Resiliency Research: Implications for Schools and Policy

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J ohn and Paul were friends who grew up in the same run-down housing project in a large in dustrial city. Their neighborhood was plagued by drugs and violence. By the time the boys were 10 years old and each had experienced several years of family conflict, their respective parents divorced. Each was subsequently raised, along with an older sibling and two younger siblings, by a single mother. Their fathers played only a minor role in their lives after the divorce. They were below average students in school and got into some trouble with the police as they were growing up. Both older siblings dropped out of school and spent time in prison. John finished high school and received two years of training in a local trade school. He is now 30 years old, works at a local factory, and lives with his wife and two children. John is happy, healthy, and well adapted to his life in a nice neighborhood in the city. He hopes to help send his children to college so they might have opportunities in life he never had. Paul never graduated from high school. He has been in and out of prison over the last several years, is currently unemployed, and drinks alcohol excessively on a regular basis. He has two children he rarely sees, and he was never married to either mother. Paul has lived in several locations over the years, mostly in his old, unchanged neighborhood.

These brief biographies illustrate two very different developmental paths that began at the same place. Risk research would have predicted Paul's outcomes, and John would have simply been part of the unexplained variance in researchers' statistical analyses. Researchers know much about why people end up with detrimental and undesirable outcomes. Poverty begets poverty. Hopelessness breeds futility. Risks lead to problems. Unfortunately, we know much less about why some people, in the face of adversity and against the odds, develop into well-functioning and relatively healthy adults. This is John's story. People like him survive risky environments with their self-confidence, their coping skills, and their risk-avoidance behavior relatively intact. They have been able to fight off or recover from their misfortune. They have been *resilient*.

Over the last two decades the concept of resiliency has received increasing attention in

developmental psychology (Cicchetti & Garmezy, 1993). It has helped frame the study of development using a strengths model rather than a deficit and problem-oriented approach. Rutter (1987) and Garmezy (1991) have pointed out that more than half the children living in disadvantaged conditions do not repeat that pattern in their adult lives. Researchers, however, have typically emphasized the pathology of disadvantage by cataloguing risk factors and documenting their adverse effects on healthy adolescent development (Dryfoos, 1990; Hawkins, Catalano, & Miller, 1992; Newcomb & Felix-Ortiz, 1992). They have studied risk factors for psychopathology, alcohol and drug abuse, and delinquency. Problem behavior theory (Jessor & Jessor, 1977), stage theory of adolescent drug use (Kandel, 1975), and social influence models (Barnes & Welte, 1986; Dishion & Loeber, 1985; Huba & Bentler, 1980; Needle et al., 1986) have all focused on risk factors associated with negative outcomes for adolescents. This approach has led, in turn, to an interest in identifying vulnerable children.

Vulnerability refers to the individual's predisposition to develop varied forms of psychopathology or behavioral ineffectiveness. It reflects the susceptibility to negative developmental outcomes that can occur under high-risk conditions (Pelligrini, 1990; Werner, 1993). Rutter (1985) suggests that genetic make-up and temperament contribute to a child's susceptibility in high-risk environmental conditions. Vulnerability brings about a modification in the person's response to the risk situation such that the probability of a maladaptive response is heightened. In contrast, *resiliency* refers to fending off maladaptive responses to risk and their potential negative consequences. How is it that many children who face multiple risk conditions come through relatively intact? This is the underlying question posed by resiliency research.

Although an increasing number of researchers have begun to study resiliency, the research literature lacks a consistent vocabulary, conceptual framework, and methodological approach. It has also largely focused on variables associated with individual-level characteristics and has virtually ignored the role of community and social institutions (e.g., schools) in promoting or hindering resiliency. The literature includes a wide array of terms, research designs, analytic models, and content areas that fall under the rubric of resiliency (Stouthamer-Loeber et al., 1993). The purpose of this paper is (1) to integrate and differentiate this literature; (2) to identify conceptual and methodological issues that may help guide future research; (3) to illustrate how one institution, our schools, may promote resiliency; and (4) to offer policy suggestions for funding agencies, legislative bodies, and administrative audiences.

Background

Early Work on Resilience

The pioneering work of Garmezy, Rutter, and Werner has launched the study of resilience (Garmezy, 1991, 1993; Rutter, 1985, 1987; Rutter, Maughan, Mortimore, & Ouston, 1979; Werner, 1993; Werner & Smith, 1977, 1989, 1992). Garmezy and his colleagues undertook Project Competence in order to understand resiliency (Garmezy, Masten, & Tellegen, 1984). For more than ten years the focus of this project was on the cumulative effects of life stressors on various aspects of competence manifested in elementary school children. Approximately 200 children and their families participated in this study. Stress exposure was measured by a life events questionnaire. Competence was assessed by teacher ratings, peer assessments, and school record data. Parents were interviewed for 6 hours about their family interactions and their perspective about their child. Disadvantaged children, with lower IQ and socioeconomic status (SES) and less positive family qualities, were generally less competent and more likely to be disruptive. Yet, Garmezy and his colleagues found that some of the disadvantaged children were competent

and did not display behavior problems. This led them to raise the question about how some children come to beat the odds (Garmezy et al., 1984).

Rutter et al.'s early work (1979) involved investigations of the children of people diagnosed as mentally ill on the Isle of Wight and in inner-city London. He followed 125 of these children over a 10-year period. He found in this intensive interview study that offspring of mentally ill patients escaped relatively unscathed. They did not become mentally ill themselves or exhibit maladaptive behavior. He reasoned that if so many children did not succumb to deprivation, it was important to determine why this was so and to identify what protected them from the hazards they faced. Rutter (1987) began to look upon resilience as the manifestation of individual variations in response to a risk factor. He suggested that resiliency arises out of a belief in one's own self-efficacy, the ability to deal with change, and a repertoire of social problem-solving skills (Rutter, 1985).

Werner and her colleagues conducted a longitudinal study of a cohort of children born in 1955 in Kauai (Werner, 1993; Werner & Smith, 1977). Their study extended over three decades. One third of this cohort (n = 201) was designated as high-risk because they were born into poverty and lived in a family environment troubled by a number of factors such as biological and prenatal stress, family instability and discord, parental psychopathology, or other poor child-rearing conditions. One third of these high-risk children (n = 72) grew up as competent, confident, and caring adults. When these children were contrasted with those at risk who did develop serious problems, a number of differences were found. As babies the resilient children in this high-risk group were active and affectionate. In elementary school they had a number of interests other than academics. They had a positive self-concept and felt they had personal control over their lives. They were more nurturant, responsible, achievement-oriented, and autonomous. Most of the resilient boys and girls had grown up in families with 4 or fewer children. All of the children at risk who eventually developed into healthy adults had the opportunity when they were infants to establish a close bond with at least one caregiver from whom they received abundant positive attention. Resilient boys and girls also sought and found emotional support outside their own family. Thus, in spite of exposure to chronic stress, a core group of this cohort emerged in late adolescence as competent and able persons, capable of handling the problems that befell them.

Werner and Smith (1992) also found some interesting gender differences in a follow-up study when their sample was 31-32 years old. They found scholastic competence at age 10 was, for example, more strongly associated with successful transition into adult responsibilities for men than for women. On the other hand, factors such as high self-esteem, efficacy, sense of personal control at age 18 were more predictive of successful adult adaptation among the women than men. Similarly, the effects of different stressors in the youths' lives influenced their development into adulthood. Werner and Smith (1992) found that males were more vulnerable to separation from or loss of caregivers in the first decade of life (early to middle childhood) than girls, but in the second decade (adolescence) girls were more vulnerable to chronic family discord and disturbed interpersonal relationships than boys. They also found that more positive changes occurred among the women who had mental health problems as adolescents than among the men. These results provide compelling evidence that although many factors may help at-risk children overall to be resilient in the face of adversity, the resiliency process may differ for men and women.

Recent Work

Terms such as *invincibility* and *invulnerability* have come to be used synonymously with resiliency (Cowen & Work, 1988). Cowen and Work (1988) refer to invincibility as "unusual

resilience stemming from sources not yet fully understood" (p. 593). According to this view, invulnerable children are untouched by the stresses they face. Few children, however, exhibit such complete immunity to disorder in the presence of risk factors. Neither vulnerability nor invulnerability is an all-or-none phenomenon. The term invulnerability has largely been replaced by *resilience* (Werner & Smith, 1992). Resilience is preferred because it refers to the capacity of these children and adolescents to face stress without being debilitated; it does not mean they never experience distress.

Luthar and her colleagues (Luthar, Doernberger, & Zigler, 1993; Luthar & Zigler, 1991) have indicated that some of the children in their longitudinal study who managed to avoid negative behavioral outcomes in the face of risks that typically predict adolescent problems (e.g., drug use, delinquency) nevertheless reported feelings of anxiety. The resilient youth in their sample of 138 ninth-graders reacted to the stressful experience in an internalizing, rather than acting-out, fashion (e.g., aggressive behavior). They suggest that such youth may be incorrectly identified as resilient or invincible simply because their maladaptive responses have not become overt behavioral problems. Luthar and Zigler (1991) reported further that highly stressed children who showed impressive behavioral competence were highly vulnerable to emotional distress over time, and also that those who appeared to be resilient in one domain of social competence may have difficulties in other domains.

This research suggests that resiliency is not a universal construct that applies to all life domains. Rather, research on resiliency can only identify those particular risk circumstances when environmental conditions, individual factors, and developmental tasks interact to help children and adolescents avoid negative consequences (Rutter, 1987). They may be resilient to specific risk conditions but quite vulnerable to others.

Refining the Definition of Resiliency

The development of the resiliency concept has resulted in multiple meanings, ambiguous terminology, and what may appear to be inconsistencies. At the least, it is a multidimensional phenomenon that is context-specific and involves developmental change.

The term "resiliency" generally refers to those factors and processes that interrupt the trajectory from risk to problem behaviors or psychopathology and thereby result in adaptive outcomes even in the presence of adversity. Garmezy and Masten (1991) define resilience as "a process of, or capacity for, or the outcome of successful adaptation despite challenging and threatening circumstances" (p. 459). Werner (1993) uses the concept of resiliency to refer to those children who successfully cope with biological and social risk factors.

Resiliency and invulnerability are not equivalent. Resilience refers to the ability to spring back from adversity (Garmezy, 1993); it does not mean that one cannot be wounded—as the term invulnerability implies. Rutter (1985) suggests, moreover, that resistance to stress is (1) relative and not absolute, (2) the result of environmental as well as individual factors, (3) not a fixed quantity, and (4) dependent on context (e.g., psychopathology, substance use, school dropout). Thus, the relative concept of resilience is preferable to the absolute concept of invulnerability.

In addition, resiliency is not a monolithic construct that, once achieved, will always be present. It cannot be seen as a fixed attribute of the individual, because the circumstances in which it may occur are dynamic. When the situation changes, so may one's resiliency. Rutter stresses the individual's active role in the resiliency process. He suggests that resilience is not just a matter of constitutional strength or weakness, but that it includes taking action to address a stressful situation (Rutter, 1985, 1987). Kaplan (1994) further points out that resiliency may not be well defined because researchers often inter-

mingle resiliency and outcome. Resiliency, he argues, may be the functional equivalent of outcomes or the cause of outcomes.

Staudinger, Marsiske, and Baltes (1993) point out that the term resiliency has been used to refer both to the maintenance of healthy development despite the presence of threat and to the recovery from trauma. Poverty, on the one hand, can be looked on as a source of constant threat that increases the vulnerability of children. Being poor and thus vulnerable may lead to social deprivation, malnutrition, or an educational disadvantage, but not all children succumb to these risks. Many will maintain healthy development. The loss of one's parent through death or divorce, on the other hand, is not a chronic circumstance but a traumatic event. Some youth will, after an initial setback, recover from this stress, while others will remain discontented and troubled.

While a single definition may not adequately capture the complex meaning of resilience, varied definitions pose a problem for research and policy. Most definitions of resiliency nevertheless do encompass individual characteristics, the nature of the context, the risk factors, and the counteracting, protective, and compensatory factors of interest.

Models of Resiliency

Researchers have described several mechanisms by which environmental and individual factors help to reduce or offset the adverse effects of risk factors. While different researchers have sometimes suggested different models, many have also given the same mechanism different names. Garmezy et al. (1984) have proposed three models to describe the impact of stress and personal attributes on the quality of adaptation: (1) the compensatory model, (2) the challenge model, and (3) the protective factor, or immunity-versus-vulnerability, model. Rutter (1985) describes a model where the protective factors manifest their effect by virtue of their interaction

with a risk factor to predict negative outcomes (e.g., psychopathology, drug use, delinquency). He also suggests "inoculation," or "steeling," as another model of resiliency. Each of these models is briefly described below.

Compensatory Model

A compensatory factor is a variable that neutralizes exposure to risk (Garmezy et al., 1984; Masten et al., 1988). It does not interact with a risk factor; rather it has a direct and independent influence on the outcome of interest (Figure 1). Both the risk and compensatory factors contribute additively in the prediction of the


Figure 1. Compensatory Model
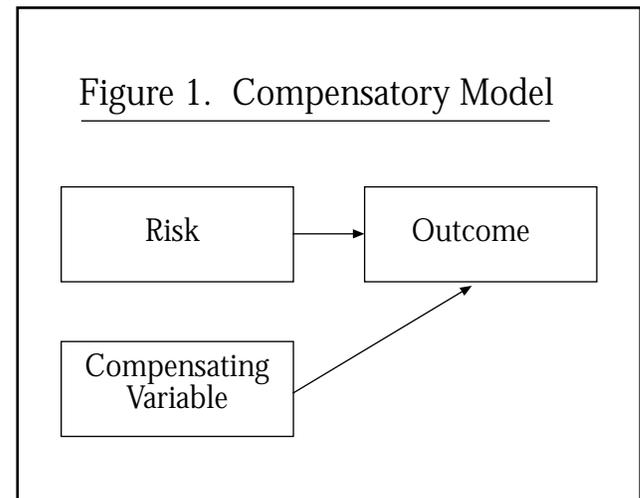
outcome (Masten, Garmezy, Tellegen, & Pelligrini, 1988). In this model, for example, stress (risk factor) and self-esteem (compensatory factor) are seen to combine additively in the prediction of competence (outcome). Thus, when one of the independent variables, stress or self-esteem, is held constant, competence changes with changing levels of the other independent variable. Higher levels of self-esteem compensate for higher levels of stress exposure; thus, children with high self-esteem maintain a level of competence comparable to other children who have less self-esteem but also less stress exposure (Masten et al., 1988). The direct effect of a compensating variable would predict less

psychopathology, drug use, or delinquency. The analysis for this model involves examining the direct linear effects of the compensatory and risk factors in a linear regression.

As an example of compensation, one could examine parental interest (compensatory factor) and parental conflict (risk factor) as predictors of academic competence (outcome). Children may display academic competence at high stress levels (i.e., family conflict) because parental interests in their child's education offset the effects of conflict between the parents. These children may receive vital parental help facilitating success despite the conflict between parents.

Challenge Model

The challenge model of resiliency is one in which a stressor (i.e., risk factor) is treated as a potential enhancer of successful adaptation, provided that it is not excessive. In this model, too little stress is not challenging enough, and very high levels render the individual helpless, which may result in maladaptive behavior. Moderate

Figure 2. Challenge Model
(Steeling, Inoculation)
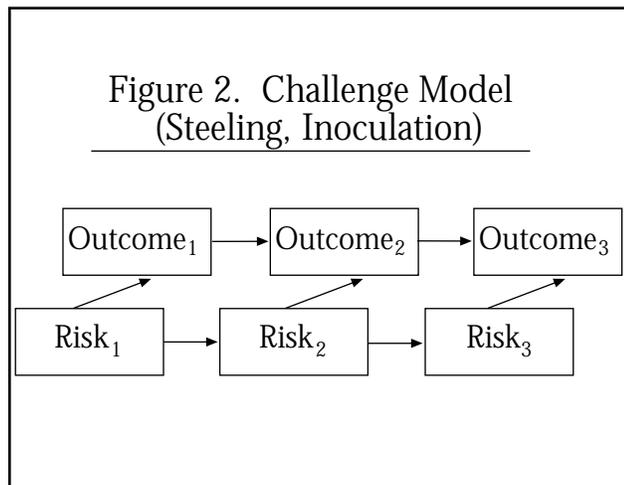
levels of stress, however, provide the individual with a challenge that, when overcome, strengthens competence. If challenge is successfully met, this helps prepare the individual for the next difficulty (Figure 2). Rutter (1987) has called this process "steeling" or "inoculation." If efforts to meet the challenge are not met successfully, the

individual may become increasingly vulnerable to risk. Thus, an optimal level of stress is one in which adaptation is strengthened as the person meets a given challenge. This model requires longitudinal data and would be assessed analytically using path or structural equation modeling (e.g., LISREL).
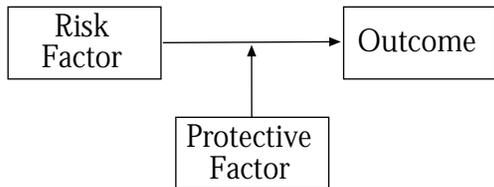
Protective Factor Model

A protective factor is a process that interacts with a risk factor in reducing the probability of a negative outcome. It works by moderating the effect of exposure to risk, and acts as a catalyst by modifying the response to a risk factor (Brook, Nomura, & Cohen, 1989; Cowen & Work, 1988; Garmezy et al., 1984; Pelligrini, 1990; Werner & Smith, 1989). A protective factor may have a direct effect on an outcome, but its effect is stronger in the presence of a stressor. Rutter (1987) describes a protective mechanism as an interactive process which helps to identify "multiplicative interactions or synergistic effects in which one variable potentiates the effect of another" (p. 601). Garmezy et al. (1984) refer to the protective factor model as an immunity-versus-vulnerability model. This model appears to be the most widely studied of resiliency models.

Brook, Brook, Gordon, and Whiteman (1990) propose two mechanisms for how protective effects may function: *risk/protective* or *protective/protective*. A risk/protective variable functions to mitigate the negative effects of a risk factor (Figure 3A). A protective/protective mechanism works by enhancing the protective effects of variables found to decrease the probability of negative outcomes (Figure 3B).

Risk/protective mechanism. Werner and Smith (1992) suggest that the interaction of risk and protective factors establish a balance between the individual's power and the power of his or her physical and social environment. Brook, Nomura, and Cohen (1989) found that assertiveness and high self-esteem protected adolescent girls from the negative influence of parental conflict (risk factor) on their depressive

Figure 3. Protective Factor Model

A. Risk/Protective

Risk Factor → Outcome

Protective Factor

B. Protective/Protective

Protective Factor$_1$ → Outcome

Protective Factor$_2$
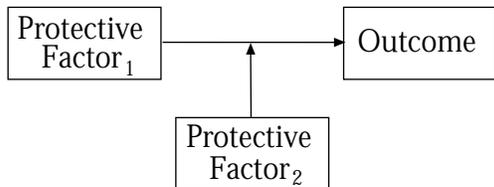
moods. Stacy, Newcomb, and Bentler (1992) found that liberalism (protective factor) significantly reduced the predictive effect of peer substance use (risk factor) on self-use.

Dubow and Luster (1990) studied 721 children, aged 8 to 15, and their mothers from the mother-child data set of the National Longitudinal Survey of Youth. They found that risk factors such as poverty status and mother's self-esteem affected the child's academic and behavioral adjustment. Protective factors such as intelligence and supportive home environment enhanced the prediction of adjustment beyond the contribution of risk factors alone. They also found that the presence of these protective factors reduced the child's vulnerability to academic and behavioral difficulties.

Brook, Nomura, and Cohen (1989) studied the interrelationship of neighborhood, school, peer, and family factors on adolescent drug use. A harmonious and organized school environment interacted with peer substance use (i.e., alcohol, cigarettes, and marijuana) to decrease the adolescent's use of all three substances.

Protective/protective mechanism. Zimmer-

man, Ramirez, Washienko, Walter, and Dyer (1994) found in a sample of 121 Native American youth that cultural identity enhanced the effects of self-esteem as a predictor of alcohol and substance use. Whereas cultural identity by itself had no independent effect on use, self-esteem predicted less alcohol and substance use for those youth who reported average or higher levels of cultural identity. Youth with the highest levels of self-esteem and cultural identity reported the lowest levels of alcohol and substance use.

Brook, Whiteman, Gordon, and Cohen (1989) found that low levels of early drug use in combination with conventional values resulted in the lowest probability of increased substance use. Brook, Whiteman, Gordon, and Cohen (1986) also describe an example of a protective/protective mechanism for predicting depressive moods among female college students. They found that time spent with father heightened the effects of the respondent's responsibility, assertiveness, and parental identification in predicting low levels of depression.

Both risk/protective and protective/protective factors may be evaluated by exploring the moderating relationships among predictors and outcome. The protective factor influences the relationship between either the risk or other protective factor and the outcome in an *interactive* fashion. The two factors combine effects to either offset or enhance each other. Baron and Kenny (1986) suggest that a moderating variable specifies when certain relationships will hold under different conditions of a third varialbe (i.e., the moderator). Newcomb and Feliz-Ortiz (1992) offer as illustration the finding that an adolescent's susceptibility to social influences (moderator) can interact with social influences to affect drug use. Peer drug use (risk factor), for example, may have a direct effect on the adolescent's drug abuse (outcome), but a strong social group sanction against drug use (moderator) may interact with the risk factor (peer drug use) to moderate the relationship between adolescent drug use and peer use.

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The protective model of resiliency is different from the compensation and challenge models in that it operates indirectly to influence outcomes. Compensatory models examine the additive and direct effects of factors. Challenge models involve enhanced resilience through repeated exposure to stress regardless of the influence of any other factors. It is vital to point out, however, that the three models of resilience presented are not mutually exclusive. Thus, positive factors in youths' lives may act to compensate for some risks while also interacting with others to reduce negative outcomes. And some risk factors that ordinarily might be thought detrimental may provide a manageable level of stress so that future exposure to risk is less debilitating; the stress, in effect, becomes a resource to further strengthen the youth's capacity to deal with ever more intense stress.

Take John and Paul, the boys in our opening vignette, as an example. John may have succeeded in avoiding the risks associated with his life because a positive male role model compensated for his father's absence (compensatory model) and because the support he received from his network of drug-free and nonviolent friends helped to protect him from the risks associated with growing up in a poor and high-crime neighborhood (protective factor model). Successfully overcoming the experience of the stress and hurt of his older sibling's troubles may have made him better able to cope with the new stress of added family responsibilities in his brother's absence (challenge model). These three models provide us with a basis for exploring the positive outcomes experienced by youth considered to be in a high-risk environment. Several theoretical and methodological issues, however, hinder the advancement of research on resiliency.

Theoretical and Methodological Issues

Resiliency research is a relatively new area that has yet to see the benefit of either years of study or the attention of numerous researchers.

Nevertheless, like most other psychological constructs, it faces several theoretical and methodological issues that must be addressed. Such issues do not, however, compromise the usefulness of the resiliency construct as a heuristic for understanding healthy child development achieved against seemingly insurmountable odds.

Theoretical Issues

Defining protective and risk factors. Protective and risk factors have been conceptualized as the opposite ends of a single continuum (Brook, Whiteman, Gordon, & Cohen, 1989; Newcomb & Felix-Ortiz, 1992; Rutter, 1987). High religiosity, for example, may be a protective factor against drug use, while low religiosity may be a risk factor associated with increased drug use. Whether a variable is called a risk factor or a protective factor seems to depend on which end of the continuum is emphasized (Newcomb, McCarthy, & Bentler, 1989; Stouthamer-Loeber et al., 1993). While Seifer, Sameroff, Baldwin, and Baldwin (1992) used low SES as a potential risk factor, others (e.g., Masten et al., 1988) include high SES as a potential protective factor. Socioeconomic status is one of the most commonly investigated indices of stress, but we have little consensus on whether SES generates vulnerability in children or acts as a protective factor against other risks (Masten et al., 1988).

Newcomb and his colleagues (Newcomb et al., 1989; Newcomb & Felix-Ortiz, 1992; Stacy, Newcomb, & Bentler, 1992) have used an innovative approach to explore the issue of risk and protective factors falling on the same continuum. They investigated the interactive influences of risk and protective factors on various drug use patterns, examining both the quantity and frequency of drug use. Protective factors had main effects but also interacted with the risk factors to influence drug use. Several variables were combined to create a Multiple Risk Factor Index and a Multiple Protective Factor Index (MPFI). Variables were made dichotomous by recoding them

as either a risk or protective factor based on which end of the continuum a respondent fell (e.g., high self-esteem was protective while low self-esteem was a risk). Composite scores were then created by summing the dichotomous variables. Researchers found the MPFI to be related to less drug involvement (Newcomb & Felix-Ortiz, 1992).

Felix-Ortiz and Newcomb (1992) used similar indices to study the risk and protective factors associated with drug use among Latino and white adolescents. They found that as the Protective Factor index increased, alcohol use among Latino males and white females decreased. As the Risk Factor index increased, protective factors were less effective buffers of hard drug use for both Latino and white adolescents.

Sameroff, Seifer, Baldwin, and Baldwin (1993) studied the influence of social and family risk factors on the stability of intelligence from preschool to adolescence. They found that the pattern of risk was less important than the total amount of risk present in the child's life. In other words, the burden of too many risk factors could not be remedied by the protective factors studied. The simultaneous consideration of multiple indices of risk and protection may help us to better understand resiliency, but it may also pose difficulties.

One problem with this approach is that more neutral middle scores of the recoded variables get mixed in with more extreme scores which may obscure information about either the risk or protective effect. We lack sufficient empirical evidence to determine what criterion to use to define a variable as a risk or protective factor (Hawkins et al., 1992; Seifer et al., 1992; Stouthamer-Loeber et al., 1993). It is also not clear when opposite ends of the continuum are actually opposites or simply less of one variable. While a high score on parental support, for example, may be a protective factor, a low score may not necessarily mean that a youth lacks adequate parental support. Rather, the low score may simply indicate lower levels of reported parental support. No parental support may be a

risk factor, but it is not necessarily the opposite end of a parental support scale, because a low score on such a scale does not necessarily mean support is absent.

Multiplicity and specificity of protective factors. It may be very difficult, if not impossible, to specify for any given outcome which protective factors go with which risk factors. Similarly, it would be difficult to specify a one-to-one relationship between risk factors and protective factors; most negative outcomes do not directly relate to a single risk factor (Seifer et al., 1992).

Felix-Ortiz and Newcomb (1992) found that an individual's use of drugs was influenced by different predictors for different groups. Although their study highlights the importance of considering multiple factors of risk and protection, they also fail to specify the individual contribution of any one factor. It may not be critical to create a taxonomy of the linkages of risk factor, protective factor, and outcome, but future research would profit from organizing the information that is presently available.

Domain specificity. Luthar and Zigler (1991) point out that resiliency in one life domain may not translate to resiliency in other life domains. A child may show resiliency to parental conflict as it relates to school-related outcomes, for example, but not to social relationships. Luthar and Zigler (1991) have found that urban ninth graders considered to be academically resilient often show signs of emotional maladjustment. Students who were considered resilient within one domain of school competence were not necessarily resilient when other outcomes were considered.

Process versus trait. Rutter (1987) stressed the need to focus on the mechanisms by which youth maintain their self-esteem and self-efficacy in the face of adversity. While a protective factor *model* suggests a trait approach focusing on static relationships, a protective *mechanism* approach implies the processes by which factors interact over time to alter the individual's trajectory. Many researchers write about mechanisms, but they typically study only static protective factors. The accumulation of a body of research on these

factors could be helpful in identifying what mechanisms may be fruitful avenues for research. Vulnerability research went through a parallel evolution, first identifying risk factors and then studying the etiology of problems (e.g., drug use, delinquency, psychopathology).

Cross-sectional analysis of one-time behavioral assessments only gives us a snapshot of the resiliency process. Longitudinal research will be needed to establish any sort of causal relationships among risk factors, protective factors, and outcomes. Gest, Neemann, Hubbard, Masten, and Tellegen (1993) suggest that longitudinal research on resiliency will be most informative if (1) baseline measures are made of all constructs under consideration; (2) samples are large enough to detect the statistical interaction of interest; and (3) assessments are taken at three or more points spaced far enough apart in time to provide opportunity for the hypothesized process to occur.

Methodological Issues

Measurement. Measurement issues are critical for any psychological construct, but they pose a particular problem for resiliency. Multiple conceptualizations of this construct and the lack of a common approach to studying it make measurement a confusing task. While current technologies are adequate for developing psychometrically sound measures of specific variables (e.g., self-esteem, parental support, anxiety, drug use), methods are limited for assessing how variables interact over time to affect an outcome. This suggests that models must be well specified and made testable so they can be evaluated empirically. Etiologic models of problem behavior, for example, may provide a useful heuristic for formulating and studying the mechanisms by which youth succeed despite the odds. In addition, qualitative methodology (e.g., Glaser & Strauss, 1967) could be useful in developing relevant models that can be tested quantitatively in a larger study.

Variance explained. The amount of variance explained by the addition of interactive effects (i.e., protective effects) is typically small, which might mistakenly lead us to conclude the effects are inconsequential. Garmezy et al. (1984) report only a 4% increment (from 62% to 66%) in the amount of variance explained by the interaction effect of protective factors with risk factors on competence. Zimmerman et al. (1994) also found that the addition of an interaction term to determine the protective/protective effects of cultural identity only explained an additional 4% of variance of alcohol and drug use.

Several reasons may explain these seemingly limited results:

(1) The model may have specified variables incorrectly.

(2) Resiliency may sound like a feasible explanation but fail to engender meaningful empirical support.

(3) The small effects could be an artifact of the analysis procedure. Effects of the resiliency process are typically considered after all the risk variables have already been assessed in the analysis, and the interactive term is then introduced only at the last step. Little variance may be left to explain at that point, and the fact that any is explained in the final steps of the analysis may actually suggest fairly strong effects. Models that treat resiliency-related variables more prominently may be useful in clarifying such effects.

(4) Finally, any particular study may fail to capture the resiliency process at the point in a child's or youth's development when it is most crucial; alternatively, a resiliency process may operate differently at different phases of development. The protective factor of a male role model, for example, may function differently for the young child of 5 who is learning about family than it does for the youth of 16 who is contemplating dropping out of school. If a model misspecifies the action of this factor, little variance may be explained.

Level of analysis. Most research on resiliency to date has concentrated on the individual, with studies focusing on personal attributes such as intelligence, gender, self-esteem, self-efficacy, autonomy, sociability, aggressiveness, religiosity, and so on. Unfortunately, this emphasis on the individual may unwittingly blame victims for their deleterious outcomes. Moreover, it may lead us to rely too heavily on interventions aimed at changing the individual, when it may be more efficient and economical to create settings that help youth compensate for or protect themselves against risk.

Some investigators have considered a level of analysis that subsumes the individual. This approach can take the form of assessing social relationships (e.g., family relations, mentorship, peer influences) or contextual factors (e.g., neighborhood, SES). Although these broader contexts are usually treated as risk factors (e.g., lack of mentoring or lack of neighborhood facilities), some researchers have begun to include them as resiliency factors (Brook, Nomura, & Cohen, 1989; Brook, Whiteman, Balka, & Hamburg, 1992).

Research is needed to identify the role that social institutions play in helping youth to become resilient and sustain their capacity to face risk. Schools are such settings. A research focus on schools as promoters and safeguards of resilience shifts attention away from the individual and onto a context within which children can develop problem-solving skills, find social supports, and experience success.

Schools and Resiliency

Schools have a significant influence on child and adolescent development (Entwisle, 1990). From the age of 5, children spend a large part of their day in school, and their experiences in school may affect them in multiple ways. The school environment has the potential either to increase children's risk or protect them from the debilitating consequences of other risks. School size, for example, is associated with school dropout, with smaller schools being more protective (Pittman & Haughwout, 1987; Rumberger, 1987). Low academic motivation (absenteeism, dropout), achievement (grades), and commitment (school bonding) have been linked to adolescent drug use (Bachman, et al., 1980; Barnes & Welte, 1986; Coombs et al., 1985; Hawkins et al., 1992; Johnston & O'Malley, 1986; Kandel, 1980). Rutter et al.'s (1979) longitudinal study of children from the first grade to the tenth grade highlights the many influences of school. They found that students vary markedly in their behavior, attendance, exam success, and delinquency, and that these outcomes are systematically and strongly associated with school characteristics.

Several school-based interventions have been designed to help children develop skills (Weissberg, Caplan, & Sivo, 1989), cope with stress (Felner & Felner, 1989; Pedro-Carroll & Cowen, 1985), and reduce risk behavior (Perry et al., 1990). Unfortunately most school-based prevention programs have employed a deficit model (Weissberg et al., 1989). Such programs typically target children likely to be educationally disadvantaged, disruptive, or delinquent (Maughan, 1988), and stress individual behavior change.

School experiences can obviously contribute to both risk and protective mechanisms, but as Maughan (1988) suggests, the role of schools has received relatively little consideration in the study of resiliency processes. Rutter (1987) suggests that schools can be protective because they can promote self-esteem and self-efficacy by providing opportunities for students to experience success and enabling them to develop important social and problem-solving skills. Researchers have found that school-based supportive ties can serve to buffer against potentially hazardous conditions in the home and other nonschool environments (Dubois, Felner, Brand, Adam, & Evans, 1992). Brook, Nomura, and Cohen (1989) found, for instance, that a harmonious and organized school environment where teachers and

students are committed to learning limited the effect of peer cigarette use on adolescent drug use.

Research on the motivational climate of schools indicates that the varying goals pursued by schools influence students' personal goals, which, in turn, influence their feelings of self-efficacy and self-esteem (Maehr & Nicholls, 1980). Such motivational goals may be characterized as *task* and *performance* goals (Ames, 1992; Ames & Archer, 1988). A task goal stresses learning for learning's sake, and success is measured by improvement. The focus is on the intrinsic value of learning (Nicholls, 1984). In contrast, a performance goal stresses demonstrating superior ability relative to others, or avoiding appearing unable. The goal is decidedly competitive in nature, and success is defined in terms of relative standing on some scale, such as test scores, grade point average, or other comparison between students. Emphasis is on the extrinsic aspects of learning. A performance orientation necessitates that there be some winners and some losers (e.g., straight-A students vs. failing students). Children in the performance-focused situation tend to attribute failures to lack of ability (Ames & Ames, 1984; Elliot & Dweck, 1988).

In contrast, children in task-focused situations are more likely to view failures as a challenge to try harder and to develop more useful strategies; they also report less negative affect in response to failure. Students have reported greater self-efficacy when pursuing task goals than performance goals (Urdan, Turner, Park, & Midgley, 1992). Thus, schools can play a protective role by helping students develop the self-confidence and analytic skills they need to solve the problems that confront them.

Ames (1992) also found that task-oriented schools influence other perceptions of self, like the sense of belonging. A competition-oriented school where students are subtly, or sometimes explicitly, pitted against one another may dampen some students' sense of belonging. This is significant because sense of belonging to the school has been shown to enhance student motivation and improve achievement (Goodenow, 1993). Sense of belonging to a school has also been shown to protect against adolescent substance abuse (Hawkins et al., 1992).

Other aspects of school structure and process can also affect student outcomes. While the perceived competence that comes with academic achievement can play a protective role and encourage a student to stay in school, failing in school may make a student more vulnerable to negative outcomes. The presence of an understanding teacher or the availability of other support systems in the school (e.g., peer tutoring, counseling) may increase a student's chances of developing coping skills. Finally, school activities where students have opportunities to share ideas, provide help to others, and participate in decision making about issues of concern to them may also play a protective role. Such activities could include peer education programs, service learning, or student advisory boards.

Although the field of resiliency research is still in its infancy and many issues remain to be worked out, investigations of how social institutions, like our schools, foster resiliency are needed to ensure the creation of settings where children and youth may develop into healthy adults. Such settings can be a critical resource for children and youth, and an important focus for addressing many social problems.

Policy Implications

Resiliency poses several policy implications for research on child and adolescent development. The policy implications listed below are not intended to be a complete or mutually exclusive list. They are intended to generate ideas that will shift attention from a focus on risk factors and the etiology of problem behaviors to efforts to understand healthy and adaptive responses to stressful circumstances.

- *Develop specific funding initiatives for studying resiliency.*

Most calls for proposals and research initiatives target problem behaviors (e.g., violence, substance use, teen pregnancy) and often neglect language that would encourage research on resiliency. A notable exception is the current National Science Foundation's Human Capital Initiative. The NSF program announcement, while not specifically designed for resiliency research, does include language that would address resiliency. It states that human capital research is defined as "research which advances basic understanding of the causes of the psychological, social, economic, and cultural capacities of productive citizenship."

- *Fund longitudinal studies that emphasize exploration of resiliency among youth with risk factors.*

    Resiliency is a developmental construct and must be studied longitudinally, because it is not a trait that a youth is either born with or automatically keeps once it is achieved. Longitudinal research will allow us to study not only how resiliency develops but how it may also deteriorate over time. This research could parallel etiological research on risk factors but focus on what leads to positive instead of negative outcomes. It would be important for longitudinal studies to include critical developmental periods such as school transition or puberty.

- *Fund research that explicitly examines resiliency in different populations.*

    Resiliency research is in its infancy, and the knowledge gaps are sizable. The number of researchers studying a greater number of topics in various populations needs to be increased. Studies that examine interactions of developmental transitions and gender, for example, will help identify how resiliency may differ for males and

females. Similarly, studies within different populations (e.g., rural communities or various physical disabilities) would help to further specify how resilience operates. Ethnic group differences may also be important to study, especially among populations where bicultural issues, mainstreaming into majority culture, and strong ethnic ties are part of the developmental experience. In order for resilience to be a useful construct, it needs to be studied in various populations and contexts.

- *Create intervention programs designed specifically to enhance factors found to be protective and to contribute to resiliency.*

    Prevention programs are often designed to eliminate or reduce risk factors found to be related to a negative outcome. Thus, they focus on amelioration of a potentially dangerous status. An alternative approach would be to develop programs that enhance those factors found to protect or inoculate youth against the effects of risk factors. This is fundamentally different because it focuses on building capacity instead of fixing problems. This alternative approach requires us to learn more about the etiology of positive outcomes in otherwise risky situations. Intervention research will push the field to be more specific about outcomes, relationships among variables, and measurement issues.

- *Resiliency research needs to include multiple levels of analysis.*

    Resilience is not simply an individual level construct nor does it lie solely within the individual. Most of the research on resiliency has focused on individual and family factors. More efforts are needed to understand how social institutions—schools, public health departments, court systems—can contribute to or hinder youth resiliency. The discussion above about

schools provides an example of how social institutions can play a role in the resiliency of our children.

- *Research the roles our schools may play in developing resilient youth.*

    Many school programs only evaluate motivation and academic outcomes (e.g., cognitive skills, achievement), but researchers could begin to explore how schools help enhance protective factors such as social skills, problem-solving skills, or self-esteem. Evaluation of school programs designed to have a task-oriented curriculum and reward systems could, for example, include assessment of factors associated with resiliency.

- *Research that focuses on people in a crisis situation and how they differentially adapt is needed to more fully understand the resilience process.*

    People who experience the same stressors but end up with different outcomes (like John and Paul in our opening story) provide an important population for study. The goal of such a program of research would be to identify the stressful situation and follow youth over time to analyze whether their response was resilient or ineffective. One significant common stressor for many youth is poverty, yet we know relatively little about why some youth escape from it while others remain poor and disenfranchised.

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