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Annotation: Methodological and Conceptual Issues in Research on Childhood Resilience

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Abstract

Recent advances in research on childhood resilience have yielded valuable insights on protective processes in adjustment. At the same time, however, as with any growing discipline, the rapid accrual of data has led to the identification of additional important questions, many of which are currently inadequately resolved. The focus of this paper is on salient methodological and conceptual issues that merit further scrutiny in research on resilience. The discussion focuses in turn on definitions of competence, measurement of risk, terminology used to describe protective mechanisms, main effect and interaction effect models of resilience, and processes underlying “buffering” or “moderating” effects.

Keywords

Resilience; social competence; risk

Definitions of Competence

Varying profiles of competence

In operationalizing levels of overall adjustment, several researchers have argued for the use of social competence as the construct of choice (Garmezy, Masten & Tellegen, 1984; Masterpasqua, 1989; Zigler & Trickett, 1978). Studies on childhood resilience have generally focused on social competence as reflected in multiple behavioral indices, such as school grades, and ratings by parents, peers and teachers (Luthar & Zigler, 1991). The assumption in using such indices is that success in accomplishing salient developmental tasks reflects good underlying coping skills (Garmezy & Masten, 1986; 1991).

Recent studies on resilience have indicated that overt social competence among high-risk individuals is not necessarily paralleled by superior adjustment on covert mental health indices (Luthar & Zigler, 1991). Manifestly competent individuals in a range of high-risk situations have been found to show significant vulnerability to internalizing symptoms and/or physical health problems (Doernberger, 1992; Luthar, 1991a; Werner & Smith 1982, 1992). To illustrate, Farber and Egeland (1987) found that some abused and neglected children were able to develop coping strategies that helped them to adapt to the situations they were in. Despite their apparently successful coping behaviors, however, many of these

children were not emotionally healthy. Similarly, children of depressed parents have been found to show considerable vulnerability to depression in spite of positive manifest coping with the demands of everyday life (Radke-Yarrow & Sherman, 1990).

Varied patterns of adjustment among high-risk children occur not only across covert and overt indices, but also, within the broad domain of social competence. For example, in a study on school-based social competence among inner-city youth, it was found that although grades and teacher ratings were modestly correlated, adolescents rated highly by their peers often did very poorly on academic competence (Luthar, 1991a). Similarly, Masten *et al.* (1988) found that different models were required to describe associations between risk and competence across different domains of classroom competence.

Implications for definitions of resilience

Since at-risk children can vary considerably in adjustment across different domains, on what basis should labels of “resilience” be conferred? Recognizing that emotional distress often underlies impressive overt competence, some researchers have suggested that resilience be used to represent a circumscribed construct, implying behaviorally manifested success at negotiating salient developmental tasks, in spite of major stressors and possibly underlying emotional distress (Luthar & Zigler, 1991). There is, however, a need for still greater specificity in defining the construct, since adjustment levels often vary considerably even *within* the broad domain of manifest competence. The current evidence indicates, then, that notions of “overall” resilience are of questionable utility. In future research, it would be more useful if discussions were presented in terms of the specific domains of successful coping (e.g. academic resilience, social resilience or emotional resilience), along with those areas in which apparent survivors show high vulnerability.

To summarize, studies on childhood resilience have shown that high-risk children can show differing success levels across different domains of adjustment. In general, social competence is an outcome variable well-suited to studies on resilience: it is undoubtedly of value to know why some children are able to meet major societal expectations despite conditions of high risk. At the same time, however, differences across spheres of adjustment must be carefully appraised, and discussions on resilience should be presented in terms of the specific spheres of successful (and less successful) adaptation. While it is important to demonstrate which children survive relatively well and why, it is equally critical that researchers address the costs that at-risk children may pay even as they maintain positive profiles across some adjustment domains.

Measurement of Risk

Statistical risk versus vulnerability

As with definitions of competence, several perplexing issues arise around operationalizing risk in studying stress-resistance. Researchers have emphasized the need to distinguish between “distal” and “proximal” levels of risk (Baldwin, Baldwin & Cole, 1990; Masten, Best & Garmezy, in press; Richters & Weintraub, 1990). Distal variables, such as socioeconomic status or parental mental illness, are not directly experienced by the child,

but are mediated by proximal variables such as ineffective parenting or conflict between parents (Masten *et al.*, in press).

Conceptual difficulties associated with using distal variables in risk research have been discussed at length by Richters and Weintraub (1990). The authors note the need to distinguish between statistical risk and vulnerability for a disorder, arguing that although statistically 10–15% of offspring of schizophrenic parents develop schizophrenia themselves, statistics such as these convey nothing about the risks faced by individual children. Such data do not imply, for example, that all children of schizophrenics are 10–15% along the way to maladjustment. In summary, risk status in itself conveys nothing about the non-genetic proximal processes to which children may be exposed, and researchers need to focus on specific aspects of being the offspring of a schizophrenic parent (such as inconsistent or erratic parenting) that affect adjustment.

Assumptions of statistical risk as constituting vulnerability also affect interpretations about protective factors. In studying children of psychiatrically ill parents, the search for protective factors involves identifying dimensions associated with positive outcomes (resilience) among these children. In the absence of definite evidence on proximal risk factors, however, many of the so-called resilient children may simply be those who had faced few adverse influences (Masten *et al.*, in press; Richters & Weintraub, 1990). In other words, despite their parental psychopathology, many of these children may in fact, be at relatively *low* risk, rather than being those who should be appropriately thought of as resilient.

In considering the preceding argument, two related issues must be weighed. First, even with so-called “proximal” variables, their high-risk nature cannot necessarily be assumed *a priori*. For example, authoritarian parental styles may constitute a high-risk proximal variable among some but not all families. Among disadvantaged children living in dangerous environments, favorable outcomes have been found to be associated with restrictive and authoritarian family patterns rather than with democratic ones (Baldwin *et al.*, 1990).

A second concern with defining proximal risk environments is that in practice, it is impossible to identify precisely all the proximal factors that go into affecting outcomes, or to demonstrate conclusively that *any* given variable does, in fact, constitute a risk factor. In the context of ineffective parenting, for example, consider evidence showing that children in the same family not only receive differential treatment from their parents (Daniels & Plomin, 1985; Plomin & Daniels, 1987; Reiss, Plomin & Hetherington, 1991), but also differ in how they influence, and respond to, their parents' behaviors. For instance, while active girls may elicit especially positive behaviors from parents, this is not the case for active boys (Maccoby & Jacklin, 1983). In short, conclusions that children exposed to “proximal” variables are inevitably at risk, are open to question, just as are inferences that “distal” variables such as parental mental illness invariably represent high levels of risk.

To summarize the issues discussed here, given the complex web of factors influencing children's psychosocial development, it cannot be assumed that any environmental risk factor—wherever it falls on the distal-proximal continuum—carries equivalent levels of risk

to all children exposed to it. In the future, the identification of specific markers of vulnerability (e.g. genetic risk for mental illness) may bring further precision to the measurement of risk in resilience. Until such time, our understanding of childhood resilience would be facilitated to the extent that distal risk factors are examined in terms of the proximal factors that may mediate their effects. The long-term objective of most studies on stress-resistance is to derive implications for intervention, a goal best achieved with data indicating the specific processes, such as parental neglect or family conflict, via which global risk factors such as parental psychopathology might operate.

The use of multiple indices of risk

Commonly employed strategies to defining risk in resilience research include (a) the life events or “daily hassles” approaches, that involve computing the number of negative events experienced by a child, and (b) the use of individual stressful experiences such as parental divorce. The methodological advantages and limitations of these approaches have been discussed at length elsewhere (e.g. Garmezy & Rutter, 1985; Luthar & Zigler, 1991; Thoits, 1983).

A third and comparatively less utilized approach to defining risk involves the simultaneous consideration of multiple familial and sociodemographic indices, such as impaired maternal psychological functioning, low parental occupation and income, absence of a parent, and minority group membership. Empirical evidence indicates that such variables often have a synergistic effect, wherein the effects of co-existing stressors far exceeds the effects of any single factor considered individually (Rutter, 1979; Sameroff & Seifer, 1983; Sameroff, Seifer, Barocas, Zax & Greenspan, 1987).

When multiple risk indices are used in studies on resilience, how might they be integrated to yield an “overall” index of risk? The most straightforward strategy is a simple additive one. In research by Sameroff and colleagues (Sameroff & Seifer, 1990; Sameroff *et al.*, 1987), a series of indices previously established to be high risk in nature were selected, such as high maternal anxiety, minority group status and large family size. Using simple counts of one versus zero, those risk indices faced by a particular child were added to compute the overall risk encountered. A similar additive strategy has been adopted with continuous data (Masten, Morison, Pellegrini & Tellegen, 1990). In this case, scores on different risk scales were standardized, and these *z* scores were added to indicate total risk faced.

Summative approaches to assessing risk might be questioned on various grounds. For example, it may be argued that the items added have high overlap (e.g. poverty and minority group status), and/or that they differ dramatically in their seriousness as risk factors. Problems such as these, however, are inherent in most psychological scales. For example, in current measures of life events, or even among self-report measures on symptoms or personality, multiple items on a scale are added; the items have high shared variance (they must, in the interest of internal consistency); and the items often vary considerably in how strongly they are related to a particular outcome.

From a conceptual perspective, it might be argued that summated risk scores convey nothing about the specific processes via which these factors might affect adjustment. Sameroff and

colleagues (1987), however, have discussed their summated risk scores in terms of various possible processes, such as high environmental stress impinging on the family, limits in the family's resources for dealing with that stress, a large number of children sharing those resources, and low flexibility among parents in dealing with their children. Moreover, based on their data, the authors discuss specific areas of risk that might be amenable to interventions.

On the positive side of the coin, several factors argue in favor of using summative approaches to assessing risk. From a psychometric standpoint, “scales” involving summated risk variables have high face validity. They are also likely to be more reliable than measures involving individual risk factors since in general, increasing the number of items on a scale increases its reliability (Carmines & Zeller, 1979). With appropriate research designs and sufficiently large samples, additional psychometric properties of these “scales”—such as internal consistency, test–retest reliability, and criterion validity—could be established for specific high-risk groups.

Conceptually, it has been argued that the inclusion of different levels of organization, i.e. the individual, the family and the cultural context, are necessary to achieve comprehensive definitions of risk (Seifer & Sameroff, 1987). Empirical data support this argument. In reality, biological or psychosocial risk factors rarely act in isolation (Meyer-Probst, Rosier & Teichmann, 1983), and the simultaneous consideration of multiple stressors accounts for far more variance in outcomes than any one stressor considered individually (Masten, 1989; Meyer-Probst *et al.*, 1983; Rutter & Quinton, 1977; Sameroff *et al.*, 1987; Seifer & Sameroff, 1987).

In summary, the use of multiple indices is an approach to operationalizing risk that merits further examination in studying resilience. Although open to some methodological and conceptual questions, this strategy carries promise, since risk factors rarely operate in isolation in the real world. The simultaneous consideration of several indices may provide the most comprehensive assessment of the overall adversity experienced by a child in a high-risk situation.

Terminology in the Field: Varying Connotations of Pivotal Terms

In addressing the central question of “What promotes resilience?”, two broad strategies have been adopted. The first of these involves the search for interactive or buffering processes against risk. Such processes would be inferred, for example, if high-risk children with a particular attribute functioned considerably better than those without it, whereas among low-risk youngsters, the presence or absence of the attribute made, little, difference to their levels of competence (e.g. Fig. 1A or B). The alternative strategy to this interactive model has been to use a “main effects” model. Here, the question of interest is simply whether high-risk individuals with a particular attribute do better than those without it, regardless of whether the same functions are served among their low-risk counterparts (e.g. Fig. 1D).

It has been relatively recently that researchers have presented specific terminology associated with different models of resilience. Among the earliest and most cogent descriptions of resilience models are those provided by Garnezy *et al.* (1984), Masten and

colleagues (1988), and Rutter (1987). These investigators reserved the term “protective” for effects involving interactions between specific attributes and risk, and used the term “compensatory” to describe models involving main effects (Garmezy *et al.*, 1984).

In contrast with this trend, several contemporary investigators use the term “protective” to refer to direct ameliorative effects. For example, in the pioneering study on children in Hawaii, protective variables were not those involving interaction effects, but simply those differentiating high-functioning children at risk from those who developed serious problems (Werner & Smith, 1982, 1992). Similarly, in the Rochester Child Resilience Project, differences have been examined between high-risk children showing positive versus negative adjustment (Parker, Cowen, Work & Wyman, 1990; Wyman, Cowen, Work & Parker, 1991). The growing confusion around the term “protective factors” is reflected in recent reviews of the literature, in which the term is used interchangeably to discuss main effects models as well as those involving interactive processes (see Luthar & Zigler, 1991; Rolf, Masten, Cicchetti, Nuechterlein & Weintraub, 1990).

Even within the sphere of interaction effects, there is ambiguity. Rutter (1990) has discussed protective processes as those in which a variable affects outcomes when risk is high, but has no effect in the absence of the risk variable. The term protective, however, could reasonably be applied to each of the trends in Fig. 1(A–C), since in each case, high-risk individuals with the trait in question do better than those without the trait. Yet, these findings differ considerably in their implications, suggesting, for example, that a particular attribute helps maintain stability of performance across risk levels (Fig. 1(A)); helps children to “engage” with stress and thus augment their performance (Fig. 1(B)); or is generally an advantage, but much more so when stress levels are low (Fig. 1(C)). Similar ambiguities pertaining to the term “vulnerability process” have been discussed by Luthar and Zigler (1992).

Given the varied implications of different interactive trends in resilience research, it may be useful to incorporate more differentiated terms as descriptors. Attributes with direct ameliorative effects (Fig. 1(D)) might simply be labelled “protective”, as they are by many contemporary investigators. Such direct effects may be distinguished from more complex moderating processes with more descriptive labels for the latter, such as “protective-stabilizing” for trends in Fig. 1(A), “protective-enhancing” for patterns in Fig. 1(B), and “protective/reactive” for those in Fig. 1(C).

In summary, in current research, the terms “protective” and “vulnerability” processes are often used to connote what they intuitively suggest, i.e. direct effects of positive versus negative outcomes among individuals at risk. Given this trend, main effects might be distinguished from the more complex interactive processes with the use of more elaborated labels for the latter. Such terms with greater specificity could simultaneously indicate both the existence and directionality of important interactive processes in resilience.

Other researchers have raised issues similar to those discussed above, with regard to the need to make distinctions between variables providing direct protection and those involving interaction effects (e.g. Rolf & Johnson, 1990; Rutter, 1990). The need for greater precision in terminology goes beyond simple issues of semantics. All sciences are built upon

classifications that structure their domains of enquiry. Over the last few decades, resilience has been increasingly recognized as a distinct field of enquiry within developmental psychology. As with any emerging discipline, the development of specific terms for pivotal constructs—with clear operational definitions to ensure similar meanings for different professionals—are vital for heuristic purposes.

Interaction Effect Versus Main Effect Models of Resilience

Interactive models

Interactive processes have been described as being crucial in understanding protective mechanisms in resilience (Rutter, 1987; 1990). Although undoubtedly of great theoretical interest, these processes pose several difficulties in terms of their empirical investigation. Typically, statistically significant interaction effects are considered evidence of moderating mechanisms in the relationship between risk and adjustment (Luthar & Zigler, 1991). Interactive processes, however, may not necessarily be synonymous with interaction effects in multivariate analyses (Rutter, 1990). For instance, while a significant interaction effect indicates that the relationship between a predictor and outcome depends on the level of the second independent variable (or modifier), interactive processes may often concern the second independent variable rather than the outcome variable, e.g. by increasing the level of risk of the second predictor (Rutter, 1990).

Such cautions notwithstanding, at this time, researchers are generally forced to rely on statistically significant interaction effects to demonstrate buffering or moderating effects. The statistical complexities associated with such effects are many. First, interaction terms usually account for a relatively small proportion of the total explained variance in outcomes (Luthar & Zigler, 1991). Their small effect sizes indicate both the need for—and, unfortunately, the low likelihood of—replicating significant interaction effects.

While interaction effects may often not replicate across studies, still more disturbing are findings that they may show different results *within* the same sample depending on specific modeling decisions. For example, in multivariate analyses involving categorical data, results for interactions depend heavily on the absolute numbers in the different cells, and can vary depending on the particular statistical technique used (Rutter, 1983). Similarly, in the context of hierarchical regression analyses of multiple continuous variables, it has been demonstrated that the statistical significance of interaction terms can change depending on whether a single predictor—one with little relevance to the criterion—is included or excluded in the equation (Luthar, 1991b). Several other complexities around testing for interaction terms have been discussed at length in the literature (e.g. see Aiken & West, 1991; Cleary & Kessler, 1982; Cronbach, 1987; Lubinski & Humphreys, 1990; Shepperd, 1991).

Preceding discussions underscore the need for cautiousness in statistically analyzing interaction effects in resilience. Recommendations for exploring interaction effects using categorical data have been summarized by Rutter (1983), and include the need to use multiple statistical procedures such as weighted least-squares procedures and log-linear models. When analyses involve hierarchical regressions to analyse continuous data, a sound

theoretical rationale must be developed for the selection and ordering of variables in equations. Equations other than those decided upon *a priori* should be viewed in comparison to those theoretically derived. Finally, in any research design—involving continuous or categorical data—when interaction effects are found to be significant, replicative analyses are necessary before definitive conclusions can be made on their basis.

Main effect models

Although interaction effects provide potentially important information about buffering processes, the many complexities associated with their analyses have led some investigators to suggest using more parsimonious main effect models in predicting resilience (e.g. Wertlieb, Weigel & Feldstein, 1989). As indicated earlier, main effect models have, in fact, frequently been used by researchers in the area (Rolf *et al.*, 1990; Werner & Smith, 1992).

While addressing the broad issue of what makes for resilience, there is no reason to assume that main effect models are any less informative or useful than are interaction models. If, for example, intelligence were found to be related to competence among high-risk children, and was *also* related to (the generally higher) competence among low-risk controls, two main effects, and no interaction effect, would be found. The absence of an interaction effect should not detract in any way from the protective functions of intelligence among children in the high-risk situation.

In weighing the merits of main effect models and interactive models while studying resilience, it should be noted that the two strategies address different questions, each important. In essence, main effect models ask, “Among high-risk children, what distinguishes those who do well from those who do poorly?”, whereas interaction models pertain to specific moderating processes, asking, for example, “Which attributes are associated with differential competence levels at high, but not necessarily at low levels of risk?” When possible, the simultaneous exploration of both these sets of issues could provide the most complete understanding of the role of specific variables in childhood resilience.

Processes Underlying Moderator Effects

The need to examine underlying processes

A corollary to the fact that interaction effects can have widely differing trends is that there could be major differences in the types of *processes* underlying such effects. Rutter (1987; 1990) has repeatedly argued that researchers should discuss interaction effects not simply as protective “factors”, but should go further, attempting to understand the processes underlying the effects observed.

The importance of considering processes in interaction effects is illustrated with an example. Among inner-city adolescents, intelligence has been involved in trends comparable to those in Fig. 1(C), where bright youngsters showed greater declines in functioning at high versus low levels of life stress than did less intelligent youngsters (Luthar, 1991a). In terms of underlying mechanisms, these findings might reflect the greater sensitivity of intelligent youth to negative events in their lives. Alternatively, they might imply that bright inner-city

youth are more highly motivated to perform *well* at school under *benign* or conducive life conditions (e.g. low life stress). Support for the latter interpretation is seen in subsequent findings showing that like low life stress, other psychosocial assets, such as good impulse control or beliefs in the controllability of life events, are also associated with optimal academic performance among intelligent but not less intelligent youth (Luthar & Zigler, 1992).

The example discussed above illustrates that to speak of intelligence merely as being a protective or vulnerability factor is not very informative. An interactive trend may arise from any of several underlying mechanisms, that could vary widely in their implications for understanding childhood resilience. The discussion that follows briefly outlines additional research findings involving interaction effects, along with some speculations on underlying processes that merit further empirical study.

Intelligence among preadolescents—Among preadolescent children, intelligence has been found to be involved in protective effects such as those displayed in Fig. 1(A) (Masten *et al.*, 1988). In terms of underlying mechanisms, a high IQ may involve assets in terms of problem solving and coping, so that intelligent children may be better able to evaluate consequences of their behaviors, to delay gratification, and to contain impulses (Garmezy & Masten, 1991). Alternatively or additionally, IQ may be protective because of the benefits associated with academic achievements, given the emphasis on schooling in contemporary society (Masten *et al.*, in press).

Gender—Research by Rutter and Quinton (1984) has indicated that boys are more likely than are girls to react to parental discord with emotional/behavioral disturbances, implying that being female affords protection against family discord. Various mechanisms have been noted by Rutter (1990) that may account for these findings. Males may have a high biologically determined susceptibility to psychosocial hazards (paralleling their vulnerability to physical hazards). Their greater vulnerability may arise from their having witnessed parental arguments more often than daughters, or their placement in institutional care following parental separation more often than daughters. Boys may also be more susceptible to parental discord since they tend to react with disruptive behaviors rather than emotional distress, and elicit negative responses from adults more frequently than girls.

Locus of control—Several studies have shown buffering effects among children of internal locus of control, or the belief that events in one's life are determined by one's own efforts rather than by external forces (Luthar, 1991a; Murphy & Moriarty, 1976; Parker *et al.*, 1990; Werner & Smith, 1992). Such findings may reflect the tendency of externally directed individuals to react to negative events with greater feelings of helplessness and anxiety (Anderson, 1977; Lefcourt, 1976; Seligman, 1975), while perceptions of greater control may lead to lower experiences of stress among internally directed individuals (Averill, 1973; Cohen, 1980). Another possible explanatory mechanism relates to the use of supports under conditions of stress. Internals may differ from externals in the extent to which they actively seek social supports, in the kinds of support they receive, and in the interpretations of and responsiveness following supportive interactions (Sandler & Lakey, 1982).

Social skills—Among school-age children, interaction effects found between interpersonal awareness and life stress indicate that increasing stress was associated with decreasing competence, but only among children with low interpersonal awareness (Pellegrini, 1980). Among adolescents, two studies (Luthar, 1991a; Doernberger, 1992) have yielded trends involving social skills that are almost identical, parallel to those shown in Fig. 1(B). Remarkably, high-risk adolescents who were high on self-rated social skills had far better peer rated competence levels than even those low on risk. In terms of underlying processes, these trends may suggest varying degrees of investment in relationships. Under conditions of high life stress, youngsters who see themselves as socially skilled may often turn to their peer group for positive experiences. This high investment in relationships may be what is reflected in the very positive ratings they receive from their classmates (Luthar, 1991b).

Conclusions

While significant advances have been made in research on childhood resilience over the last few decades, several conceptual and methodological issues remain inadequately resolved. In the context of defining outcomes, labels implying “overall” resilience are of questionable value, since children at risk often show widely varying levels of success across different adjustment domains. In future research efforts, there is a need for greater specificity while discussing childhood resilience, with delineation of the particular domains of successful coping as well as those spheres in which many so-called “survivors” remain vulnerable.

With regard to defining risk variables in studies on resilience, understanding of underlying risk processes would be facilitated with the use of indices that are proximal and that can be understood in terms of underlying processes. An approach to defining risk that carries promise for resilience research involves the simultaneous consideration of multiple indices at the level of the individual, family and community. Although simple summated scores based on such strategies may be questioned on statistical or psychometric grounds, the value of further exploring their utility is reflected in their relatively high comprehensiveness as assessments of risk.

Research on childhood resilience has approached the issue of “protective factors” from two distinct perspectives, from the point of direct (or main) effects as opposed to moderating (or interaction) effects. These approaches each represent useful strategies to addressing the central question of what makes for childhood resilience. Given the rapid growth of this area of enquiry, however, there is currently a need to arrive at a consensus on the terminology used to define, and distinguish between, pivotal constructs within this field.

Finally, attempts to understand moderating effects in terms of underlying processes, rather than simply as protective or vulnerability factors, is vital to promote understanding of childhood resilience. Accumulating evidence in the field has indicated the need to move from asking simple queries such as “What makes for resilience,” to questions with far greater specificity, such as, “What are the types of processes via which a particular attribute might moderate the effects of risk, with reference to a specific aspect of competence?”

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Fig. 1.

Some models of the effects of risk and moderator variables on adjustment. (A) Protective-stabilizing effects; (B) Protective-enhancing effects; (C) Protective-reactive effects; and (D) Protective effects.