous research has been conducted with preadolescent and younger children (Garmezy & Tellegen, 1984; Garmezy, Masten, & Tellegen, 1984; Masten et al., 1988; Werner & Smith, 1982) or with young adults (Quinton, Rutter, & Liddle, 1984; Rutter & Quinton, 1984; Werner, 1989). This study sought to determine whether variables identified as being protective at different ages served ameliorative functions during adolescence as well. Selection of an inner-city sample was based on findings of higher rates of adolescent behavior problems (e.g., juvenile delinquency) among underprivileged populations (Farrington, 1987; Snyder & Patterson, 1987). Epidemiological data such as these underscore the need for research on stress resistance among disadvantaged teenagers.

Operational definitions of the two central constructs embedded within the major research question, that is, stress and competence, were based on earlier research in the area. Two

approaches have commonly been used in operationalizing stress. One of these, termed the “life events method,” involves the use of self-report measures to obtain a count of stressful life events encountered in the recent past (Garmezy & Tellegen, 1984; O’Grady & Metz, 1987). An alternative strategy has been to examine the separate effects of individual life stresses that are “obviously disruptive,” including disasters such as war and floods (Garmezy & Rutter, 1985), and sociodemographic variables such as economic deprivation (Sameroff, Seifer, Barocas, Zax, & Greenspan, 1987), institutionalization (Rutter & Quinton, 1984), and parental divorce (Wallerstein, 1983).

Low socioeconomic status is among the most commonly investigated sociodemographic variables in risk research. Studies have pinpointed specific factors that frequently characterize low-SES families and that operate as high risk factors. Apart from low-status parental occupation, these include low maternal education, large family size, membership in a minority group, and absence of one parent (Rutter & Quinton, 1977; Sameroff et al., 1987; West & Farrington, 1977).

In view of the evidence cited, a two-pronged approach to defining stress was used in this study. Negative life events constituted the central measure of life stress. In addition, high-risk sociodemographic variables were examined.

The definition of outcome variables was also based on earlier work on resilience. During the last two decades, studies on stress resistance have tended to include outcome measures based on health and competence (rather than the absence of psychopathology), correcting empirical psychologists’ traditional neglect of successful coping under adversity (Garmezy & Tellegen, 1984). In assessing overall functioning, researchers have argued for the use of social competence as the measure of choice (Masterpasqua, 1989; Waters & Sroufe, 1983; Zigler & Trickett, 1978).

Within research on resilience, social competence has generally been operationalized on the basis of observable, behavioral criteria, with assessments based on ratings by teachers, parents, or peers, as well as on academic achievement scores (e.g., Garmezy et al., 1984; Masten, Morison, Pellegrini, & Tellegen, in press; O’Grady & Metz, 1987). A converging operations approach (Garner, Hake, & Eriksen, 1956) was used while defining social competence in this study. The measurement modalities used included teacher ratings, peer ratings, and school grades.

In the search for factors that moderate the effects of stress, the focus of this study was on personal attributes of the child. Dispositional attributes have been viewed as constituting a major class of protective/vulnerability factors (Garmezy, 1985). Yet, researchers emphasize the current need for greater specification of the ways in which such variables are involved in resilience (Garmezy & Masten, 1986; Rutter, 1987).

Personality variables explored in this study included intelligence, locus of control, social skills, and ego development. In earlier studies on preadolescents, intellectual ability has been found to be protective against stress in predicting various indices of competence (Masten et al., 1988; Pellegrini, 1980). Similarly, Werner and Smith (1982) found that during young adulthood, resilient individuals had high faith in their own control over their environment

(reflecting an internal locus of control) as opposed to believing that the external environment was determinative.

Protective aspects of interpersonal skills have been indicated by empirical studies (Leadbeater, Hellner, Allen, & Aber, 1989; Pellegrini, 1980; Rubenstein, Heeren, Housman, Rubin, & Stechler, 1989) as well as by clinical case discussions of resilient children. Such children have been described as having high social skills (e.g., Masten et al., in press), with characteristics such as warmth, spontaneity, and expressiveness (Murphy & Moriarty, 1976). In the present study, six variables subsumed within the global construct of social skills were examined; these reflected aspects of emotional as well as social response styles.

Ego development, a construct conceptualized by Loevinger (1976), is a “master” trait reflecting character development which is related to various aspects of cognitive and interpersonal development, but which represents more than any of them considered individually (Hauser, 1976). Inclusion of ego development as a moderator variable in this study was based on previous research showing that levels of this construct are negatively related to various indices of coping and maladjustment (Browning & Quinlan, 1985; Frank & Quinlan, 1976; Hauser et al., 1984; Noam et al., 1984).

In addition to the four personal attributes selected, frequency of positive life events was also examined as a potential moderator of stress. It has been argued that positive feeling states facilitate coping with stress (Lazarus, Kanner, & Folkman, 1980), and studies have established that positive experiences can be ameliorative against negative ones (Reich & Zautra, 1981; Rutter & Quinton, 1984).

Recently, Garmezy (Garmezy et al., 1984) and Rutter (1987) have emphasized the need to make conceptual distinctions between different ameliorative factors, based on the processes through which they moderate the effects of life stresses. *Compensatory* factors operate in a simple counteractive fashion, wherein stressors tend to lower levels of competence, while the attributes in question help to improve competence levels. *Protective* and *vulnerability* factors, on the other hand, are involved in interactive relations with stress in predicting adjustment. A protective function is implied if, for example, individuals with high levels of a trait are unaffected by (or do better under) conditions of increasing stress, whereas those low on the trait show declines in competence with increasing stress levels. Conversely, in a vulnerability process, individuals with high levels of a certain attribute are more susceptible to increasing stress than are those low on the attribute. Rutter (1987) has noted that the search for such interactive processes is critical in understanding buffering effects involved in resilience.

## Stress Resistance and Internalizing Symptoms

A second objective of this study was to examine the possibility of psychopathology among resilient children. Labels of these children as competent have generally been based on observable, behavioral criteria, based on the assumption that manifest competence reflects good underlying coping skills (Garmezy & Masten, 1986).

Developmental psychopathologists (Achenbach & Edelbrock, 1978) distinguish between action-oriented, “externalizing” symptoms (e.g., aggressive behaviors) and thought-oriented, “internalizing” ones (such as depression and anxiety). It is possible that “resilient” children’s reactions to their stressful experiences are primarily of an internalizing nature. This argument is based on two empirically based findings. First, at higher levels of development, pathology tends to be expressed more often in internalizing symptoms than in externalizing ones (Zigler & Glick, 1986). Second, children identified as resilient are generally at high developmental levels, as reflected, for instance, in their greater intellectual maturity (Masten et al., in press; Pellegrini, 1980). Given these findings, the question at issue is whether resilient children have elevated levels of symptoms such as depression and anxiety, despite their profiles of superior adjustment on behavioral measures of competence.

## Method

### Sample Characteristics

The sample consisted of 144 (62 boys, 82 girls) adolescents enrolled in an inner-city public school in Connecticut. In the school sampled, students were placed in five “gate” levels, with curricula of varying difficulty. For the present study, students were drawn from 10 ninth-grade classrooms with two classes randomly selected from each of the five gate levels.

Complete data were obtained for 83% of the students enrolled in the classes sampled. Of the 29 students who were not included, 11 were excluded because of incomplete data, two did not want to participate, and 16 were absent throughout the days of data collection.

The mean age of the sample was 15.3 years ( $SD = .78$ ) with a range of 14.0 to 17.2 years. As rated by the Two-Factor Index of Social Position (Hollingshead & Redlich, 1958), the mean SES of families was 52.4, which falls in the second lowest of the five Hollingshead categories. Seventy-seven percent of the students belonged to minority groups (with approximately 45% Blacks and 30% Hispanics).

### Measures of Stress

**Negative life events**—The Life Events Checklist (LEC; Johnson & McCutcheon, 1980) consists of 46 events, along with four spaces for respondents to report events not specifically listed. This questionnaire asks about the number of events experienced during the previous year, whether each event experienced was seen as being undesirable (negative) or desirable (positive), and the extent to which events affected respondents’ lives. Research has indicated that summations of unit scores (each event weighted one) are as highly correlated with dependent variables as are summed impact ratings (Johnson & Bradlyn, 1988; Johnson & McCutcheon, 1980). Simple counts of life events were therefore used in this study. Acceptable levels of test-retest reliability, convergent validity, and discriminant validity have been reported for both positive and negative experiences among adolescent samples (Brand & Johnson, 1982; Johnson, 1982).

Eighteen of the items on the LEC represent events over which a respondent would probably have little control (e.g., “parents separated”). These items are less likely to be confounded with indices of adjustment as compared to events such as “failing a grade” or “losing a job.”

Some researchers (e.g., Gersten, Langner, Eisenberg, & Simcha-Fagan, 1977; Masten et al., 1988) have advocated the use of only uncontrollable events in life stress research to protect against possible confounds with outcome variables. Others, however, have argued for the inclusion of both types of events given the intention to sample the major domain of stressful events, since even those events that may be under the person's control could be stressful when experienced (Johnson, 1986).

The use of a subset of uncontrollable items presents its own problems in terms of compromising meaningfulness of scores. Such events generally constitute between one-third and one-half of the items on life event measures. Apart from being restricted in range, scores based on these events have uncertain psychometric properties, since marked reduction of items on a scale can affect its reliability and validity (Carmines & Zeller, 1979). Given these concerns, along with the pivotal position of the construct of stress within this study, the use of scores on uncontrollable events was considered inappropriate for central analyses. These scores were, however, used in supplemental analyses to attempt replication of major findings.

**Demographic variables**—A self-report questionnaire was used to obtain information on *family size, household composition, and ethnicity*. Data on *parents' education and occupation* were obtained from respondents' parents, either on the telephone or through written communication. The following cutoff points were used in classifying demographic variables as constituting stressors: maternal education below the high school level; head of household engaged in unskilled, semiskilled, or skilled manual work; membership in a minority group; presence of more than three children in the household; absence of parent or parent surrogate of either sex.

### Measures of Competence

**Teacher ratings**—The Teacher-Child Rating Scale (T-CRS; Hightower et al., 1986) was given to English teachers of all students in the sample. A 36-item scale, the T-CRS assesses behaviors within two domains, with three scores within each: *Problems* (Acting Out, Shy-Anxious, and Learning), and *Adjustment* (Frustration Tolerance, Assertive Social Skills, and Task Orientation). Acceptable psychometric properties have been reported (Hightower et al., 1986).

**Peer ratings**—The Revised Class Play (RCP; Masten, Morison, & Pellegrini, 1985) was used to assess peer reputation. RCP items have been found to fall into three major factors, *Aggressive-Disruptive, Sensitive-Isolated, and Sociability-Leadership* (Masten et al., 1985). In this study, principal components analyses of the RCP items were conducted on the whole sample and, for confirmatory purposes, on boys and girls and on two random halves of the sample. These analyses yielded a highly consistent pattern of results, wherein slopes of the eigenvalues indicated the presence of four main factors. Two of these factors were negative, that is, Aggressive-Disruptive and Sensitive-Isolated. The single positive factor found by Masten et al. (1985) fell into two separate factors, labeled Sociability and Leadership. Based on these results, four RCP scores were developed. Masten et al. (1985) have reported adequate coefficients of reliability and validity for the RCP. Acceptable reliability and

validity levels for the four scores used in this study have also been demonstrated (Luthar, 1990).

**School grades**—School records were used to ascertain students' grades. Marks from two "marking periods" were collected for four academic courses, yielding a total of eight marks for each respondent. These marks were converted into grades using a grid developed by school officials, which made it possible to compare marks across the five gate levels (which varied in curricula). Based on these eight scores, mean grades were computed. High scores on the school grades variable were reflective of high social competence levels.

### Moderator Variables

**Intelligence**—The Raven's Standard Progressive Matrices (SPM; Raven, Court, & Raven, 1977), a widely utilized test that is relatively culture free, was used to assess intelligence. Acceptable psychometric properties of the SPM have been established in several investigations (Raven et al., 1977).

Research shows that of the five SPM Sets (A through E), younger children are not expected to solve more than the problems in Sets A and B and the easier problems in Sets C and D. For adults, on the other hand, these same problems provide little more than training in the method of working (Raven et al., 1977). In this study, therefore, Sets B through D were administered, with the anticipation that these three sets would be sufficient to capture the range of intellectual abilities within the adolescent sample under study.

**Social skills**—The Social Skills Inventory (SSI; Riggio & Throckmorton, 1986) contains 90 items rated on a nine-point scale, with 15 items on each of the following dimensions: *emotional expressivity*, *emotional sensitivity*, *emotional control*, *social expressivity*, *social sensitivity*, and *social control*. Since the scale was originally developed for use with adults, the language was simplified where necessary for the sample of this study. Acceptable coefficients of test-retest reliability and internal consistency have been reported for the original SSI, and high convergent and discriminant validity have been established (Riggio, 1986). Adequate psychometric properties have been reported for the modified version as well (Luthar, 1990).

**Locus of control**—The Nowicki-Strickland Locus of Control Scale (Nowicki & Strickland, 1973) was used to measure the extent to which children make external versus internal attributions. On this 40-item, two-choice measure, high scores are indicative of high externality. Within this study, scoring was reversed to achieve consistency with the positive direction of scores for other moderator variables. High reliability and validity levels of this measure have been reported in several studies (Nowicki & Strickland, 1973).

**Ego development**—To assess ego development, the abbreviated version of the Sentence Completion Test, Form 81 (Loevinger, 1985), was administered. The item sum score was used to represent level of ego development in the statistical analyses. The Sentence Completion Test has been found to have acceptable levels of internal consistency, test-retest reliability, and construct and discriminant validity (Hauser, 1976; Loevinger, 1979, 1985; Redmore & Waldman, 1975).



**Positive life events**—The Life Events Checklist (Johnson & McCutcheon, 1980), described earlier, was used to assess frequency of positive life experiences.

### Measures of Internalizing Symptoms

**Depression**—The Children's Depression Inventory (Kovacs, 1982), a 27-item self-report scale designed for school-age children and adolescents, was administered. Each item consists of three choices, with scores ranging from 0 to 2. This measure has acceptable levels of internal consistency (Kovacs, 1985) as well as criterion and concurrent validity (Saylor, Finch, Spirito, & Bennett, 1984).

**Anxiety**—The total anxiety score yielded by the Revised Children's Manifest Anxiety Scale (Reynolds & Richmond, 1985) was used in this study. Items on this 37-item self-report measure are scored 0 or 1, with high scores being indicative of high anxiety. Acceptable reliability and validity coefficients have been reported (Reynolds & Richmond, 1985).

**Depressive tendencies**—The Depressive Experiences Questionnaire (DEQ; Blatt, D'Affliti, & Quinlan, 1979) provides scores on two types of depressive tendencies—*dependency* and *self-criticism*—along with a third factor called *efficacy*, representing a sense of well-being. The DEQ was originally constructed for use with adults. A version prepared for use with adolescents (S. J. Blatt, personal communication, October 1987) was administered in the present study. Adequate psychometric properties have been demonstrated for the original DEQ (Blatt, Quinlan, Chevron, McDonald, & Zuroff, 1982; Zuroff, Moskowitz, Wielgus, Powers, & Franko, 1983) as well as for the modified version (Luthar, 1990).

### Procedure

Data for each student were collected during three 45-min class periods allocated for English, on three consecutive days. Testing of the children was done in groups of 10 to 20. Questionnaires were administered in the same order to all the groups, with relatively structured, nonthreatening measures administered at the beginning and end of each session. To ensure maximal participation, an incentive of \$5 was offered to each student, and teachers were given \$1 for each student rating they completed.

## Results

### Data Reduction

To reduce the number of dependent variables by constructing a smaller set of composite variables, standardized scores obtained from peer and teacher ratings were subjected to a factor analysis. Results indicated three main factors, which together accounted for 77% of the total variance. Factor analyses conducted for boys and girls yielded similar results. Based on these analyses, three composite scores of competence were developed. Scoring operations were as follows (scales from which scores derive are in parentheses): Assertive-Responsible = Frustration tolerance (T-CRS) + Task orientation (T-CRS) + Assertiveness (T-CRS)–Shy-anxious (T-CRS) –Learning problems (T-CRS); Disruptive-Disengaged =

Aggressive-Disruptive (RCP) + Acting out (T-CRS) –Leadership (RCP); *Sociable* = Sociable (RCP) –Sensitive-Isolated (RCP).

High scores on the Assertive-Responsible and Sociable indices reflected high competence levels, whereas high scores on Disruptive-Disengaged represented poor social competence.

### Defining Stress

Regression analyses were conducted with negative life events and the five sociodemographic indices as predictors, and the competence composites as dependent variables. To identify stressors, the analyses were examined to find indices that significantly (and independently) contributed to reduced competence scores. Results revealed that only negative life events scores met these criteria with stability. The variable Stress was therefore defined only on the basis of negative life event scores. The mean score on negative life events in this sample was 5.80 (SD = 3.83).

### Descriptive Statistics

Correlations among stress, competence, and moderator variables are presented in Table 1. As seen in Table 1, stress was significantly related to all the competence variables in expected directions, with the exception of the variable Sociable. Further, Sociable was the single competence variable that was not significantly related to all the others. SES<sup>1</sup> (Hollingshead Index) was found to be unrelated to stress but was negatively related to Assertive-Responsible and school grades among the competence variables, as well as to intelligence, internality, and ego development.

### Compensatory and Protective Factors: Hierarchical Regressions

Examination of the relation between stress, competence, and potential moderator variables was done through hierarchical multiple regressions (Cohen & Cohen, 1975). This approach, recommended for designs that contain multiple independent variables, indicates the unique contribution of each predictor to the criterion, having taken into account the interrelations between the predictors. The order in which variables are entered into regression equations is dictated by various considerations, discussed by Cohen and Cohen (1975). In research focused primarily on psychological attributes, “organismic” characteristics (e.g., intelligence) are typically given priority over “environmental” ones (such as SES) in the order of entry (e.g., Garmezzy et al., 1984).

Separate regression analyses were conducted for each of the four scores of social competence, that is, the three composites and school grades. Gender, followed by age, were the first independent variables entered into the regression equations, being “fixed” factors that cannot be affected by other independent variables. These were followed by the four psychological variables in the design (steps 3–6), with their entry being allowed to vary in order of decreasing tolerance (Tabachnick & Fidell, 1989). Following these “organismic factors” were the environmental variables, with SES (step 7) taking precedence over the two

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<sup>1</sup>Although the five demographic variables considered individually were not found to be significant stressors, the overall SES variable (Hollingshead Index) was included in the statistical analyses, in keeping with previous research designs in the area.



life event scores (steps 8 and 9) since social status is presumably less changeable than are life events. Finally, steps 10–14 included five interaction terms between Stress and each of the five moderator variables. Again, order of entry was determined by decreasing tolerance. The interaction effects were entered last in order to determine their unique contribution to variance accounted for after the main effects had already been entered.

Within these analyses, significant interaction effects would indicate a variable's involvement in either protective or vulnerability processes: Compensatory functions would be indicated if significant main effects were obtained for a particular moderator as well as for stress (with no interaction between these two predictors in predicting competence).

Results of the hierarchical regressions conducted on the competence variables are presented in Tables 2–5. As seen in Table 2, Stress was significant in the prediction of the Assertive-Responsible variable. The main effect for ego development indicates its compensatory functions. Table 2 also indicates two significant interaction effects, that is, those involving internality and intelligence.

In order to interpret significant interaction effects, simultaneous regression equations were solved following procedures adopted in similar studies (Garmezy et al., 1984; Masten, 1982). For each significant effect, the equation was solved four times with “high” and “low” values of the moderator variable and stress (1 SD above and below the mean), with all other values set at the mean.

Equations for all significant interactions were solved at Step 10 (rather than at the specific step of entry), that is, after partialing main effects but before any other interaction effects were entered. This strategy was adopted in order to simplify interpretation of effects: interaction effects that are significant after other interactions have been partialled are not just difficult to interpret but may, too, reflect the influence of “suppressor” variables.<sup>2</sup>

The illustrative values resulting from these computations are shown in Figures 1 and 2. As seen in Figures 1A and 1B, internality was found to be protective in nature for the Assertive-Responsible variable, while intelligence operated as a vulnerability factor.

For the Disruptive-Disengaged competence measure, ego development was a compensatory variable, as indicated in Table 3. No significant interaction effects were found for this domain of competence.

As seen in Table 4, for the Sociable competence index, social skills was involved in a significant interaction effect. To identify the relative contribution of the six social skills (social/emotional expressivity, sensitivity, and control) to the overall social skills variable as a protective factor, a follow-up analysis was done, with all six of them replacing the single global SSI score. Significant effects were obtained with only one of the six variables, that is, social expressivity. The interaction between stress and social expressivity accounted for 6% of the variance. As seen in Figure 2A, social expressivity operated as a protective factor.

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<sup>2</sup>All six interaction effects discussed in this section were statistically significant at least at  $p < .05$  when they were entered at Step 10. Further, for each significant interaction, changes in  $R^2$  at Step 10 were very similar to values reported in the hierarchical results presented in Tables 2–5.

Finally, Table 5 indicates that ego development served as a compensatory factor in influencing school grades. In addition, two vulnerability factors were indicated, that is, positive events and intelligence, illustrated in Figures 2B and 2C.

### Replication of Results Using Uncontrollable Life Events

The regression analyses discussed above were repeated, with scores based on the 18 uncontrollable life events replacing total negative event (stress) scores. Positive life event scores were similarly substituted in these analyses.<sup>3</sup> Results replicated earlier findings in that significant interaction effects were obtained with the same four moderator variables, and similar protective versus vulnerability trends were found. In these analyses, however, four significant effects were found, as opposed to the five effects obtained in previous analyses. Internality and social expressivity showed protective functions, for the Assertive-Responsible and Sociable criteria, respectively. Positive events and intelligence were involved in vulnerability processes, with school grades and Sociable, respectively, as criteria.

In the first three of these four significant interaction effects, the results showed patterns similar to the slopes displayed in Figures 1A, 2A, and 2B, respectively. With regard to the fourth finding, with increasing stress, intelligent children showed sharp declines on the Sociable criterion, while less intelligent children showed relatively little change.

### Internalizing Symptoms among Resilient Youth

Analyses of variance were used to examine whether resilient children differed from others on internalizing symptoms. To define groups high and low on stress and competence, cutoff points were 1 SD above and below the respective group means. Four cells were defined, that is, high/low stress, by high/low competence. To be classified as being high (or low) in competence, subjects had to have scores on the upper (or lower) extreme on one or more competence composites. Individuals who were at the upper extreme in one area of competence but at the lower extreme in another were not used in the analyses.

One of the four cells (low stress, low competence) was excluded from the analyses since only two children met the criteria for inclusion. Thus, the analysis conducted was between resilient children (high stress, high competence,  $n = 9$ ) and (a) high stress, low competence ( $n = 12$ ) and (b) low stress, high competence children ( $n = 11$ ).

Dependent variables in these analyses included scores on depression, anxiety, and the two depressive tendencies, that is, dependency and self-criticism. Since these variables were conceptually intercorrelated, a preliminary one-way MANOVA was conducted, which yielded a significant main effect, Wilks's criterion,  $F(8,52) = 3.54, p < .01$ . One-way ANOVAs were then conducted for each dependent variable. Results of these analyses are presented in Table 6. Significant effects were obtained for three of the four variables, that is, depression,  $F(2,29) = 9.66, p < .001$ , anxiety,  $F(2,29) = 9.13, p < .001$ , and self-criticism,

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<sup>3</sup>Mean scores on uncontrollable events on the Life Events Checklist were 2.17 (SD = 1.81) for negative events, and 1.84 (SD = 1.22) for positive events. Correlations between uncontrollable and total life event scores were .80 and .54 for negative and positive events, respectively.

$F(2,29) = 3.37, p < .05$ . For each significant difference obtained, two Newman-Keuls comparisons were conducted, that is, between the resilient group and each of the other two groups.

As seen in Table 6, on depression and anxiety, children identified as resilient had higher scores than did participants who were also high in competence but were from low-stress backgrounds. In comparison with students who had experienced high stress but who were low in competence, the socially competent youngsters were found to have comparable levels of internalizing symptoms (for all Newman-Keuls comparisons,  $F[1,29]$ ,  $\alpha = .05$ ).

## Discussion

Within this study, various aspects of personality were found to be involved in protective, vulnerability, and compensatory processes, modifying, in different ways, the effects of life stresses. Findings pertaining to each of these processes are discussed in turn.

Internal locus of control, or the belief that forces shaping one's life are largely within one's own control, was found to be involved in *protective* processes for assertiveness in the classroom. In comparison to children with an internal locus of control, those with an external orientation showed greater declines in functioning with increasing stress levels. Support for these findings is seen in the learned helplessness paradigm (Seligman, 1975). This paradigm suggests that when people believe they are powerless to control what happens to them, they become passive and restricted in coping abilities. On the other hand, when individuals believe that events and outcomes are controllable, learned helplessness is avoided, and, instead, active attempts are made to overcome aversive situations. Additional support for the present results is evident in studies establishing that internally oriented children who have weathered several setbacks tend to show strong efforts to master challenging situations they encounter (Luthar & Zigler, 1988; Werner & Smith, 1982).

Of the six types of social skills investigated in the present study, social expressiveness was significant in protecting against stress, when competence was defined in terms of the child's popularity with peers. This finding supports empirical data (Pellegrini, 1980) as well as descriptive, qualitative reports (e.g., Murphy & Moriarty, 1976) on the role of interpersonal skills in protecting against stress. The importance of these findings is underscored by the fact that children's social skills can be modified with intervention programs. Implementation of school-based programs (e.g., Cowen, 1985; Spivack & Shure, 1982) may help significantly in reducing the number of inner-city youngsters who succumb to the deleterious effects of stressful life situations.

Interaction effects between intelligence and stress indicated that rather than being protective in the face of stress, intelligence was involved as a *vulnerability* mechanism. At low stress levels, intelligence was positively related to competence for school grades as well as classroom assertiveness. When stress was high, on the other hand, the intelligent children appeared to lose their advantage and demonstrated competence levels more similar to those of less intelligent children.

While many previous studies have found that intelligence protects against stress (Garmezy et al., 1984), findings of other studies (e.g., Masten, 1982) have been consistent with the present results. It has been suggested that more intelligent children tend to have higher levels of sensitivity to their environments (Zigler & Farber, 1985). This greater sensitivity might account for the higher susceptibility to stressors of brighter children as compared to those who are less intelligent.

A second implication of this finding may be that the protective versus vulnerability effects of a variable can vary across aspects of competence examined, as well as across populations studied. For instance, while intelligence may be protective with regard to disruptive behaviors in the classroom (Masten et al., 1988), it may function as a vulnerability factor for other domains of competence such as assertiveness or achievement. Similarly, in many earlier studies which showed that intelligence was protective against stress (Garmezy et al., 1984; Masten et al., 1988), the samples have consisted of preadolescent and younger children. For an economically disadvantaged adolescent facing several stressors, on the other hand, increasing freedom from home and school may lead to lower investment in school and to the use of talents in arenas other than academic achievement.

Apart from intelligence, positive life events was another variable that was found to be a vulnerability factor. This variable, too, has been previously shown to serve protective functions, in experimental as well as longitudinal investigations (Reich & Zautra, 1981; Rutter & Quinton, 1984).

Chronology of positive and negative life events may be significant in accounting for whether positive events do, in fact, serve as buffers against stress. When positive experiences follow negative ones (as against occurring simultaneously with them) it is plausible that they serve reparative functions such as those suggested in earlier research (Reich & Zautra, 1981; Rutter & Quinton, 1984). In this study, however, the positive and negative life events reported had all occurred within the previous year. Experiences of frequent positive events interspersed with negative ones possibly give rise to perceptions of the environment as being powerful and unpredictable. Commenting on the impact of environmental stability, Anthony (1987) said that rapid changes may create a state of “future shock”; individuals emerging from uncertain environments may be the first to succumb to significant stressors.

Intense or powerful environments tend to affect individuals most during periods of rapid growth (Anthony, 1987). The sample of this study included children in early to mid-adolescence, a period of significant growth (Cohen, 1973). It is possible that heightened susceptibility to change during adolescence also contributes to the present finding of high positive events being a vulnerability factor (even though such events may serve as buffers against stress for younger or older individuals).

Ego development was found to be a robust *compensatory* factor, having strong relationships in expected directions with three of the four indices of competence, that is, school grades, classroom assertiveness, and classroom disruptiveness. These results are consistent with several earlier empirical findings establishing that ego development is a significant

concomitant of various aspects of adjustment and mental health (Browning & Quinlan, 1985; Frank & Quinlan, 1976; Hauser et al., 1984; Noam et al., 1984).

At the outset of this investigation, the variable stress was to be operationalized in terms of life events as well as sociodemographic factors. The attempt was to include two commonly used—and very different— approaches to measuring stress, and to use empirical methods to determine the extent to which the different indices functioned as stressors.

The finding that demographic variables were not significantly related to adjustment contrasts with results of prior studies. Several investigations (e.g., Rutter & Quinton, 1977; Sameroff et al., 1987; West & Farrington, 1977) have provided evidence for the high-risk nature of factors such as low SES, minority group membership, and large family size. The lack of such results in this study may be due to restricted ranges on the demographic variables. For instance, most of the participants were from lower-SES families, and over three-quarters belonged to minority groups. It is possible that the inclusion of less disadvantaged children in the sample would have yielded the expected—and previously obtained—relationships between sociodemographic variables and adjustment.

Aside from the search for variables that moderate the effects of stress, the second major thrust of this study was to explore levels of psychopathology among children identified as resilient. It was predicted that among competent youngsters who had experienced several negative life events, the effects of stresses would be manifested in more developmentally “advanced” internalizing symptoms. This hypothesis was confirmed.

Previous theoretical and empirical works in the area have contained cautionary statements on the use of terms such as “invulnerable” and “resilient.” For instance, it has often been noted that resilience is not necessarily continuous over time but is, instead, interspersed with setbacks under certain circumstances (Anthony, 1987; Felsman & Vaillant, 1987; Murphy & Moriarty, 1976). The question raised by this study, however, is whether even phases of apparently successful coping are in fact as trouble free as they seem. Evidence that resilient youth in this study were significantly more depressed and anxious than were competent youngsters from low stress backgrounds suggests that while the type of problems developed may vary, some type of difficulties may inevitably be associated with severe life stresses.

If maladjustment of some sort is in fact inevitable in the face of marked adversity, it may be useful to consider a somewhat qualified definition of the term resilience, wherein it simply represents the “least detrimental” of all possible symptoms. In other words, one might argue that while some youngsters faced with high stress react with emotional distress as well as behavioral difficulties, others, even though depressed and anxious, are able to function successfully in terms of societal expectations; this ability in itself may be sufficient to warrant labels such as stress resistance.

Limitations of this study include the use of cross-sectional data. The approach adopted was necessarily exploratory, given the absence of previous empirical evidence on resilience among inner-city adolescents. While appropriate for initial stages of investigation, the use of a cross-sectional design does not allow for definitive causal conclusions regarding the role of moderator variables.

The definition of the variable stress constitutes another factor that may qualify interpretations to some extent. In the central analyses of this study, stress was defined based on both controllable and uncontrollable negative events. The use of scores derived solely from uncontrollable life events was considered inappropriate, given the extremely restricted range of such scores in this sample, the absence of any psychometric data on uncontrollable event scores, and the fact that even controllable events can be stressful when experienced (Johnson, 1986). However, it must be recognized that the inclusion of controllable events in the overall stress score may have led to some confounding with outcome measures.

Attempts to replicate major findings with uncontrollable event scores yielded four significant effects, as opposed to five obtained in analyses with total event scores. In addition, in one of these cases, it was found that although the moderator variable (intelligence) was involved in vulnerability rather than protective processes across both sets of analyses, the competence criteria differed in the two cases. While failure to achieve identical replications of original findings may well have resulted, at least in part, from the restricted range of uncontrollable event scores, it may also indicate that some protective and vulnerability processes may be specific to controllable life events. Such possibilities might be explored in future investigations employing measures specifically designed to make separate assessments of both controllable and uncontrollable life events.

Findings of this study are among the first to yield insights based on empirical data on the ways in which personality variables might interact with stress in influencing social competence among inner-city adolescents. Internality and social skills were found to operate in protective processes, while intelligence and positive life events were involved in vulnerability processes, across two sets of analyses in which different stress scores were used. The consistency of findings involving these moderator variables indicates that in future longitudinal studies, it would be useful to examine the causal role of these four variables in various facets of resilience. Future investigations might also explore gender differences in the effects of these moderator variables, a dimension which could not be pursued here due to limited sample size.

Another possibility for further investigation has to do with the effects of participants' ratings, versus others' judgments, of life events as being negative or positive. Strong arguments have been made for the use of self-ratings in this context. The stressfulness of any life event depends a great deal on the child's appraisal of it (Lazarus & Folkman, 1985). Events such as a parent getting a new job, or even parental divorce, may be viewed either negatively or positively, depending on associated circumstances (Johnson, 1986). Moreover, there is evidence that adult ratings of life events may not correspond well with children's self-ratings of the same events (Yamamoto & Felsenthal, 1982). In spite of these arguments in favor of using participant ratings of negative and positive events, there remains a possibility, again, of potential confounds with outcomes when such methods are used, since ratings of events as negative can be influenced by the individual's level of adjustment.

With regard to findings on resilience and emotional health in this study, the results must be viewed in the context of the use of a relatively small number of participants in these analyses, as well as the possibility of some response bias (which could result from the use of



self-report data on stress as well as on internalizing symptoms). Unfortunately, replication of these results using two types of life stress scores was not possible: the range of uncontrollable life event scores left too few children within each comparison group. The results obtained, however, are supported by findings obtained with other age groups. For example, data within a longitudinal study of young abused children (Farber & Egeland, 1987) indicated that despite their good adaptive behaviors, many apparently invulnerable children did not seem to be emotionally healthy. Similarly, in a study comparing stress-resistant and stress-affected school-age children, the resilient group did not show the advantages on self-rated depression and anxiety levels, which they did on behavioral indices of social competence (Parker, Cowen, Work, & Wyman, 1990).

In conclusion, results of this study provide additional insights to an emerging area of developmental psychopathology, the empirical study of childhood resilience. The study indicates the importance of various personality attributes as potential moderators of life stresses among inner-city youth. In addition, the present findings suggest the need for future investigations to incorporate distinctions between emotional health and behavioral competence in exploring adjustment in the face of stress.

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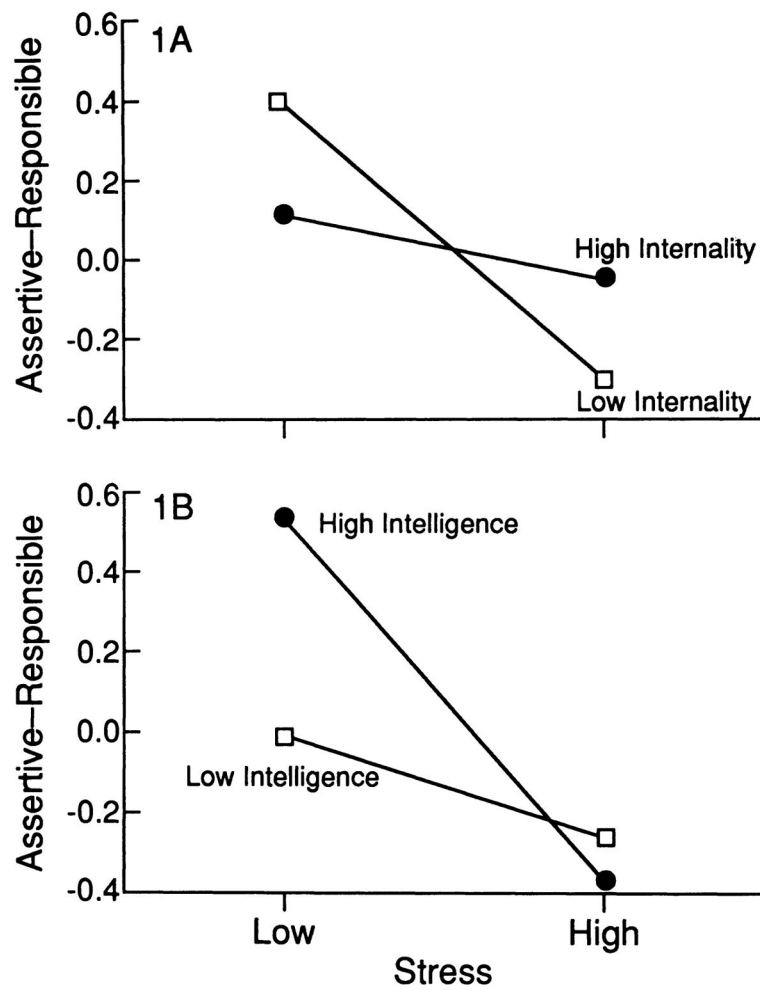
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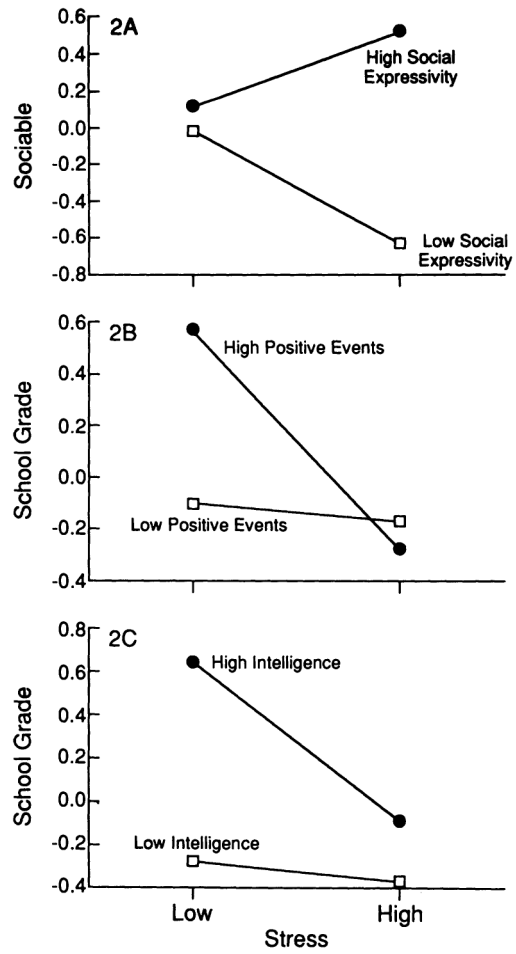
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**Fig. 1.** Interactions between stress and moderator variables in predicting scores on the Assertive-Responsible criterion of competence.



**Fig. 2.** Interactions between stress and moderator variables in predicting scores on the Sociable (A) and school grades (B and C) criteria of competence.



TABLE 1

Intercorrelations of Measures of Stress, Competence, and Moderator Variables

	1	2	3	4	5	6	7	8	9	10
1. Stress										
2. Assertiveness	-.33***									
3. Disruptiveness	.35***	-.46***								
4. Sociability	-.05	.05	.06							
5. School grade	-.29***	.68***	-.36***	-.05						
6. SES	.08	-.19*	.01	.07	-.29***					
7. Positive events	-.01	.24**	-.11	.06	.24**	-.13				
8. Intelligence	-.16*	.26**	.01	-.03	.46***	-.21**	.13			
9. Ego development	-.12	.36***	-.21***	-.06	.50***	-.17*	-.26**	.36***		
10. Internality	-.30***	.21**	-.05	.13	.26**	-.25**	.16*	.17*	.29***	
11. Social skills	.04	.02	.04	.27**	.05	-.14	.21**	.19*	.09	.21**

Note.— $n = 144$ .\*  $p < .05$ .\*\*  $p < .01$ .\*\*\*  $p < .0001$ .

**TABLE 2**  
 Results of Hierarchical Regression Analyses for the Prediction of the Variable Assertive-Responsible

Step and Predictor	Multiple R	F	R <sup>2</sup>	R <sup>2</sup> Change
1. Gender	.03	0.13	.0001	.001
2. Age	.31	7.25**	.10	.09*** <sup>a</sup>
3-6. Internality	.36	6.78***	.13	.03*
Intelligence	.39	6.35***	.16	.03*
Social skills	.41	5.45***	.16	.01
Ego development	.46	6.06***	.21	.05**
7. SES	.47	5.41***	.22	.01
8-9. Positive events	.49	5.21***	.24	.02
Stress	.55	6.52***	.31	.07*** <sup>a</sup>
10-14. Stress × positive events	.55	5.82***	.31	.00
Stress × internality	.58	5.98***	.33	.03*
Stress × intelligence	.60	6.10***	.36	.03*
Stress × ego development	.60	5.60***	.36	.00
Stress × social skills	.60	5.19***	.36	.00

Note.—*n* = 144.

<sup>a</sup> Indicates significant main effects that are negatively related to the criterion.

\* *p* < .05.

\*\* *p* < .01.

\*\*\* *p* < .0001.

**TABLE 3**  
 Results of Hierarchical Regression Analyses for the Prediction of the Variable Disruptive-Disengaged

Step and Predictor	Multiple R	F	R <sup>2</sup>	R <sup>2</sup> Change
1. Gender	.05	.40	.001	.001
2. Age	.10	.67	.01	.01
3-6. Internality	.11	.54	.01	.001
Intelligence	.11	.44	.01	.001
Social skills	.13	.48	.02	.01
Ego development	.24	1.37	.06	.04 <sup>a</sup>
7. SES	.24	1.17	.06	.001
8-9. Positive events	.25	1.10	.06	.001
Stress	.44	3.48 <sup>**</sup>	.19	.13 <sup>***</sup>
10-14. Stress × positive events	.45	3.31 <sup>**</sup>	.20	.01
Stress × internality	.47	3.36 <sup>***</sup>	.22	.02
Stress × intelligence	.47	3.13 <sup>**</sup>	.22	.001
Stress × ego development	.48	3.02 <sup>**</sup>	.23	.01
Stress × social skills	.48	2.78 <sup>**</sup>	.23	.001

Note.—*n* = 144.

<sup>a</sup> Indicates significant main effects that are negatively related to the criterion.

\* *p* < .05.

\*\* *p* < .01.

\*\*\* *p* < .0001.

**TABLE 4**  
 Results of Hierarchical Regression Analyses for the Prediction of the Variable Sociable

Step and Predictor	Multiple R	F	R <sup>2</sup>	R <sup>2</sup> Change
1. Gender	.03	.16	.001	.001
2. Age	.20	2.91	.04	.04*
3-6. Internality	.25	3.17*	.06	.02
Intelligence	.25	2.36	.06	.001
Social skills	.38	4.75***	.15	.08***
Ego development	.39	4.06**	.15	.001
7. SES	.40	3.76**	.16	.01
8-9. Positive events	.41	3.31**	.16	.001
Stress	.41	2.95**	.17	.001
10-14. Stress × positive events	.42	2.85**	.18	.01
Stress × internality	.42	2.59**	.18	.001
Stress × intelligence	.43	2.46**	.18	.01
Stress × ego development	.43	2.27**	.19	.001
Stress × social skills	.46	2.48**	.21	.03*

Note.— $n = 144$ . Both significant main effects are positively related to the criterion.

\*  $p < .05$ .

\*\*  $p < .01$ .

\*\*\*  $p < .0001$ .

**TABLE 5**  
Results of Hierarchical Regression Analyses for the Prediction of the Variable School Grade

Step and Predictor	Multiple R	F	R <sup>2</sup>	R <sup>2</sup> Change
1. Gender	.13	2.60	.02	.02
2. Age	.31	7.65**	.10	.08** <sup>a</sup>
3-6. Internality	.39	8.50***	.15	.06**
Intelligence	.54	14.47***	.29	.14***
Social skills	.56	12.31***	.31	.02
Ego development	.62	13.93***	.38	.07***
7. SES	.63	12.96***	.40	.02* <sup>a</sup>
8-9. Positive events	.64	11.72***	.41	.01
Stress	.67	11.95***	.45	.04** <sup>a</sup>
10-14. Stress × positive events	.69	12.33***	.48	.04**
Stress × internality	.70	11.21***	.48	.00
Stress × intelligence	.71	10.96***	.50	.02*
Stress × ego development	.71	10.04***	.50	.00
Stress × social skills	.71	9.30***	.50	.00

Note.—*n* = 144.

<sup>a</sup>Indicates significant main effects which are negatively related to the criterion.

\* *p* < .05.

\*\* *p* < .01.

\*\*\* *p* < .0001.

**TABLE 6**

Mean Scores on Internalizing Symptoms: Resilient Youth Compared with Others

Dependent Variable	Group			<i>F</i>
	High Stress, High Competence	Low Stress, High Competence	High Stress, Low Competence	
Depression	12.89	5.00 <sup>#</sup>	17.35	9.66 <sup>**</sup>
Anxiety	12.44	6.27 <sup>#</sup>	16.38	9.13 <sup>**</sup>
Dependency	-.30	-1.21	-.39	1.50
Self-criticism	.39	-.59	.40	3.37 <sup>*</sup>

Note.—Means which significantly differ from those of the resilient group are denoted by #.

\*  $p < .05$ .

\*\*  $p < .001$ .