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Risk and Protection in Successful Outcomes Among Disadvantaged Adolescents

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The role of psychosocial risk and protective factors in successful adolescent development under circumstances of socioeconomic disadvantage was investigated among 1,638 high school students in a large, urban school district. Success referred to 2 important developmental tasks: engagement in school and avoiding more than minimal involvement in problem behavior. Significant negative effects on success were found for disadvantage and for risk factors, whereas protective factors had significant positive effects. In addition, protection moderated the effects of risk, especially for more disadvantaged youth. Further, in longitudinal analyses, both risk and protective factors accounted for significant variance in change in successful outcomes over time and development. Key risk factors are Low Expectations for Success, Low Self-Esteem, Hopelessness, and having Friends as Models for Problem Behavior. Key protective factors are Attitudinal Intolerance of Deviance, Positive Orientation to Health, and having Friends as Models for Conventional Behavior. Strengthening protective factors, as well as reducing risk, may enhance successful development, especially in disadvantaged life circumstances.

A growing literature in recent years reflects the increased attention of behavioral science to the impact of poverty and disadvantage on the lives of young people in American society, for example, the recent special issue on "Children and Poverty" in *Child Development* (Huston, Garcia Coll, & McLoyd, 1994). With about one in five adolescents coming from families with incomes below the poverty line (Sum & Fogg, 1991) and with the proportion reaching about two in five for minority youth, the issue of disadvantaged life circumstances is increasingly difficult to ignore in efforts to understand social and personal development. Although earlier perspectives tended to view poverty and disadvantage as a monolithic influence with direct effects and homogeneous outcomes, more recent formulations have become much more complex; they recognize the many factors that may intervene between disadvantage and developmental outcomes, as well as the heterogeneity and variability of those outcomes (Cook, Shagle, Phillips, Settersten, & Degirmencioglu, 1998; Felner et al., 1995; Furstenberg, Cook, Eccles, Elder, & Sameroff, in press; Jessor, 1993).

Despite the adverse circumstances of much of inner city life—not only poverty and disadvantage, but also dilapidated neighborhoods, inadequate institutional resources, and often exposure to danger—it is clear that many, if not most, young people manage to do well and to "make it," that is, to stay in school and graduate; to avoid life-compromising experiences such as trouble with the law, too-early childbearing, or intense involvement with drugs; and to develop the human capital that will enable them to enter and carry out the roles of young adulthood (e.g., Smith, Lizotte, Thornberry, & Krohn, 1995). Commenting specifically about African American adolescents growing up in poverty, Taylor (1991) observed:

> Given these cumulative disadvantages, it is remarkable that the proportion of black male adolescents who survive to become well-adjusted individuals and responsible husbands and fathers is so high, or that the percentage who drop out of school, become addicted to drugs, involved in crime, and end up in jail is not considerably greater. (p. 156)

Other accounts of young people growing up poor, these of an ethnographic nature, support this conclusion (Williams & Kornblum, 1985, 1994).

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The challenge of contemporary research on disadvantage is, therefore, not only to examine its compromising impact—the risk it poses in itself—but to illuminate the processes underlying the heterogeneity of outcomes under disadvantage and to account for the demonstrable success of the young people who manage to make it despite adversity, limited opportunity, and the dangers in their life settings. This article is a partial response to that challenge. It is an attempt to account for individual differences in outcomes among disadvantaged adolescents by analyzing variation in both risk and protection and by documenting the moderator role that protection plays in the relation of risk to those outcomes.

The behavioral science concern with risk and protection had its origin in work in developmental psychopathology (Garmezy, 1985; Rutter, 1979; Werner, 1989a, 1989b); more recently, it has been extended to substance abuse (Costa, Jessor, & Turbin, in press; Hawkins, Catalano, & Miller, 1992; Smith et al., 1995) and to problem behavior more generally (Jessor, Van Den Bos, Vanderryn, Costa, & Turbin, 1995). Conceptually, *risk factors* are conditions or variables associated with a lower likelihood of socially desirable or positive outcomes and a higher likelihood of negative or socially undesirable outcomes in a variety of life areas from health and well-being to social role performance. *Protective factors* have the reverse effect; they enhance the likelihood of positive outcomes and lessen the likelihood of negative consequences from exposure to risk.

The notion of positive or successful outcomes is, of course, a relative and contingent one. From the perspective of the adolescent life stage, successful outcomes can be defined in relation to the developmental tasks of that portion of the life-course trajectory (Havighurst, 1972). A key outcome in adolescence is sustained involvement in and commitment to the educational system. Making progress in school and completing a secondary education is not only a widely endorsed developmental task for adolescents, but success in this regard is important for later life, especially for labor-force entry and participation. The importance of disengagement from school as compromising successful adolescent development has been emphasized by others (Finn & Rock, 1997; Steinberg & Avenevoli, 1998). A second key outcome is increasingly recognized as a developmental task for contemporary adolescents, namely, the avoidance of heavy involvement in or commitment to problem behavior, whether alcohol or drug abuse, precocious sexual activity, or delinquency. Beyond the negative social sanctions such activities tend to elicit, they also raise the possibility of life-compromising experiences involving the juvenile justice system, too-early childbearing, or morbidity and even mortality.

These two areas of adolescent outcomes are addressed in this article. Each is central enough to this life stage to warrant the term success if, as developmental tasks, they are indeed accomplished. Obviously, the inclusion of other areas, such as achieving social skills in interpersonal relationships, would yield a more comprehensive definition of successful outcomes in adolescence. Obviously, too, more stringent criteria could be set for each of the two areas of present interest, for example, avoiding any rather than some involvement with problem behavior or achieving a high grade point average rather than just progressing in school. Because of our concern to have a definition of success that has wider applicability, we have opted for a more modest definition of successful outcomes and for a focus on just these two key outcome areas. They will be referred to as *school engagement* and *low problem behavior involvment.* Although it will be important to consider each of these key areas on its own, a more comprehensive criterion of successful outcomes is also examined in this article, namely, the intra-individual coexistence or joint occurrence of both of these outcome criteria—commitment to and moving ahead in school and no more than a limited involvement with problem behavior. It is this joint outcome that seems an especially critical criterion of success for disadvantaged youth. In recognition of its increasing use in the everyday—and even the professional—lexicon, we have employed the term *making it* for that joint criterion.

Conceptually, risk factors operate by instigating or supporting problem behavior, by promoting actions incompatible with staying in school, or by generating circumstances that would attenuate or compromise attachment to school. In contrast, protective factors operate by providing personal or social controls against problem behavior, by promoting activities that are alternatives to or incompatible with problem behavior, and by strengthening orientations toward and commitments to conventional institutions, such as church, school, or family, or to the larger adult society.

Five psychosocial risk factors and seven psychosocial protective factors were examined in this study. The risk factors include Low Expectations for Success, Low Self-Esteem, a general sense of Hopelessness, greater Orientation to Friends than to parents, and greater awareness of Friends as Models for Problem Behavior. The protective factors include Attitudinal Intolerance of Deviance, Positive Orientation to Health, Religiosity, Positive Relations with Adults, the perception of strong social sanctions for transgression (Perceived Social Controls), greater awareness of Friends as Models for Conventional Behavior, and greater involvement in Prosocial Activities, such as volunteer work and family activities. These risk and protection variables were drawn from the set of instigations and controls in the personality, perceived environment, and behavior systems of problem-behavior

theory (Jessor, Donovan, & Costa, 1991; Jessor & Jessor, 1977), and the rationale for each is elaborated in the Method section. Similar risk and protective factors have been operationalized in other studies (e.g., Felix-Ortiz & Newcomb, 1992; Hawkins et al., 1992; Smith et al., 1995; Stacy, Newcomb, & Bentler, 1992; Wills, Vaccaro, & McNamara, 1992).

The primary aim of this study was to examine the relations of both risk and protective factors to Making It among socioeconomically disadvantaged adolescents. Part of that examination entailed consideration of the separate components of the Making It criterion, namely, school engagement and low problem behavior involvement. A second aim of the study was to examine whether protective factors moderate the relation between risk and successful adolescent outcomes, that is, whether they indeed buffer or attenuate the negative relation between risk and success among youth in disadvantaged life circumstances. A third aim was to examine the development of successful outcomes over time and the role of risk factors and protective factors in accounting for change in successful outcomes.

Method

Study Design, Procedures, and Participants

The data used in this article are from a longitudinal questionnaire study of problem behavior and health-related behavior among adolescents in a large urban area in the Rocky Mountain region. Details of the sample and procedures have been described earlier (Jessor et al., 1995). The sample was drawn from six middle schools and four high schools selected to maximize minority racial and ethnic representation. Due largely to the necessity of obtaining active personal and parental consent and to the difficulty of eliciting a response from many of the parents, the initial participation rate was less than desirable. At Wave 1 (1989), 2,263 Hispanic, White, and Black students in Grades 7 through 9 filled out questionnaires (67% of the seventh and eighth graders and 49% of the ninth graders). Comparisons of the Wave 1 participants with the nonparticipants, using school record data, showed that the participant sample represented the full range of scores on grade point average, standardized achievement test scores, disciplinary actions, and school absences, even though participants had, on average, higher academic achievement and fewer absences and suspensions than the nonparticipants.

The most comprehensive set of measures relevant to the purposes of this article is available only in the Wave 3 (1991) and Wave 4 (1992) questionnaires. The Wave 4 questionnaire was completed by 1,688 (75%) of the Wave 1 participants. For these analyses, we used data from each Hispanic, White, and Black participant who completed a Wave 4 questionnaire, except for 50 students who were excluded due to missing data. This final sample included 1,638 participants, of which 655 (40%) were Hispanic, 607 (37%) were White, and 376 (23%) were Black. Fifty-seven percent were girls, and about equal percentages were in Grades 10, 11, and 12 at Wave 4.

To gauge the possible biasing effect of sample loss from the original Wave 1 participant sample, we compared the 1,638 participants who had complete Wave 4 data with the 625 participants lost to attrition after Wave 1 (n = 575) or to missing data (n = 50) on the Wave 1 measures of the variables used in these analyses: a measure of disadvantage, a risk factors scale, a protective factors scale, and the composite success criterion. The participants lost to attrition or missing data were characterized, as expected, by greater disadvantage and risk and by lower protection and success (all comparisons significant at $p \leq .001$). The magnitude of the differences ranged from 0.3 to 0.5 *SD*. Despite these mean differences, however, the intercorrelations among the measures were very similar for the participants and those lost to attrition or missing data. A test of the similarity of the covariance matrices of the two groups against a model that equated the covariances for each measure (following a procedure suggested by Hayduk, 1987, p. 168; see also Jöreskog & Sörbom, 1989, pp. 227–229) yielded a goodness-of-fit index of .99 and a nonsignificant chi-square ($df = 6$) of 7.3, indicating a very good fit. Therefore, relations among the measures would have been about the same if no cases had been lost to attrition or missing data. Consequently, the results reported in the following are not likely to have been biased by sample loss after Wave 1.

Measurement of Disadvantage

In accord with conventional practice, we constructed the measure of socioeconomic disadvantage to reflect parental education, parental occupation, and family structure. (Measures of income or of economic hardship were not available to us.) Six components were assessed: low levels of father's and mother's education (less than high school diploma), low status of father's and mother's job (Hollingshead code of 3 or less—menial or semiskilled labor), nonintact family (absence of one or both of the adolescent's biological parents in the home), and single-parent family (no second parent or stepparent in the home). For each participant, each of the six indicators was scored 1 if it applied and 0 if it did not. Missing data on parents' education or occupation were replaced with the sample mean; there were no missing data on the two family composition measures. Those scores were summed to form a disadvantage index with a possible range of 0

through 6; the mean, median, and mode were 2. Thirty percent (n = 492) of this Wave 4 sample had disadvantage scores at the mean value, 36% (n = 596) of the sample had disadvantage scores below the mean, and 34% (n = 550) had scores above the mean. The latter percentage varied by sex (29% of boys, n = 202; 37% of girls, n = 348) and by ethnic group (15% of Whites, n = 88; 34% of Blacks, n = 127; 51% of Hispanics, n = 335) but did not differ by grade cohort. Twenty-four participants (1.5% of the sample) had the maximum of six indicators of disadvantage. Another 65 participants (4% of the sample) had a disadvantage score of 5. About 10% of the sample had a disadvantage score of 4, and 18% scored just above the mean with 3 of the possible 6 points.

Although participants in this study represent the full range of disadvantage scores, our theoretical and analytic focus is on the most disadvantaged members of the sample. Therefore, it was necessary for us to transform the disadvantage scores to permit us to focus on that part of the distribution. Regression analyses generally yield equations that apply to the average member of a sample. However, when there is a possibility of an interaction between two predictors, it becomes critically important to specify where the zero point is on those two measures because the regression weight for either one of those measures represents its relation to the criterion only for cases in which the other measure has a score of 0 (Judd & McClelland, 1989; West, Aiken, & Krull, 1996). Any measure that may interact with another should be scaled to make the zero point meaningful. Because our primary interest is in the relation of risk and protection to successful outcomes among disadvantaged youth, we set the highest disadvantage score to 0 by subtracting 6 (the highest possible value) from each score. (For examples of similar transformations, see Judd & McClelland, 1989, pp. 247–261; and West et al., 1996.) In the analyses that we report, the regression weights, therefore, describe relations of risk and protection to outcomes among the most disadvantaged participants. Those relations would be significantly different at other levels of disadvantage if and only if there is a significant interaction between disadvantage and risk or protection. If there is no significant interaction between disadvantage and risk or protection, the same regression weights would apply to participants at all levels of disadvantage.

An alternative strategy would have been to carry out the regressions within a disadvantaged subsample. That strategy, however, entails a severe reduction in sample size, a consequent loss of statistical power, less stable regression weights with larger standard errors, and a greater probability of Type II errors. The strategy we have selected overcomes these limitations, and it allows us not only to maintain the analytic focus on the disadvantaged adolescents in the sample but also to assess the applicability of the regression model across the full range of disadvantage represented in the sample.

Measurement of Successful Outcomes

Outcomes in two major areas of adolescent life were assessed as criteria of success: attachment to and progress in the conventional institution of school, and behavioral compliance with conventional social norms about transgression. For the first criterion, School Engagement, standardized scores were summed for (a) attitude toward school (an 8-item scale, e.g., "Staying in school is important for my future," α = .83); (b) propensity for dropping out of school (a 5-item scale assessing having thought or talked seriously about dropping out and having actually stopped attending school at some time in the past, α = .84);[1] and (c) self-reported usual grades (a 1-item scale).[2] Success with respect to school engagement is reflected by a more positive attitude toward school, lower propensity for dropping out, and higher grades. For the second criterion, Low Problem Behavior Involvement, standardized scores were summed for three types of self-reported problem behavior in the previous 6 months: (a) problem drinking (number of times drunk and number of occurrences of negative consequences from drinking, α = .60), (b) number of instances of use of marijuana and other illicit drugs (an 8-item scale, α = .67), and (c) delinquent-type behavior (e.g., theft and physical aggression, a 10-item scale, α = .82).

Each participant's summative scores for School Engagement and for Low Problem Behavior Involvement were then summed (reversing the sign on Low Problem Behavior Involvement) to form the joint criterion measure of success, Making It. Scores on the composite ranged from –22.0 to 5.9, with a mean of 0 and a standard deviation of 3.8. All analyses were carried out with the composite criterion as well as with each of its two components.

Girls evidenced greater success than boys on the composite measure of Making It and on each of its two components—they showed greater School Engagement and lower Problem Behavior Involvement. On

[1] By Wave 4, 74 participants in this sample (5%) had already dropped out of school and were contacted by mail to complete the study. The questionnaire item for usual grades asked those no longer in school what kind of grades they got while they were in school. More of the Hispanic participants (7%) dropped out than the White or Black participants (3%, $p < .01$). This was true within each sex. Forty-seven of the dropouts were girls and 27 were boys; this is not significantly different from the sex distribution in the rest of the sample. Among the 47 female dropouts, 30 had been pregnant; this is more than twice the pregnancy rate of the rest of the female participants ($p < .001$). For neither sex did the dropouts differ from the other participants in percentage who held a job. The dropouts averaged lower than the others on usual grades and attitude toward school, and, of course, much higher on the dropout propensity score (all significant at $p < .001$).

[2] Although grade point average from school records was available for nearly all participants at Wave 1, it was missing for several hundred participants at Wave 4. The correlation between self-reported grades and school record grades in Wave 1 is .73.

the average, girls reported usual grades of Bs, whereas boys reported usual grades of Bs and Cs, $t(1633) = 4.2$, $p < .001$. There was no gender difference in attitude toward school or in dropout propensity. On the Low Problem Behavior Involvement measure, boys reported greater involvement in delinquent-type behavior, $t(1271) = 7.2$, $p < .001$; and in problem drinking, $t(1265) = 3.8$, $p < .001$. There was no sex difference in the frequency of use of illicit drugs.

With regard to mean scores on Making It for the White, Black, and Hispanic groups, the Hispanic mean was the lowest, $F(2, 1653) = 9.5$, $p < .001$. Significant ethnic group differences were also found for School Engagement, with White youth more "successful" than Black and Hispanic youth, $F(2, 1653) = 14.6$, $p < .001$; and for Low Problem Behavior Involvement, with Hispanic youth less successful than Black youth, $F(2, 1653) = 4.8$, $p < .01$. White youth had higher grades than Black and Hispanic youth, $F(2, 1632) = 44.3$, $p < .001$. Hispanic youth had more positive attitudes toward school than White youth, $F(2, 1644) = 3.5$, $p < .05$, but also had greater propensity for dropping out than White and Black youth, $F(2, 1647) = 21.5$, $p < .001$. Among the Low Problem Behavior Involvement measures, Black youth reported the lowest level of problem drinking, $F(2, 1502) = 10.5$, $p < .001$, and Hispanic youth reported the greatest frequency of use of illicit drugs, $F(2, 1630) = 7.5$, $p < .001$.

Disadvantage, as expected, is modestly related to successful outcomes: $rs = -.20$ with Making It, $-.24$ with School Engagement, and .09 with Problem Behavior Involvement (all significant at $p < .001$).

Measurement of Risk and Protection

Measures of risk. Five risk factors were measured. Expectations for Success is an eight-item scale that assesses anticipated outcomes in various nonacademic life areas such as family life, career, and friendships ($\alpha = .92$). Low expectation of achieving valued life goals constitutes risk because it can instigate detachment from school and serve to pressure a young person toward illegitimate means, such as crime or substance use, to achieve these goals. Self-Esteem is a six-item scale that measures beliefs about one's abilities and attributes in different domains, including social competence, academic skills, and attractiveness ($\alpha = .66$). Low self-esteem constitutes risk because it may hamper academic effort and lead to disengagement from other school activities and because taking part in drug use and other problem behaviors may be a way to cope with negative feelings that accompany low self-confidence and a poor self-image. Hopelessness is a summative index of the standardized scores on a four-item depression scale ($\alpha = .85$) and a four-item alienation scale ($\alpha = .67$). The measure assesses feelings of depression, social alienation, anxiety, and hopelessness. Feelings of isolation and disengagement from societal norms constitute risk because social controls against norm-violative behaviors are attenuated and commitment to conventional institutions and goals is weakened. Orientation to Friends is a two-component index consisting of standardized scores on a three-item scale that measures perceived compatibility or agreement between parents and friends ($\alpha = .71$) and a four-item scale that assesses the relative influence of parents and friends on the adolescent's outlook and behavior ($\alpha = .69$). Greater orientation to friends constitutes risk because it represents moving away from the influence of parents' controls against nonnormative behaviors and parents' models for conventional values and activities. Greater orientation to friends implies greater exposure to peer norms that differ from parents' norms. Friends as Models for Problem Behavior is a four-item scale that measures perceived models among friends for cigarette smoking, alcohol use, marijuana use, and sexual intercourse ($\alpha = .75$). Exposure to friends who model problem behaviors constitutes risk because models provide opportunities to learn how to engage in the behaviors, provide support for engaging in the behaviors, and indicate that the behaviors are characteristic of the social group in which the adolescent is included. Overall, then, risk is indicated by measures from the personality and perceived environment systems: low expectations for success, low self-esteem, high hopelessness, high orientation to friends relative to parents, and more friends who model problem behavior.

Measures of protection. Seven protective factors were measured. Attitudinal Intolerance of Deviance is a 10-item scale that assesses the perceived "wrongness" of various delinquent-type behaviors, including theft, property damage, and physical aggression ($\alpha = .90$). Intolerance of deviance constitutes protection because it reflects support of conventional values and disapproval of behaviors that violate social norms, and it serves as a personal control against taking part in such activities. Positive Orientation to Health was measured by a two-component index based on the standardized score on a 7-item measure of personal value on health ($\alpha = .67$) added to the standardized score on a 10-item scale of the perceived health consequences of various behaviors, including tobacco use and eating junk food ($\alpha = .76$). A positive orientation toward health constitutes protection because it serves as a control against engaging in behaviors that are damaging to or incompatible with health, such as drug use, and it reflects a commitment to values and outlooks that are supported by conventional adult society. Religiosity is a 4-item scale that assesses the importance

to the respondent of religious teachings and beliefs (α = .89). Religiosity constitutes protection because it reflects a commitment to conventional values and serves as a control against participation in norm-violative activities. Positive Relations With Adults was measured by a 4-item scale assessing the respondent's relationships with parents and other adults, including the extent to which parents show interest in the respondent and whether the respondent can discuss personal problems with an adult (α = .72). More positive relations with adults constitutes protection because adults generally model and provide support for conventional behavior and provide sanctions against behavior that violates social norms. Perceived Social Controls is a two-component index based on the standardized score on a 7-item scale of family rules added to the score on a single item about expected sanctions from friends for involvement in deviant behavior (α = .57). Perception of greater social controls constitutes protection because it indicates that certain types of behavior are unacceptable to others, and it decreases the likelihood that the adolescent will take part in such behaviors. Friends as Models for Conventional Behavior is a 4-item scale that assesses the proportion of friends who take part in conventional activities, such as school clubs and church groups (α = .75). This measure constitutes protection because it reflects greater involvement with conventional peers and more time spent in conventional activities. Finally, Prosocial Activities is a 2-item index of family activities and volunteer activities (α = .20). Higher involvement in prosocial activities constitutes protection because these activities preempt time to become involved in problem behaviors, and they promote outlooks and social networks that support conventional goals and values.[3] Overall, then, protection is indicated by measures from the personality, perceived environment, and behavior systems: high intolerance of deviance, positive orientation to health, high religiosity, positive relations with adults, high perceived social controls, more friends who model conventional behavior, and greater involvement in prosocial behavior.

A Risk Factors Scale and a Protective Factors Scale were formed by summing scores that were standardized on the entire sample for the five risk factors and the seven protective factors, respectively.[4] Risk Factors Scale scores ranged from –8.4 to 13.6, with a mean of 0 and standard deviation of 3.2. Protective Factors Scale scores ranged from –17.7 to 12.2, with a mean of 0 and standard deviation of 4.0. The correlation between the Risk Factors Scale and the Protective Factors Scale is –.56; they share less than a third of their variance. The correlation of each of these scales with disadvantage is .20 and –.08 for risk and protection, respectively. The correlations of the separate risk and protective factors with disadvantage range from .04 to .20 in absolute magnitude. Girls reported greater risk, $t(1654) = 2.8, p < .01$, and greater protection, $t(1654) = 8.4, p < .001$, than boys. Among the three ethnic groups, Hispanic participants reported the highest risk, $F(2, 1653) = 10.1, p < .001$, and Black participants reported the highest protection, $F(2, 1653) = 9.8, p < .001$.

As elaborated elsewhere (Jessor et al., 1995), risk and protection are considered conceptually orthogonal. Although risk and protective factors are typically negatively related, this relation is not conceptualized as a logical necessity. Rather, the inverse correlation between risk and protection probably reflects the vicissitudes of personal experience and the organization of the social ecology. That is, in contexts in which protection is high, risk is typically low, and vice versa. Despite the negative correlation between risk and protective factors, their common variance is limited, and they also relate differently to other variables. For example, in earlier work (Jessor et al., 1995), we were able to show that Friends as Models for Problem Behavior (a risk factor) and Friends as Models for Conventional Behavior (a protective factor) were only modestly correlated (–.20), that both measures were significant predictors of (i.e., contributed unique variance to) problem behavior in the final regression models, and that the two measures have notably different correlations with other measures (e.g., –.11 and .32 with Prosocial Activities for the two respective measures). There is, then, both a conceptual and an empirical basis for considering risk and protection as different domains of influence rather than as opposite ends of the same dimension.

The analytic procedure used to assess the role of risk and protection in successful adolescent outcomes is hierarchical multiple regression, with all risk and protection measures centered. That procedure lends itself to

[3] Two of the risk factors (Low School Grades and Dropout Propensity) and one protective factor (Positive Orientation to School) used in earlier work (Jessor et al., 1995) were not included in this study because they overlapped with the School Engagement criterion employed here. The use of a measure as a risk factor in one study and as an outcome measure in another depends on the purpose of the study. For example, involvement in a particular problem behavior (e.g., illicit drug use) may be an outcome measure of key interest in one study, but it may also constitute a risk factor for involvement in other problem behaviors (e.g., delinquency, problem drinking, or school dropout) in another study.

[4] Parallel analyses were run using risk and protection indexes formed by counting the number of risk and protective factors that obtain for each participant. (For such an approach, see Brook, Whiteman, Cohen, & Tanaka, 1992; Bry, 1983; Jessor et al., 1995; Sameroff, Seifer, Baldwin, & Baldwin, 1993; and Sameroff, Seifer, Barocas, Zax, & Greenspan, 1987). These indexes, as would be expected, have slightly smaller bivariate correlations with the criterion measures than do the scales, and they account for less variance in the multivariate analyses. The overall pattern of relations, however, is essentially the same as with the scale scores.

testing for a moderator effect of protection on the relation of risk with successful adolescent outcomes. Including a Risk × Protection interaction term at a later step in the regression, and examining whether that product adds predictability to the additive model, is the accepted way to demonstrate a moderator effect (Baron & Kenny, 1986; Cohen & Cohen, 1983; Saunders, 1956). Hierarchical multiple regression also permits instituting the necessary controls in earlier steps, prior to the main theoretical measures being entered.

Results

Presentation of results is organized into three parts. First, we examine the cross-sectional relations of the Risk Factors Scale and the Protective Factors Scale to the three criterion measures of success in adolescence, controlling for demographic characteristics and disadvantage; we also examine whether protection moderates the relation between risk and the three success criteria. Second, we "unpack" the Risk Factors Scale and Protective Factors Scale to assess which particular risk and protective factors are most associated with the success criteria. Third, we carry out prospective analyses of success relying on antecedent measures of risk and protective factors and examine the predictability of the success criteria over time and development.

Cross-Sectional Analyses of the Relations of Risk and Protection to the Criterion Measures of Success

The composite criterion measure, Making It, was regressed against the Risk Factors Scale and the Protective Factors Scale in a set of hierarchical regressions. Results are shown in the top section of Table 1. Both risk and protection accounted for significant variation in Making It, with demographic attributes and disadvantage controlled. In addition, protection did indeed moderate the relation between risk and Making It. The significant Risk × Protection interaction indicates that risk was less strongly related to success under conditions of high protection than it was when protection is low.

The bivariate correlations in Table 1 show that sex and ethnicity were significantly correlated with Making It (greater success for girls, for White vs. non-White adolescents, and for Black vs. Hispanic adolescents).[5] That set of demographic covariates, entered at Step 1, accounted for a small but significant proportion of variance (2.8%, as shown in the column for ΔR^2). The disadvantage measure was also significantly related to Making It ($r = -.20$); it was controlled at Step 2, where its entry accounted for an additional significant proportion of variance (3.5%). The Risk Factors Scale ($r = -.59$) was entered at Step 3, where it accounted for substantial additional variance in Making It (31.6%). A nontrivial account of variation in Making It in adolescence can, as expected, be provided by variation in risk.

The Protective Factors Scale, entered at Step 4, was positively correlated with Making It ($r = .55$), and it accounted for a significant increment of variance (5.4%) over and above all the measures entered at the previous steps. The Risk × Protection interaction term, entered at Step 5, added yet another significant increment in variance accounted for (1.6%). Protection thus moderated the risk–Making It relation, and the positive regression weight for the interaction term means that the relation between risk and Making It was significantly stronger at low levels of protection than at higher levels.[6] The total amount of variance in Making It accounted for by all of the predictors and their interactions was substantial ($R^2 = .45$).

The possibility that relations among the measures may differ at different levels of disadvantage was examined at Step 6 by testing for any interaction between disadvantage and risk, protection, or their interaction. A Bonferroni adjustment ($p = .05/3 = .0167$) was used to keep the overall alpha level less than .05 for testing these three interactions. As explained in the Method section, we set the highest level of disadvantage to a score of 0 so that if there is a disadvantage interaction, the regression weights would describe the best-fit regression model for the most disadvantaged participants. Because there was no significant interaction with disadvantage, it follows that this model describes relations between risk and protection and Making It at all levels of disadvantage represented in the sample, not just for the most disadvantaged.

As a final step in the regression analysis, the generalizability of the model across the sexes, ethnic groups, and grade cohorts was examined by testing for interactions between the demographic grouping variables on the one hand and risk, protection, and their interaction on the other. To control the overall probability of a Type I error, these 12 interactions were tested with a Bonferroni adjustment to the alpha level ($p = .05/12 = .00417$). Two significant interactions show that the model differs somewhat between sexes and among grade cohorts. Protection was strongly related to Making It for girls but even more so for boys. Risk was

[5] A full table of correlations among all measures involved in these analyses is available from the authors.

[6] The slope for the regression of the success criterion measure on risk at any given level of protection is $B_R + (B_{R \times P} \times \text{Protection})$, where B_R is the regression weight for risk and $B_{R \times P}$ is the weight for the interaction term. Because B_R is negative and $B_{R \times P}$ is positive, the regression slope for risk increases toward 0 as protection increases.

Table 1. *Hierarchical Regression of Success Criteria on the Summative Scales of Risk Factors and Protective Factors*

Criterion	Step	Measures Entered	r	B^a	ΔR^2
Making It	1	Sociodemographic controls			.028***
		Sex	.12***	.369***	
		White or non-White	.08***	.375*	
		Hispanic or Black	−.08***	−.074	
		Grade in school	.04	.134	
	2	Disadvantage	−.20***	−.218***	.035***
	3	Risk Factors Scale	−.59***	−.554***	.316***
	4	Protective Factors Scale	.55***	.282***	.054***
	5	Risk × Protection interaction	.17***	.029***	.016***
	6	Sociodemographic interactions			.006***
		Protection × Sex	−.01	−.052**	
		Risk × Grade in School	−.41***	.078**	
		Total R^2			.45***
School Engagement	1	Sociodemographic controls			.025***
		Sex	.06*	.151***	
		White or non-White	.12***	.302**	
		Hispanic or Black	−.07**	.041	
		Grade in school	.06*	.111*	
	2	Disadvantage	−.24***	−.189***	.047***
	3	Risk Factors Scale	−.58***	−.309***	.292***
	4	Protective Factors Scale	.45***	.105***	.021***
	5	Risk × Protection interaction	.11***	.009***	.004***
		Total R^2			.39***
Problem Behavior Involvement	1	Sociodemographic controls			.024***
		Sex	−.14***	−.213***	
		White or non-White	−.01	−.070	
		Hispanic or Black	.08**	.107	
		Grade in school	−.01	−.004	
	2	Disadvantage	.09***	−.027	.010***
	3	Risk Factors Scale	.41***	.234***	.160***
	4	Protective Factors Scale	−.46***	−.122**	.058***
	5	Risk × Protection interaction	−.18***	−.048***	.022***
	6	Disadvantage interactions			.005*
		Disadvantage × Risk × Protection	.10***	−.006**	
		Disadvantage × Risk[b]	−.36***	.018	
		Disadvantage × Protection[b]	.42***	.013	
		Total R^2			.28***

Note. N = 1,656. Data are from Wave 4 (1992). Disadvantage interactions were tested for significance at $p < .0167$. Sociodemographic interactions were tested for significance at $p < .00417$.

[a]Final step. Unstandardized regression coefficients. Standardized coefficients are inappropriate with interaction terms (see Aiken & West, 1991, pp. 40–47). [b]Although this measure is not significant at $p < .0167$, it is included in the analysis to yield the correct coefficient for the third-order interaction term (see Judd & McClelland, 1989, p. 278).

*$p \leq .05$. **$p \leq .01$. ***$p \leq .001$.

most strongly related to Making It for the youngest cohort, but still very strong for the oldest cohort.[7]

The interaction between risk and protection, holding disadvantage constant at its highest value, and holding each of the other demographic controls constant at its mean, is illustrated in Figure 1. The two regression lines plotted in the graph show the predicted relation between risk and Making It at two levels of protection: high and low (the means of the Protective Factors Scale scores within the upper third and the lower third of the distribution, 4.4 and –4.4, respectively, which are at the 86th and 13th percentiles). The negative slopes of the two lines illustrate the inverse relation between risk and Making It. The line for the low protection level is steeper because risk was more strongly related to Making It when protection was lower. At the high protection level, the slope of the regression line is shallower, indicating that risk was less

[7]With alpha reduced by the Bonferroni adjustment, statistical power to detect a just-significant interaction was low (about .5), and the probability of a Type II error was about 50% (1 – .5). Therefore, we also tested all potential interaction terms with alpha set at .05 to allow more power. In those analyses, the Protection × Sex and Risk × Grade interactions found earlier for Making It were also significant for School Engagement, and the Risk × Grade interaction was also significant for Low Problem Behavior Involvement. In addition, a Risk × Hispanic or Black interaction showed that risk was most strongly related to School Engagement among the Hispanic participants, though quite strong for all three ethnic groups. These interactions show that the strength of the relations may differ across groups, but these measures of risk and protection are indeed relevant to successful outcomes for all sociodemographic groups represented in the sample.

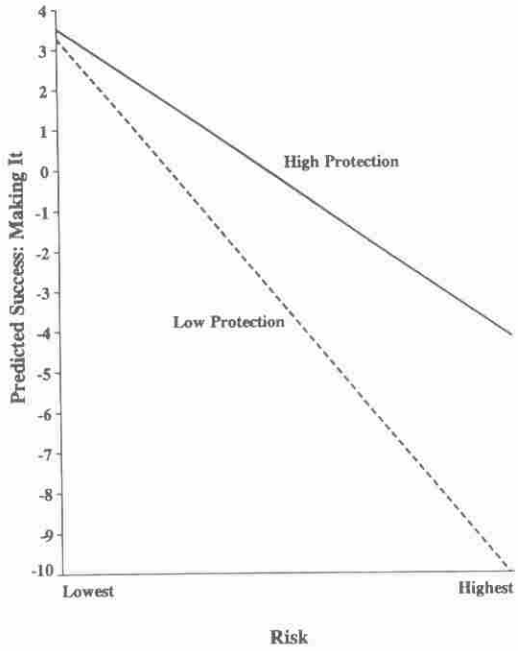

Figure 1. The interaction of risk and protection in the prediction of making it.

strongly related to Making It, although the inverse relation was still significant ($p < .001$). The vertical distance between the two lines at any level of risk shows the positive relation between protection and Making It. That relation was strongest where the distance was greatest, at the highest level of risk. Clearly, the combination of low protection and high risk is most detrimental to Making It. Because disadvantage does not interact significantly with risk, protection, or their interaction, a graph of these relations at any lower level of disadvantage, not just the highest, would look the same (except displaced upward along the ordinate because disadvantage is inversely related to success).

The two components of the Making It criterion were examined separately in the same way. The bivariate correlations between each predictor measure and School Engagement and Problem Behavior Involvement, respectively, are shown in the middle and lower parts of Table 1. They were similar in magnitude to the correlations between those predictors and Making It, the composite criterion, with only a few differences. The sex difference in success (girls more successful) was a little stronger ($p < .01$) for Problem Behavior Involvement ($r = -.14$) than for School Engagement ($r = .06$). Also, the Risk Factors Scale was less strongly correlated ($p < .001$) with Problem Behavior Involvement (.41) than it was with School Engagement (–.58).

With controls for the demographic measures and for disadvantage, the Risk Factors Scale accounted for an additional 29.2% of the variance in School Engagement, and, at the next step, the Protective Factors Scale accounted for an additional 2.1% of variance in School Engagement. The significant Risk × Protection interaction again showed that risk was less strongly related to success at high levels of protection. Although significant, this interaction was not as strong as in the analysis of Making It. Figure 2 illustrates the interaction of risk and protection in the prediction of School Engagement, holding demographic characteristics and disadvantage constant. As can be seen, the slopes of the regression lines do not differ from each other as much as they do in Figure 1.

In the analysis of School Engagement, there was no significant disadvantage interaction, and there were no differences in the regression model across demographic groups. The final model for School Engagement yielded a total R^2 of .39.

In the analysis of the Low Problem Behavior Involvement criterion, the other component of Making It, the Risk Factors Scale accounted for 16% of the criterion variance after controlling for the demographic and disadvantage measures; this compares to the 29% it accounted for in School Engagement. The Protective Factors Scale, entered at Step 4, accounted for an additional 5.8% of variance in Low Problem Behavior Involvement, compared to the 2.1% it accounted for in School Engagement. At Step 5, the Risk × Protection interaction was again significant, accounting for an additional 2.2% of variance. The moderator effect of protection, as illustrated in Figure 3, was strong enough to make the relation between risk and Low Problem Behavior Involvement disappear when protection was high. The slope of Low Problem Behavior Involvement on risk was not significantly different from 0 ($p > .05$) for approximately the upper quartile of Protective Factors Scale scores. That is, for participants with the most protection, greater risk was not associated with greater problem behavior.

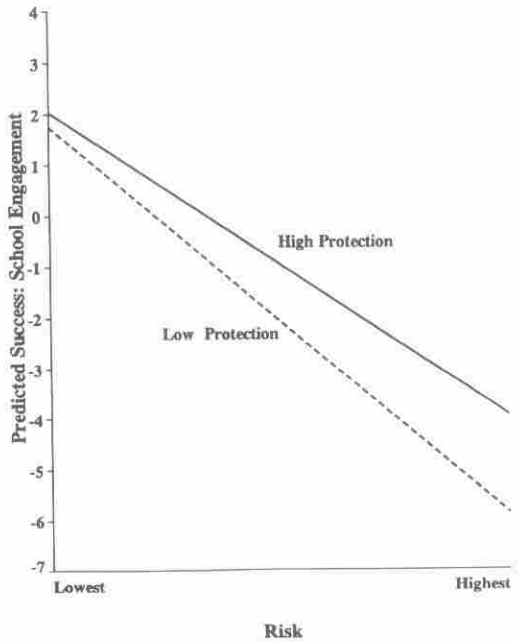

Figure 2. The interaction of risk and protection in the prediction of school engagement.

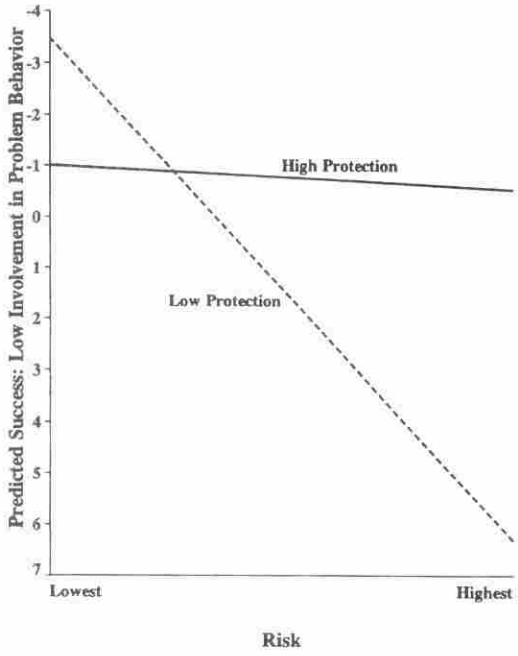

Figure 3. The interaction of risk and protection in the prediction of involvement in problem behavior. (Scale direction on the ordinate was reversed to put greater success toward the top of the axis, consistent with Figures 1 and 2.)

There was a significant Disadvantage × Risk × Protection interaction, entered at Step 6, that indicated that the strength of the Risk × Protection interaction depends on the level of disadvantage. Because the disadvantage measure was rescaled to set the highest score to 0, the coefficient in Table 1 for the Risk × Protection interaction (–.048) represents the strength of that interaction at the highest level of disadvantage. The coefficient for the three-way interaction term indicates how much the coefficient for the Risk × Protection interaction changes across different levels of disadvantage. The negative coefficient for the three-way interaction reveals that the Risk × Protection interaction was strongest at the highest level of disadvantage, weaker at lower levels, and nonsignificant at the lowest level of disadvantage. That is, for participants with none of the disadvantage indicators, protection did not moderate the relation between risk and Problem Behavior Involvement. Testing for differences in the regression model across demographic groups, we again found no significant interactions. The final model for Low Problem Behavior Involvement yielded a total R^2 of .28, considerably less than the R^2 for Making It (.45) or for School Engagement (.39).

In each of the three preceding analyses, the variance in the success criterion accounted for by protection in Step 4 (2–6%), after controlling for risk in Step 3, was much smaller than the variance accounted for by risk (16–32%), after controlling only for demographic attributes and disadvantage. However, because risk and protection were correlated (r = –.56), variance that could potentially be accounted for by protection overlapped with the variance already accounted for in Step 3 by risk. Supplemental regressions were run in which protection was entered at Step 3, and risk was then entered at Step 4. These analyses reveal that protection accounted for 26.7%, 18.8%, and 18.3% of the variance in Making It, School Engagement, and Low Problem Behavior Involvement, respectively. Risk accounted uniquely for 10.3% of the variance in Making It (vs. 5.4% uniquely accounted for by protection), 12.5% of the variance in School Engagement (vs. 2.1% uniquely accounted for by protection), and 3.4% of the variance in Low Problem Behavior Involvement (vs. 5.8% uniquely accounted for by protection). Thus, risk and protection accounted for relatively comparable proportions of variance, and both provided significant unique contributions in accounting for Making It, for School Engagement, and for Low Problem Behavior Involvement.

Unpacking the Risk and Protective Factors Summative Scale Scores

The summative Risk Factors and Protective Factors Scales were unpacked to examine the individual contributions of their components, the five risk and the seven protective factors, to success among disadvantaged youth. Because the differential contributions of the separate measures were clouded by intercorrelations among the predictors and by differences in the amount of measurement error in each measure, the results of these supplemental analyses should be interpreted tentatively. (These results, not tabled, are summarized here; tables are available from the authors.)

Each risk and protective factor was significantly correlated ($p < .001$), in the expected direction, with all three criterion measures of success: Making It, School Engagement, and Low Problem Behavior Involvement. In the analysis of Making It, four of the five risk factors could account for some unique variance: Low Expectations for Success, Low Self-Esteem, Hopelessness, and Friends as Models for Problem Behavior are significant predictors in the final model. Three protective Factors—Attitudinal Intolerance of Deviance, Positive Orientation to Health, and Friends as Models for Conventional Behavior—retained significant regression weights in the final equation. Significant Risk × Protection interactions ($\Delta R^2 = .025$, $p < .001$) showed that Orientation to Friends versus parents was a significant risk factor only at low levels of Attitudinal Intolerance of Deviance, and that the effect of Friends as Models for Problem Behavior was weaker at higher levels of Attitudinal Intolerance of Deviance and at higher levels

of Friends as Models for Conventional Behavior.[8] A total of 55% of the variance in Making It was then accounted for (as against 45% for the summative Risk Factors and Protective Factors Scales).

With respect to School Engagement, each of the five risk factors had a significant regression weight in the final model. Three of the seven protective factors were also significant: Attitudinal Intolerance of Deviance, Positive Orientation to Health, and Friends as Models for Conventional Behavior. Again, Friends as Models for Conventional Behavior was a significant moderator of Friends as Models for Problem Behavior ($\Delta R^2 = .008$, $p < .001$). The total variance accounted for in School Engagement was 44% (compared to 39% in Table 1).

In the final model for Low Problem Behavior Involvement, Friends as Models for Problem Behavior was the only significant risk factor, whereas Attitudinal Intolerance of Deviance, Positive Orientation to Health, and Friends as Models for Conventional Behavior were significant protective factors. As in the analysis of Making It, Attitudinal Intolerance of Deviance and Friends as Models for Conventional Behavior were significant moderators of Friends as Models for Problem Behavior ($\Delta R^2 = .033$, $p < .001$). Total variance accounted for was 47% (compared to 28% in Table 1).

Longitudinal Analyses of the Relations of Risk and Protection to Change in the Criterion Measures of Success

The same measures used in the preceding analyses were also assessed 1 year prior, in Wave 3 of the study. We were able, therefore, to carry out prospective analyses to assess the effects of antecedent risk and protection on subsequent development of successful outcomes. These analyses helped to illuminate the possible causal structure among the measures, and they may improve understanding of the processes underlying successful outcomes for adolescents who are at risk. In these analyses, we used the Wave 3 measures of risk and protection to predict the Wave 4 success criteria; reciprocal influences were partialled out by controlling for the Wave 3 success measures at Step 1 of a hierarchical multiple regression. Thus, we examined the predictability of change in successful outcomes over a 1-year interval, that is, the residual variance after Step 1. Results are presented in Table 2.

As expected, there was substantial stability in each criterion measure; the three correlations between Wave 3 and Wave 4 were between .64 and .71.[9] When this shared criterion variance was controlled by partialling out the Wave 3 criterion measure in Step 1 of the regression, the Wave 3 Risk Factors and Protective Factors Scales still provided a significant account (almost 2%, $p < .001$) of the approximately 50% of variance remaining to be explained in the Wave 4 criteria.

Again, sociodemographic effects were partialled out at Step 2 before entering the Wave 3 theoretical predictors. Disadvantage, entered at Step 3, accounted for a significant 0.5% of variance in Making It ($p \leq .001$), which is equivalent to 1% of the residual variance. Disadvantage accounted for 0.7% ($p \leq .001$) of variance in School Engagement and 0.2% ($p \leq .05$) in Low Problem Behavior Involvement. The Risk Factors Scale, entered at Step 4, accounted for a significant ($p \leq .001$) increment of 0.3% to 0.5% of variance in each criterion measure or about 1% of the variance in change in success. The Protective Factors Scale, entered at Step 5, added a similar increment for each criterion, 0.3% ($p \leq .01$) to 0.4% ($p \leq .001$). The Risk × Protection interaction was significant ($p < .05$) only for the Low Problem Behavior Involvement criterion. No disadvantage or demographic interaction was significant at the .0042 alpha level. For each criterion, the risk and protection measures accounted for 1.3% to 1.7% of the variance in change in success.

A similar longitudinal analysis was carried out for the longest interval possible with these data, again examining change in success, but over the 3-year span from Wave 1 to Wave 4 (not tabled; table is available from the authors). Although the predictor set could not be identical to that used in Wave 3 and Wave 4, it was very comparable.[10] The Wave 1 measure of each success criterion, entered at Step 1, accounted for only 10% to 17% of variance in the Wave 4 criterion measure. After controlling for demographic effects, disadvantage accounted for 2% of variance ($p < .001$) in Making It, for 4% of variance ($p < .001$) in School Engagement, and for 0.3% of variance ($p < .01$) in Low Problem Behavior Involvement. Then, in each case, a significant ($p < .001$) increment in variance was accounted for by the Risk Factors Scale (1–5%) and by the Protective Factors Scale (0.6–0.9%). For none of the three criteria was there a significant interaction between risk and protection. For Making It and for School Engagement the relation between protection and change in success was stronger for boys. Total

[8] To keep the experiment-wise alpha near .05, the 35 possible Risk × Protection interaction terms, the 14 possible disadvantage interactions, and the 70 possible demographic interactions were tested with alpha set at .001. Because there was no theoretical basis for a priori expectations about specific interactions, all of these possible interactions were examined at this step.

[9] There was also substantial stability of the Risk Factors and Protective Factors Scales; between Waves 3 and 4, their correlations were .72 and .71, respectively. Such stability of criterion and predictor measures makes the prediction of change more difficult.

[10] Because no measure of dropout propensity was obtained at Wave 1, a measure of value on academic achievement was substituted as a component of the School Engagement criterion measure. Further, because no measure of religiosity was assessed at Wave 1, the Wave 1 Protective Factors Scale was computed without it.

Table 2. *Hierarchical Regression of Change (Wave 3–Wave 4) in Success Criteria on the Wave 3 Summative Scales of Risk Factors and Protective Factors*

Criterion	Step	Measures Entered	*r*	*B*[a]	ΔR^2
Making It	1	Wave 3 Making It	.71***	.630***	.500***
	2	Sociodemographic controls			.007***
		Sex	.11***	.206**	
		White or non-White	.08**	.069	
		Hispanic or Black	−.09***	.001	
		Grade in school	.04	.277**	
	3	Disadvantage	−.20***	−.169***	.005***
	4	Risk Factors Scale	−.47***	−.042	.003***
	5	Protective Factors Scale	.45***	.075***	.004***
	6	Risk × Protection interaction	.11***	−.007	.001
		Total R^2			.52***
School Engagement	1	Wave 3 School Engagement	.69***	.598***	.477***
	2	Sociodemographic controls			.005**
		Sex	.05*	.024	
		White or non-White	.12***	.100	
		Hispanic or Black	−.07**	−.028	
		Grade in school	.06*	.151**	
	3	Disadvantage	−.24***	−.124***	.007***
	4	Risk Factors Scale	−.46***	.033*	.004***
	5	Protective Factors Scale	.38***	.036**	.003**
	6	Risk × Protection interaction	.11***	.001	.000
		Total R^2			.50***
Problem Behavior Involvement	1	Wave 3 Problem Behavior Involvement	.64***	.603***	.409***
	2	Sociodemographic controls			.009***
		Sex	−.13***	−.190***	
		White or non-White	−.01	.017	
		Hispanic or Black	.08**	−.026	
		Grade in school	−.01	−.122*	
	3	Disadvantage	.09***	.048	.002*
	4	Risk Factors Scale	.33***	.025	.004***
	5	Protective Factors Scale	−.38***	−.045***	.004***
	6	Risk × Protection interaction	−.08**	.006**	.002**
		Total R^2			.43***

Note. $N = 1{,}524$. Disadvantage interactions were tested for significance at $p < .0167$. Sociodemographic interactions were tested for significance at $p < .00417$.

[a]Final step. Unstandardized regression coefficients. Standardized coefficients are inappropriate with interaction terms (see Aiken & West, 1991, pp. 40–47).

*$p \leq .05$. **$p \leq .01$. ***$p \leq .001$.

variance accounted for was 25% for Making It, 22% for School Engagement, and 17% for Low Problem Behavior Involvement. Risk and protection accounted for 2.0% to 6.7% of the variance in change in success for the three criteria.

These longitudinal analyses provide support for the role of risk and protection in the development of successful outcomes over a 1-year and a 3-year interval. Despite the restriction on the amount of variance to be accounted for, the predictor scales of both risk and protection yielded significant accounts of change in the success criteria.

Discussion

The psychosocial risk and protection measures used in this study provide a significant account of variation in successful outcomes among adolescents growing up in disadvantaged life circumstances. For all three success criteria—remaining connected to school, avoiding serious involvement in problem behavior, and their composite—it is again established that risk matters; also, and hitherto less well-established, protection matters. In addition, it is clear that, for all three criteria, protection moderates the relation between risk and success: that relation is more attenuated under high protection than under low protection. Those cross-sectional results were reinforced in developmental analyses as well, with both risk and protection providing significant accounts of change in success over time.

The findings indicate, too, that disadvantage matters. The measure of disadvantage was negatively correlated with School Engagement and with Making It and positively correlated with Problem Behavior Involvement, all highly significant. With sociodemographic characteristics controlled, the disadvantage measure ac-

counted for a significant increment in variance in all three success criteria, contributing up to 5% of variance in successful outcomes. In addition, disadvantage remained a significant predictor in the final regression models for Making It and School Engagement. Thus, disadvantage, as measured in this study, clearly compromises the possibilities for adolescent success—more so for School Engagement than for Low Problem Behavior Involvement.

That said, however, it is important to point out that the role played by the theoretical measures of risk and protection was very much the same across all levels of disadvantage. It will be recalled that the highest level of the disadvantage score was set at 0 in the regression model to obtain coefficients that applied to the most disadvantaged adolescents in the sample. The absence of any significant interaction between disadvantage and either the Risk Factors Scale or the Protective Factors Scale means that the final model for each success criterion does hold across all levels of disadvantage. The moderator effect of protection on the risk–problem behavior relation was stronger at higher levels of disadvantage. These disadvantage findings are important for social policy and will be returned to later.

It was the theoretical variables measured by the Risk Factors Scale and the Protective Factors Scale that have the strongest relations with the criterion measures. The Risk Factors Scale accounted for 6 to 16 times as much variance as the demographic characteristics or the disadvantage score. Because the risk and protection scales were related, their relative contribution was, of course, affected by their order of entry in the regression. Supplementary regressions, reversing that order, revealed that the contribution of the Protective Factors Scale in accounting for variance in all three success criteria was fairly comparable to that of the Risk Factors Scale. The latter finding is especially noteworthy because so much of the attention to problem behavior and school disengagement has been focused on risk rather than on protection.

Although the Risk Factors Scale and the Protective Factors Scale enable a clear test of their independent contributions to variation in successful outcomes in adolescence and also permit the moderator effect of overall protection on the risk–success relation to be illustrated readily, they obscure the differential contribution of the separate risk and protection measures that are the components of the two scales. When the scales were unpacked, the key risk factors for making it were shown to be Low Expectations for Success, Low Self-Esteem, Hopelessness, and Friends as Models for Problem Behavior. The key protective factors were shown to be Attitudinal Intolerance of Deviance, Positive Orientation to Health, and Friends as Models for Conventional Behavior. Intolerance of Deviance and Friends as Models for Conventional Behavior also served as moderators of a risk factor. Clearly, both person attributes and perceived contextual attributes are implicated as risk and protective influences on successful adolescent outcomes.

The demonstration that protection moderates the negative relation between risk and School Engagement and the positive relation between risk and Problem Behavior Involvement is an important contribution of the study. Although demonstrated previously for problem behavior (Jessor et al., 1995), and consistent with the recent work of others (Smith et al., 1995; Stattin, Romelsjö, & Stenbacka, 1997), it has not been shown before, to our knowledge, for school commitment and connectedness, nor for such a comprehensive success criterion as Making It. Although the magnitude of the unique variance added by the Risk × Protection interactions was small (from 0.4–3.3%), it was of the order generally found for interactions in field studies (see Chaplin, 1991; McClelland & Judd, 1993), and it was significant for all three success criteria and when using either the two summative scales or their separate component measures. Replication of significant Risk × Protection interactions has been emphasized as a desirable strategy in demonstrating reliable moderator effects of protection (Luthar, 1993). Although the interactions were consistent across multiple criteria and multiple predictor measures in this study, conviction about them will ultimately be strengthened by replication in other studies.

The Risk × Protection interaction is especially important from a theoretical perspective. It indicates that the impact of risk can be reduced in more than one way—directly, by lowering risk itself, but also indirectly, by providing high protection under exposure to risk. Together, these findings suggest that a fuller understanding of variation in adolescent outcomes—whether school-related or problem behavior-related—requires closer attention to the nature and function of protective factors than has hitherto been the case. They suggest, further, that efforts at intervention—to promote school connectedness and academic achievement and to reduce involvement in problem behavior—would benefit from a less univocal focus on risk reduction and a greater willingness to devote resources to enhancing protection.

With respect to Low Problem Behavior Involvement, the Risk × Protection interaction was strongest under high disadvantage, suggesting that high protection can be most beneficial for those who are more disadvantaged. According to these findings, intervention efforts to strengthen protection may well have their strongest impact on those who could benefit most—disadvantaged youth. Of additional relevance to social policy concerns, the findings also provide support for a public health strategy rather than a targeted approach to strengthening protective factors in the lives of youth. Because the effects of risk and protection hold across levels of disadvantage, commu-

nity-wide intervention efforts would not only benefit most those who are most disadvantaged, as noted previously, but would also be of benefit to those more advantaged youth who are exposed to similar risks.

The prospective analyses of change in successful outcomes with time and development were illuminating, especially over the Wave 3 to Wave 4 interval, where the Wave 3 longitudinal predictors were the same as the predictors used in the Wave 4 cross-sectional regressions. By controlling for the Wave 3 success criteria, the longitudinal regressions helped establish directionality of predictiveness, and, therefore, they strengthen conviction about antecedent influences on developmental outcomes. Despite the over-time stability of both predictors and criteria and, consequently, the limited amount of change, both risk and protection were shown to be significant influences on later success, and their interaction was also significant for subsequent change in problem behavior. The longitudinal and cross-sectional analyses converge on the same set of inferences and, together, make the findings more compelling.

Arguing for a directional relation between predictors and criteria in these analyses should not be interpreted as precluding their reciprocal influence over the course of development. Indeed, it makes both theoretical and common sense that achieving success on any of the criteria could become an influence on both the risk factors and the protective factors. Developmental studies assessing change in predictor and criterion measures could investigate this issue more directly.

The study is limited in the inferences that can be drawn. First, of course, the definition relied upon for denoting successful outcomes in adolescence is somewhat arbitrary. Nevertheless, it does capture two of the major developmental tasks of adolescent life: sustaining engagement with school and avoiding commitment to problem behaviors, such as problem drinking, illicit drug use, and delinquency. Success in this sense, although modest in terms of accomplishment, indicates that an adolescent is still on trajectory, and that is a definition of success that has relevance for the wide range of adolescents.

The operational definition of disadvantage used in the study can also be questioned. Clearly, it would have been preferable to have direct measures of family income or indirect measures such as participation in the school lunch program (see Pungello, Kupersmidt, Burchinal, & Patterson, 1996) as indicators of economic distress to include along with the others. Because such data were unavailable to us, we relied, instead, on the conventional indicators of parental education and occupation and family structure. Although useful, these measures reflect economic well-being only indirectly, and, in this study, they have the further limitation of being based on reports by the adolescent rather than by the parents. In the latter regard, it is reassuring that Felner et al. (1995) found over 90% concordance between parent and adolescent reports of parental occupational and educational level. That disadvantage as measured in this study nevertheless did relate as expected to successful outcomes in adolescence is also reassuring.

A limitation of the risk and protective factor measures is, of course, that they all relied on self-report, and common method variance could have been an influence on their relations. If additional risk and protective factors could have been engaged (e.g., IQ) or if risk and protection could have been directly measured in the various settings of adolescent life—measuring the dangers in a neighborhood, the availability of supportive teachers in school, the quality of parenting, access to a community resource center, the presence of a caring grandparent—it would certainly have strengthened our grasp on those constructs (see Elliott et al., 1997; Garmezy, 1985). Despite these limitations, the measures used in the study accounted for substantial variance in adolescent success and were able to illustrate the theoretically important Risk × Protection interaction. Finally, the less-than-desirable initial participation of the sample drawn and the attrition of the starting sample over the subsequent 3 years can be seen as additional limitations, although the attrition analyses indicated that the final sample differed little from the original Wave 1 sample in relations among the variables.

Overall, the findings from this study begin to tell a story about how adolescents manage to make it despite the risk, the adversity, and the disadvantage that may have characterized their lives. A large part of that story, a part that is emerging more insistently in recent years, has to do with protection. The direct and the moderator effects of protection would seem to warrant further attention from researchers and interventionists alike.

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