Published in final edited form as:
Child Dev. 2000 ; 71(3): 543–562.

The Construct of Resilience: A Critical Evaluation and Guidelines for Future Work

Suniya S. Luthar
Department of Human Development, Teachers College Box 133, Columbia University, 525 West 120th Street, New York, NY 10027-6696

Dante Cicchetti
Mt. Hope Family Center, University of Rochester, Rochester, NY

Bronwyn Becker
Teachers College, Columbia University, New York, NY.

Abstract

This paper presents a critical appraisal of resilience, a construct connoting the maintenance of positive adaptation by individuals despite experiences of significant adversity. As empirical research on resilience has burgeoned in recent years, criticisms have been levied at work in this area. These critiques have generally focused on ambiguities in definitions and central terminology; heterogeneity in risks experienced and competence achieved by individuals viewed as resilient; instability of the phenomenon of resilience; and concerns regarding the usefulness of resilience as a theoretical construct. We address each identified criticism in turn, proposing solutions for those we view as legitimate and clarifying misunderstandings surrounding those we believe to be less valid. We conclude that work on resilience possesses substantial potential for augmenting the understanding of processes affecting at-risk individuals. Realization of the potential embodied by this construct, however, will remain constrained without continued scientific attention to some of the serious conceptual and methodological pitfalls that have been noted by skeptics and proponents alike.

INTRODUCTION

Resilience refers to a *dynamic process encompassing positive adaptation within the context of significant adversity*. Implicit within this notion are two critical conditions: (1) exposure to significant threat or severe adversity; and (2) the achievement of positive adaptation despite major assaults on the developmental process (Garmezy, 1990;Luthar & Zigler, 1991;Masten, Best, & Garmezy, 1990;Rutter, 1990;Werner & Smith, 1982,1992).

In this article, we strive to critically evaluate the resilience literature, an exercise spurred by the recent proliferation of research on this construct along with growing scientific concerns about this body of work. Following the publication of early writings by major systematizers in the field (see, e.g., Anthony, 1974;Garmezy, 1971,1974;Murphy & Moriarty, 1976;Rutter, 1979;Werner, Bierman, & French, 1971;Werner & Smith, 1982), scholarly interest in resilience has surged (see, e.g., Cicchetti & Garmezy, 1993;Glantz & Johnson, 1999;Wang, Haertel, & Wahlberg, 1994). This burgeoning attention has been paralleled by growing concerns about the rigor of theory and research in the area (e.g., Cicchetti & Garmezy, 1993;Luthar, 1993;Luthar & Cushing, 1999), misgivings which have sometimes culminated in assertions that overall, this is a construct of dubious scientific value (see, e.g., Gordon & Wang,

Corresponding author: Suniya S. Luthar, Department of Human Development, Teachers College Box 133, Columbia University, 525 West 120th Street, New York, NY 10027-6696; e-mail: Suniya.Luthar@columbia.edu.

1994;Kaplan, 1999;Liddle, 1994;Tarter & Vanyukov, 1999;Tolan, 1996). The continued pursuit of research on resilience and the diversity of criticisms levied against the construct conjointly emphasize the value of carefully appraising the various concerns that have been articulated.

We begin this paper with a brief historical overview of the construct of resilience, from its inception to its portrayal in current psychological inquiry. We then consider major concerns that have been raised about this construct, which generally fall into four broad categories: (1) ambiguities in definitions and terminology, (2) variations in interdomain functioning and risk experiences among ostensibly resilient children, (3) instability in the phenomenon of resilience, and (4) theoretical concerns, including questions about the utility of resilience as a scientific construct. Within each of these areas, we address the identified criticisms, and, where legitimate, propose solutions for redressing problems that have been noted. Whenever we disagree with criticisms, we strive to elucidate factors that may have contributed to a misunderstanding of the issues. By addressing the valid concerns, clarifying misconceptions, and proposing recommendations for future work, we seek to enhance the quality of scientific investigations and theoretical conceptualizations on resilience in the context of adversity.

HISTORICAL CONTEXT

The investigation of factors that result in adaptive outcomes in the presence of adversity has a long and illustrious history, with the empirical literature on schizophrenia constituting a salient founding base (Masten et al., 1990). Early investigations of severely disordered patients were focused primarily on understanding maladaptive behavior, and the subset of patients who showed relatively adaptive patterns were considered atypical and afforded little attention. By the 1970s, researchers had discovered that schizophrenics with the least severe courses of illness were characterized by a premorbid history of relative competence at work, social relations, marriage, and capacity to fulfill responsibility (Garmezy, 1970;Zigler & Glick, 1986). Although resilience was not part of the descriptive picture of these atypical schizophrenics, these aspects of premorbid social competence might be viewed today as prognostic of relatively resilient trajectories.

In parallel fashion, studies of children of schizophrenic mothers played a crucial role in the emergence of childhood resilience as a major theoretical and empirical topic (Garmezy, 1974;Garmezy & Streitman, 1974;Masten et al., 1990). Evidence that many of these children thrived despite their high-risk status led to increasing empirical efforts to understand individual variations in response to adversity.

Following Emmy Werner's groundbreaking studies on children in Hawaii (Werner et al., 1971;Werner & Smith, 1977), research on resilience expanded to include multiple adverse conditions such as socioeconomic disadvantage and associated risks (Garmezy, 1991, 1995;Rutter, 1979;Werner & Smith, 1982,1992), parental mental illness (Masten & Coatsworth, 1995,1998), maltreatment (Beeghly & Cicchetti, 1994;Cicchetti & Rogosch, 1997;Cicchetti, Rogosch, Lynch, & Holt, 1993;Moran & Eckenrode, 1992), urban poverty and community violence (Luthar, 1999;Richters & Martinez, 1993), chronic illness (Wells & Schwebel, 1987), and catastrophic life events (O'Dougherty-Wright, Masten, Northwood, & Hubbard, 1997). The thrust of this research was a systematic search for protective forces, that is, those which differentiated children with healthy adaptation profiles from those who were comparatively less well adjusted.

Early efforts were primarily focused on personal qualities of “resilient children,” such as autonomy or high self-esteem (see Masten & Garmezy, 1985). As work in the area evolved, however, researchers increasingly acknowledged that resilience may often derive from factors external to the child. Subsequent research led to the delineation of three sets of factors

implicated in the development of resilience: (1) attributes of the children themselves, (2) aspects of their families, and (3) characteristics of their wider social environments (Masten & Garmezy, 1985;Werner & Smith, 1982,1992).

During the last two decades, the focus of empirical work also has shifted away from identifying protective factors to understanding underlying protective processes. Rather than simply studying which child, family, and environmental factors are involved in resilience, researchers are increasingly striving to understand *how* such factors may contribute to positive outcomes (Cowen et al., 1997;Luthar, 1999). Such attention to underlying mechanisms is viewed as essential for advancing theory and research in the field, as well as for designing appropriate prevention and intervention strategies for individuals facing adversity (Cicchetti & Toth, 1991,1992;Luthar, 1993;Masten et al., 1990;Rutter, 1990).

Finally, conceptions of resilience as absolute or global, as opposed to relative or circumscribed, also have changed over the years. In some early writings, those who did well despite multiple risks were labeled “invulnerable” (Anthony, 1974). This term was misleading because it implied that risk evasion was absolute and unchanging. As research evolved, it became clear that positive adaptation despite exposure to adversity involves a developmental progression, such that new vulnerabilities and/or strengths often emerge with changing life circumstances (Masten & Garmezy, 1985;Werner & Smith, 1982). Thus, the term “resilient,” which more accurately describes the relative as opposed to fixed nature of the concept, came to encompass those once referred to as “invulnerable.”

THE CONSTRUCT OF RESILIENCE: SCIENTIFIC CONCERNS AND CHALLENGES

In the following discussion, we address, in turn, various issues that have been singled out as potentially problematic aspects of the construct of resilience. We proffer explicit suggestions for redressing the valid concerns that have impeded progress in this field, and elucidate factors that might underlie those criticisms we believe are less well justified.

Variations in Definitions and Use of Terminology

1. The theoretical and research literature on resilience reflects little consensus about definitions, with substantial variations in operationalization and measurement of key constructs—Without question, resilience is variously defined in extant theoretical writings. Rutter (1987,1990), for example, has characterized resilience as the positive end of the distribution of developmental outcomes among individuals at high risk. Masten and her colleagues (Masten, 1994;Masten et al., 1990) have distinguished among three groups of resilient phenomena: those where (1) at-risk individuals show better-than-expected outcomes, (2) positive adaptation is maintained despite the occurrence of stressful experiences, and (3) there is a good recovery from trauma.

In empirical research, similarly, approaches taken to operationalizing resilience have varied across laboratories (see, e.g., Cicchetti & Garmezy, 1993;Gordon & Song, 1994;Kaufman, Cook, Arny, Jones, & Pittinsky, 1994;Luthar & Cushing, 1999;Stouthamer-Loeber et al., 1993;Tarter & Vanyukov, 1999;Tolan, 1996). To illustrate, adversity conditions examined have ranged from single stressful life experiences—such as exposure to war—to aggregates across multiple negative events (e.g., by means of life event checklists). Similarly, there has been substantial diversity in defining positive adjustment among individuals at risk. Some researchers have stipulated that to qualify for labels of resilience, at-risk children must excel in multiple adjustment domains (e.g., Tolan, 1996), whereas others have required excellence in one salient sphere with at least average performance in other areas (Luthar, 1991;Luthar,

Doernberger, & Zigler, 1993; see also Egeland & Farber, 1987;Radke-Yarrow & Sherman, 1990).

Resilience researchers have also conceptualized the connection between conditions of risk and manifest competence differently. Some have used personbased data analytic approaches, which entail identifying individuals with high adversity and high competence, and comparing them with others (e.g., low adversity, high competence). Other investigators have used variable-based analyses and relied on either main effect models or those involving interaction effects (see Luthar & Cushing, 1999, for a detailed review of measurement issues). This diversity in measurement has led some scholars to question whether resilience researchers are dealing with the same entity or with fundamentally different phenomena (Kaplan, 1999).

Although diverse empirical methods can admittedly lead to a medley of unrelated findings, it must be noted, too, that some variability in methods is essential to expand understanding of any scientific construct (Luthar, 1996). Consider, as an analogous case, the vast literature on parent–child relations. If one were told of new research evidence on "predictors of adequate parenting," a number of questions would inevitably arise, including, "Adequate parenting in terms of which dimensions? Parental attitudes or parental behaviors? If the latter, is the reference to nurturance, discipline, communication styles, or some combination of these? What ethnic group is involved, and who are the respondents?" Depending on the answers to each of these queries, the conclusions deriving from the research could differ substantially.

Returning to the controversy under consideration, it is clearly untenable to argue that the diversity in defining or measuring positive parenting, in itself, diminishes the literature on this construct. To the contrary, this very diversity is essential for establishing the validity of discrete parenting domains. If different studies with diverse methods yielded largely consonant findings on particular aspects of parenting, it would be reasonable to infer that they each tapped into the same broad scientific construct (cf. Cronbach & Meehl, 1955).

Considering such evidence of construct validity for the existence of a hypothetical concept (Carnap, 1950;Meehl, 1977;Pap, 1953), research in the area of resilience appears to be in good standing. Reviews of the relatively small though burgeoning literature (see, e.g., Cicchetti & Garmezy, 1993;Luthar & Zigler, 1991;Masten et al., 1990;Masten & Coatsworth, 1995, 1998;Rutter, 1990;Werner, 1990,1995) have indicated synchronous evidence regarding many correlates of resilience (protective factors) across multiple studies that have used varying measurement strategies. Themes that recur across studies include the importance of close relations with supportive adults, effective schools, and connections with competent, prosocial adults in the wider community.

This said, we believe that in future research, concerted attention must be given both to selecting and justifying strategies used to operationalize pivotal constructs. Definitional diversity can result not only in varying conclusions regarding risk and protective processes but also in disparate estimates of rates of resilience among similar risk groups (Cicchetti & Rogosch, 1997;Kaufman et al., 1994;Luthar & Cushing, 1999). In the absence of any universally employed operationalization of resilience, researchers must clearly explicate the approaches they select to define both adversity and competence and provide cogent justifications for choices made on both conceptual and empirical grounds (also see discussions later in this article on the multidimensional nature of resilience).

Furthermore, as empirical evidence on resilience accumulates, scholars need to consolidate findings periodically, identifying themes that recur across methodologically diverse studies as opposed to those identified in relatively few instances (cf. Luthar, 1999). Such diversity is essential in allowing the derivation of testable theoretical postulates that imply breadth of

applicability across disparate at-risk samples and methods, as opposed to those that suggest relative specificity in application.

2. Discrepancies also exist in conceptualizations of resilience as a personal trait versus a dynamic process. Researchers use the term interchangeably to refer to each of these—Confusion regarding the issue of trait versus process derives, in part, from the influential literature on ego-resiliency, a construct developed by Jeanne and Jack Block (1980) that refers to a personal characteristic of the individual. Ego resiliency encompasses a set of traits reflecting general resourcefulness and sturdiness of character, and flexibility of functioning in response to varying environmental circumstances. Illustrative descriptors on the California Q-sort measure (Block, 1969) include, “engaged with the world but not subservient to it,” and “integrated performance under stress.”

Although adversity of some kind actually may have been experienced by a child labeled as ego-resilient, by definition, one cannot necessarily assume that this is true. In contrast, when the term resilience is used to refer to a process, the experience of significant adversity is a given. Thus, the terms ego-resiliency and resilience differ on two major dimensions (Luthar, 1996). Ego-resiliency is a personality characteristic of the individual, whereas resilience is a dynamic developmental process.[1] Second, ego-resiliency does not presuppose exposure to substantial adversity, whereas resilience, by definition, does.

Commenting on issues of terminology, Masten (1994) recommended that the term resilience be used exclusively when referring to the maintenance of positive adjustment under challenging life conditions. Masten cautioned against the use of the term “resiliency” in such situations because this term carries the connotation of a personality trait. Any scientific representation of resilience as a personal attribute can inadvertently pave the way for perceptions that some individuals simply do not “have what it takes” to overcome adversity. Besides being misinformed and unwarranted, such perspectives do little to illuminate processes underlying resilience or to guide the design of appropriate interventions (Masten et al., 1990;Reynolds, 1998;Tarter & Vanyukov, 1999).

Additional confusion between process versus trait may derive from the occasional use of the term “resilient children,” even by scholars who conceptualize resilience as a dynamic process (e.g., Masten et al., 1990;Rutter, 1993;Werner, 1984). Note, however, that the phrase “resilient children” does not imply reference to a discrete personal attribute, akin to intelligence or empathy. Rather, it is used to refer to the two coexisting conditions of resilience—the presence of threat to a given child's well-being and evidence of positive adaptation in this child, despite the adversity encountered (cf. Richters & Weintraub, 1990; see also Luthar, 1993;Luthar & Cushing, 1999). Allusions to resilient youth are thus most accurately interpreted as implying a two-dimensional characterization that encompasses aspects of children's life circumstances (as might terms such as “impoverished” or “maltreated” children), *and* evidence of positive adaptation among these children, across one or more domains of functioning.

In future research efforts, it is imperative that investigators exercise caution in their use of terminology, with clear indication when their work is focused on a process and not a personality trait. We concur with and underscore Masten's (1994) recommendation that competence despite adversity be referred to by the term “resilience” and never “resiliency,” which carries the misleading connotation of a discrete personal attribute.

[1]In point of fact, the trait of ego-resiliency may often be implicated in the process of resilience, serving substantial protective functions among individuals facing adversity (see Block, 1993;Cicchetti & Rogosch, 1997;Cicchetti, Rogosch, Lynch, & Holt, 1993).

3. There also is little consensus around central terms used within models of resilience. Researchers use terms such as "protective" or "vulnerability" factors in varied and inconsistent ways—Undoubtedly, this is a problem: A range of inconsistencies has been noted in the use of pivotal terms (Luthar, 1993;Luthar & Cushing, 1999). In the earliest and most cogent descriptions of models of resilience (Garmezy, Masten, & Tellegen, 1984;Masten et al., 1988;Rutter, 1987), the term "protective" was reserved for effects involving interactions, wherein individuals with a particular attribute, but not those without it, were relatively unaffected by high versus low levels of adversity. By contrast, several researchers use the term "protective" to refer to direct ameliorative effects. In Werner and Smith's research (1982,1992), for example, protective variables were simply those that distinguished high-functioning children at risk from those who developed serious problems. Similar usage of the term is evident in reports from the Rochester Child Resilience Project (Cowen, Work, & Wyman, 1997;Parker, Cowen, Work & Wyman, 1990;Wyman, Cowen, Work, & Kerley, 1993;Wyman, Cowen, Work, & Parker, 1991). Enduring confusion around the term "protective factors" is also reflected in literature reviews, in which the term is used interchangeably to discuss main effects models and those involving interactive processes (see Haggerty, Sherrod, Garmezy, & Rutter, 1994;Luthar & Zigler, 1991;Rolf, Masten, Cicchetti, Nuechterlein, & Weintraub, 1990).

To reduce the equivocality in connotations of central terms in resilience research, Luthar (1993) has argued for the incorporation of more differentiated terms to label salient processes. Attributes with direct ameliorative effects—operating at both high- and low-risk conditions (see Figure 1A)—might simply be labeled "protective" as they are by many contemporary investigators. Such direct effects may be distinguished from interactive or moderating processes by using more specific labels for the latter, such as "protective-*stabilizing*" (when the attribute in question confers stability in competence despite increasing risk, Figure 1B); "protective-*enhancing*" (when it allows children to "engage" with stress such that their competence is augmented with increasing risk, Figure 1C); or "protective but *reactive*" (when the attribute generally confers advantages but less so when stress levels are high than low, Figure 1D).

Similar suffixes can be employed for findings on vulnerability effects, that is, those where individuals with the attribute manifest greater maladjustment, overall, than those without it. To illustrate, "vulnerable-*stable*" could describe findings where the general disadvantage of individuals with the attribute remained stable despite changing levels of stress (Figure 1E) and "vulnerable and *reactive*" when the overall disadvantage linked with the attribute was heightened with increasing levels of stress (Figure 1F).

In future research, it would be useful to strive for greater congruence between the intuitive connotations of central terms and the patterns to which they are used to refer. The terms "protective" and "vulnerability" process might be used when overall effects on at-risk children's adjustment are positive versus negative in direction, respectively. Main effects can be distinguished from the more complex interactive processes through the use of more elaborated labels for the latter, which simultaneously indicate both the existence and directionality of interactive processes in resilience.

In closing our discussion on this issue, we reiterate that the need for greater precision in terminology goes well beyond issues of semantics (Luthar, 1993). All sciences are built upon classifications that structure their domains of inquiry. Although resilience has been increasingly recognized as a distinct domain of inquiry (Cicchetti, 1989,1993;Masten et al., 1990), its continued vitality and impact necessitate concerted efforts to reach consensus on pivotal terms within major models (Rolf & Johnson, 1990;Rutter, 1990). Achieving this goal

is essential for the ultimate derivation of operational criteria which can be interpreted unambiguously by the array of scientists and clinicians who pursue work in this area (Seifer, 1995).

The Multidimensional Nature of Resilience

1. The multidimensional nature of resilience, exemplified by findings that some high-risk children manifest competence in some domains but exhibit problems in other areas, has led some scientists to question the veridicality of the construct—At-risk children who are labeled as resilient on the basis of particular competence criteria can reflect considerable heterogeneity in functioning across other adjustment domains. Among children with histories of maltreatment, for example, Kaufman et al. (1994) found that almost two thirds were academically resilient, yet only 21% manifested resilience in the domain of social competence. Similarly, studies have shown that among adolescents who experienced significant adversities, those who overtly reflect successful adaptation often struggle with covert psychological difficulties, such as problems of depression and posttraumatic stress disorder (see, e.g., Luthar, 1991;Luthar et al., 1993;O'Dougherty-Wright et al., 1997). Evidence of such variations across domains has led some scientists to question whether resilience is a veridical construct as opposed to a mythical entity (Fischer et al., 1987;Liddle, 1994;Tolan, 1996).

In studies of resilience, we believe that there should undoubtedly be some uniformity across *theoretically similar* adjustment domains, but not across those that are conceptually distinct (Luthar, 1996,1998). Thus, for example, if a subset of at-risk children seem resilient on the basis of high academic grades, then they should also reflect positive adaptation on persevering classroom behaviors as perceived by others. On the other hand, it is unrealistic to except any group of individuals to exhibit consistently positive or negative adjustment across multiple domains that are conceptually unrelated, for even trajectories of "normally" developing children do not reflect a uniform progression of diverse cognitive, behavioral, and emotional capacities (e.g., Fischer, 1980;Fischer & Bidell, 1998). Unevenness in functioning across domains is a common occurrence in the process of ontogenesis (Cicchetti, 1993;Cicchetti & Toth, 1998a), such that a range of developmental outcomes is inevitably constructed within normal, abnormal, *and* resilient trajectories.

Whereas evidence of uneven functioning across different domains does not in itself invalidate resilience as a construct, it does carry a critical message for researchers—the need for specificity in discussing resilient outcomes is pressing. In describing their findings, investigators must specify the particular spheres to which their data apply and must clarify that success in these domains by no means implies positive adaptation across all important areas (Cicchetti & Garmezy, 1993;Luthar, 1993). Encouragingly, researchers are increasingly using circumscribed terms such as "educational resilience" (Wang et al., 1994), "emotional resilience" (Kline & Short, 1991), and "behavioral resilience" (Carpentieri, Mulhern, Douglas, Hanna, & Fairdough, 1993), thereby bringing greater precision to terminology commonly used in the literature.

2. Inclusion of diverse adaptation domains, and evidence of inconsistencies across these, also greatly complicates the process of delineating "optimal" indicators of resilience within individual studies—Recognizing the notion of multifinality in developmental processes (Cicchetti & Rogosch, 1996), resilience researchers typically consider multiple theoretically important domains in operationalizing "positive adaptation." A common strategy is to include several stage-salient tasks on which, if successful, the child would be viewed as having met societal expectations associated with that life stage

(Cicchetti & Schneider-Rosen, 1986;Havighurst, 1952;Masten & Coatsworth, 1998;Sroufe & Rutter, 1984). Among at-risk toddlers, for example, indicators of resilience might include behaviors reflecting secure attachments to their caregivers and the development of an autonomous self (Sroufe, Egeland, & Kreutzer, 1990). For school-age children, appropriate indicators would be academic success and positive relationships with peers as well as adults (Masten et al., 1995).

When multiple outcomes are assessed, a critical question to be considered is whether these should be examined separately or somehow integrated, and decisions in this regard must be based on the conceptual distinctness of the domains in question. If the outcomes assessed represent largely discrete constructs, it is best to examine them separately. To illustrate, there is accumulating evidence that among innercity youth, resilience as indexed by conventionally conforming behaviors (e.g., academic striving) may have little to do with resilience as indicated by peer acceptance; in point of fact, the two may sometimes run counter to each other (Coie & Jacobs, 1993;Luthar, 1995;Luthar & McMahon, 1996;Seidman, Allen, Aber, Mitchell, & Feinman, 1994). In such instances, it is most meaningful to examine vulnerability and protective processes separately for major outcomes and to discuss findings in terms of the particular domain under consideration.

A related question that arises when multiple outcomes are considered separately is whether some of these should be accorded more importance than others as the most “critical” indicators of resilience. Again, researchers' decisions must be guided by the nature of the risk under study. In situations where the adversity condition confers particularly high risk for some important outcomes, giving these priority over others is logical (Luthar, 1993). To illustrate, in the case of adolescents at high familial risk for antisocial personality disorder, socially conforming behaviors might be targeted as a primary domain. Evidence of their scholastic excellence (although undoubtedly important) would be comparatively less central in ascertaining the degree to which major risks were overcome. Among those at risk for developing a mood disorder, the primary focus might be on the achievement of emotional self-regulation and the evasion of significant internalizing problems (Cicchetti & Toth, 1998b). Again, whether the child is among the most popular students in the class would be comparatively lower on the hierarchy of outcomes in identifying resilient trajectories.

In many instances, however, no single area may be more likely than others to be affected by the risk in question. If this is so, multiple outcomes—all conceptually critical—can be accorded equivalent salience and either considered separately or integrated into a composite, if doing this is theoretically justified. The latter strategy is exemplified in the Zigler–Phillips Social Competence Index (Zigler & Glick, 1986), which involves composites based on several theoretically interlinked areas of adult functioning including occupational, educational, and marital history. Composite constructs such as these have also been profitably examined in research on childhood resilience, with incorporation of multimethod, multiinformant strategies of assessment (e.g., Pianta, Egeland, & Sroufe, 1990;Richters & Martinez, 1993).

A final question with regard to competence criteria is whether labels of resilience should necessitate excellent versus average levels of competence, and here yet again, choices must be conceptually guided by the nature of the risk studied. When the stressor entails severe to catastrophic events (e.g., see Gest, Reed, & Masten, 1999;Masten et al., 1999), the maintenance of near-average functioning should suffice. On the other hand, when risks experienced generally fall in the more moderate range (e.g., see Luthar, 1991), evidence of superior functioning in conceptually important domains may be required to justify labels of resilience.

In summary, there is undoubtedly an array of possible ways to define positive adaptation when studying resilience. Conceptual considerations must guide decisions regarding whether (1) some outcome domains are given priority over others, (2) multiple domains are combined or considered separately, and (3) criteria for resilience stipulate excellent versus adequate functioning. In future research, it is vital that resilience investigators ensure high fidelity between the theoretical underpinnings of their work and the specific criteria they select to operationalize "successful adaptation" within particular at-risk samples.

The Robustness of Evidence on Resilience

1. The construct of resilience presupposes exposure to significant risks. Given uncertainties in risk measurement, however, it is difficult to determine whether, in a given study, all individuals viewed as resilient experienced comparable levels of adversity—Two salient issues have been raised in this regard: (1) the concept of statistical risk versus actual risk (Richters & Weintraub, 1990); and (2) subjective versus "objective" ratings of risk (Bartlett, 1994;Gordon & Song, 1994). Concerns regarding statistical versus actual risk stem from the widespread practice in resilience research of treating a particular index as reflecting adversity if it shows significant statistical associations with child maladjustment (Masten et al., 1990;Richters & Weintraub, 1990). Even in instances where overall correlations have been established between exposure to the risk and poor outcomes among children, questions remain about the specific life circumstances of different individuals in a particular sample (Cicchetti & Garmezy, 1993;Kaplan, 1999;Masten, 1994).

Interpretive dilemmas in this regard are illustrated by using research findings on children of drug abusers, a group at high statistical risk for psychopathology. Among offspring of mothers addicted to cocaine or opioids, 65% of the children have been found to have a major psychiatric disorder (Luthar, Cushing, Merikangas, & Rounsaville, 1998). Although the 35% of disorder-free children might be seen as "resilient," it is possible too that their family milieus were relatively healthy, as a result, for example, of high support from extended family (e.g., Rutter, 1990). Suggestions such as these lead to questions of whether all children in ostensibly high-risk contexts are really at risk, or, alternatively, whether some well-functioning children may not be resilient at all but may actually have faced low proximal risk (Baldwin, Baldwin, & Cole, 1990;Richters & Weintraub, 1990).

Individual differences in proximal processes do not necessarily invalidate resilience research that is based on global or distal risk indices (Luthar, 1993;Luthar & Cushing, 1999). Returning to the previously noted findings on addicts' offspring, the 65%–35% split indicates that considering a delimited risk factor—parental drug abuse—the odds are about six in ten that a particular child will develop a psychiatric disorder. Admittedly, an unusually well-functioning mother in one family, or the presence of a nurturing grandparent in another, may buffer the child against the risk. This, however, is precisely what the search for protective factors is about, that is, the location of a set of processes that distinguish a substantial proportion of the healthy children from the maladjusted ones (Gest, Neemann, Hubbard, Masten, & Tellegen, 1993). Therefore, whereas the label "resilient" may sometimes be more appropriate for protective families than the healthy children within them (see Baldwin et al., 1990), the fact remains that because the likelihood is high that drug abusers' children will develop psychopathology, there is value in examining what differentiates relatively well-functioning youth from those who fare less positively.

Probabilistic evidence on global risks also serves the useful function of directing the scientific study of salient risk mechanisms. Even though risk markers themselves do not cause negative outcomes, they are valuable in terms of signaling potential processes that do causally affect outcomes (Cichetti & Rogosch, in press; O'Connor & Rutter, 1996). Knowledge that particular

risk factors are linked with high probability of maladjustment has spawned several productive efforts to elucidate proximal processes or mechanisms by which distal risk factors confer vulnerability on affected children (e.g., Baldwin et al., 1993;Cicchetti & Lynch, 1993;Richters & Martinez, 1993).

Regarding the issue of subjective perceptions of risk in resilience research, Gordon and Song (1994) note that the meaning of a particular adverse event to the individual experiencing it can differ substantially from that of the resilience researcher (Bartlett, 1994). Some individuals may see themselves as being relatively well off, even though scientists may define their life circumstances as being highly stressful.

Concerns about subjective ratings are ubiquitous in psychological research and are not unique to studies of resilience. For example, substantial evidence suggests that ratings of parent–child relationships, or of peer relationships, vary considerably depending on whose reports they are based on: a parent's, the target child's, or an “objective” observer's (Achenbach, McConaughy, & Howell, 1987;Hart, Lahey, Loeber, & Hanson, 1994;Kazdin, 1990;Reynolds & Graves, 1989;Rothbaum & Weisz, 1994;Weisz et al., 1988). Moreover, it is clear that none of these reports necessarily captures “the truth” any more than do others. In fact, there are usually important lessons to be learned by contrasting findings based on different raters (Achenbach, 1993;Voelker, Shore, Hakim-Larson, & Bruner, 1997).

Also relevant vis-à-vis concerns about subjective perceptions is the capacity of “objectively determined” risk status in itself to allow the identification of salient protective factors (O'Connor and Rutter, 1996). If most children perceived a specific event as noxious but a subset subjectively perceived it as relatively neutral, data for the second group could be critical in illuminating protective forces. Once again, the researchers' task would be to determine why these youngsters differed from the norm in perceiving the event as benign. Were they generally more optimistic than others, for example, as a result of easygoing temperaments? Alternatively, did religious faith help them feel buffered from the adversity they had experienced?

In summary, uncertainties regarding proximal risks in the lives of individual children, or dissonance between children's subjective perceptions and “objective” ratings, do not automatically fault resilience research that is based on probabilistic associations involving risk indices. Once researchers have determined that the odds of maladjustment are high in the presence of a certain risk, it is entirely logical—indeed, worthwhile—to try to determine the factors associated with relatively positive child outcomes, as well as to examine the proximal processes by which the distal risk marker confers vulnerability on affected groups of children.

2. Research findings on resilience may often be unstable. Statistical findings obtained from the tails of continua are always unstable because they involve smaller numbers, and in the case of resilience, researchers deal with not one but two tails of continua — that is, high adversity and high competence—Two major issues must be considered in weighing concerns about the instability of statistical findings on resilience (see Fisher et al., 1987;Gordon, Rollock, & Miller, 1990;Kaufman et al., 1994;Tolan, 1996). First, the number of individuals one is dealing with depends in large part on the criteria used to define high adversity and high competence in a particular study (Cicchetti & Rogosch, 1997;Fischer et al., 1987). If relatively stringent criteria are used (e.g., plus one standard deviation on both adversity and competence), then, admittedly, the researcher can end up with a small number of resilient individuals (see Luthar & Cushing, 1999).

On the other hand, when competence criteria are operationalized less stringently—and appropriately so, when dealing with extremely harsh life adversities (cf. Gest et al., 1999)—

the number of resilient children in a particular sample could be far from trivial (Cicchetti & Rogosch, 1997). Consider, for example, an investigation involving 100 adolescent offspring of drug abusing parents, many of whom experience exposure to rampant crime and violence in their neighborhoods, chronic poverty, and, often, serious parental psychopathology. For these youngsters, an appropriate criterion for positive outcomes (resilience) might simply be the evasion of serious externalizing psychopathology. If this criterion were used, then one could expect at least half the sample to be classified as resilient on the basis of evidence that by midadolescence, less than 40% of addicted mothers' children have developed lifetime diagnoses of either oppositional defiant or conduct disorders (e.g., Luthar & Cushing, 1998; Luthar et al., 1998).

Even assuming, for the moment, that only a small number of children will meet the stipulated criteria for resilience, this in itself cannot negate the value of studying the construct. Myriad examples in the literature reflect years of productive scientific effort focused on groups that are, in any absolute terms, small in size (e.g., autism, Down syndrome, manic depressive illness, physical abuse, schizophrenia, and so on). Thus, limits in absolute numbers, per se, do not provide a strong rationale for concluding that resilience is a construct unworthy of scientific study.

Previously noted issues presuppose person-based analytic approaches; the alternative strategy —where resilience is viewed as a continuous variable—presents a different set of complications with regard to instability in research results. As indicated earlier, studies using variable-based approaches rely on either main effect or interaction effect associations to detect protective factors. When findings rest on main effect associations, they can be relatively robust, with effect sizes for individual protective factors being as high as 10%–20% (Conrad & Hammen, 1993; Garmezy et al., 1994; Luthar, 1991;Morison & Masten, 1991;Pellegrini, Masten, Garmezy, & Ferrarese, 1987;Wyman et al., 1993). However, when studies require interaction effects to infer a protective or “buffering” process in resilience, effect sizes are small (often 2%–5%) and the findings, consequently, tend to be unstable (Luthar, 1993). This fact has led many researchers to caution against undue reliance on interaction effects in trying to understand factors linked with resilience (Luthar & Cushing, 1999;Rutter, 1983;Wertlieb, Weigel, & Feldstein, 1989). Although interaction effect models capture a conceptually interesting subgroup of resilience phenomena, these more complicated models are open to several difficulties linked with statistical testing.

In summary, research findings on resilience are not inevitably unstable because they involve small samples. In any study, the number of individuals classified as resilient will depend on the criteria used to define high stress and high competence. Moreover, a low frequency of occurrence should not disqualify any phenomenon from being the focus of scientific inquiry. In variable-based research in which resilience is rated as a continuum, main-effect findings of protective influences are likely to be more robust than are the often more conceptually intriguing ones involving interactive effects.

3. There can be considerable ontogenetic instability in the phenomenon of resilience, for individuals at high risk rarely maintain consistently positive adjustment over the long term—Some researchers have argued that resilience is of tenuous scientific utility because this phenomenon reflects ontogenetic instability. Although some at-risk children excel at a particular point in time, many falter subsequently and manifest substantial deterioration in their levels of adaptation (Coie et al., 1993;Kaplan, 1999;Tarter & Vanyukov, 1999;Tolan, 1996).

There is no question that all individuals—resilient or otherwise—show fluctuations over time within particular adjustment domains. However, there is increasing evidence that, overall, at-risk children who excel in critical domains continue to reflect generally positive adaptational profiles over time. Werner's (1994,1995) longitudinal research has shown that across a period of over 30 years, most children who were labeled as resilient maintained high functioning in everyday life. Egeland, Carlson, & Sroufe (1993) have shown that among at-risk children, positive adaptation during infancy and toddlerhood is related to competent functioning during the elementary school years. Cowen et al. (1997) found stability in adjustment levels in highly stressed inner-city children, even in the face of continued stress over a period of 1 to 2 years. More recently, Masten and colleagues (1999) presented evidence on longitudinal pathways to resilience from childhood to late adolescence. Results of these diverse investigations indicate that resilience is not necessarily a transient or ephemeral phenomenon (Luthar, 1998).

This collective evidence notwithstanding, it must be emphasized that empirical attentiveness to ontogenetic fluctuations is critical, for resilience is clearly not a static state (Cicchetti et al., 1993;Coie et al., 1993;Egeland et al., 1993). As Garmezy (1990) has emphasized, short- and long-term longitudinal research on resilience provides critical opportunities to record changes in life-span developmental pathways—including the emergence of new vulnerabilities, strengths, or both at each period of the life course—which permits further validation of the dynamic nature of the construct of resilience (Gest et al., 1993;Rutter, 1990). Optimally, such studies should include measurement of all competence domains investigated on at least three or more occasions, with assessments spaced far enough in time to enable the hypothesized protective factors to exert their effects. Furthermore, such studies should be designed such that they permit the use of both person-oriented and variable-oriented statistical procedures, as these approaches often yield substantively different sets of insights and conclusions (Bergman & Magnusson, 1997;Cicchetti & Rogosch, 1996;Luthar & Cushing, 1999).

Theoretical Concerns

1. Progress in the area of resilience will remain seriously constrained as long as studies remain largely empirically driven as opposed to theoretically based, with little conceptual recognition of the importance of multiple contexts in children's development—We concur with Rigsby's (1994, p. 91) assertion that accumulation of "… more correlates of resilience and failure will not be helpful if it is done outside the context of serious theory building in human development." We likewise agree with Kaplan (1999, p. 75) that a powerful theoretical framework would be one that consists "… of variables that are distantly related to the outcome, variables that are the result of those distantly related variables and that are more closely related to the outcomes, and variables that moderate the effects of the variables that are more distally or proximally related to the outcome variable of interest."

At the same time, we do not believe that existing studies on resilience have inadequate bases in theory or that they lack conceptual recognition of transactions involving contexts of development (see Kaplan, 1999;Tolan, 1996). In point of fact, three major frameworks have guided much of the extant research, common across which are emphases on multiple levels of influence on the children's adjustment and on reciprocal associations among these diverse influences and the child's adjustment status across different spheres.

The first of these guiding perspectives is that identified by Garmezy (1985) and Werner and Smith (1982,1992), in which salient protective and vulnerability processes affecting at-risk children are viewed as operating at three broad levels. These include influences at the level of the community (e.g., neighborhoods and social supports), the family (e.g., parental warmth or maltreatment), and the child (e.g., traits such as intelligence or social skillfulness). This

triarchic framework has served to organize much research on resilience (e.g., Cowen et al., 1997;Fergusson, Horwood, & Lynskey, 1994;Fergusson & Lynskey, 1996;Luthar, 1999;Masten et al., 1988;Seifer, Sameroff, Baldwin, & Baldwin, 1992;Wyman et al., 1991).

A second set of guiding perspectives consists of those focused on transactions between the ecological context and the developing child, such as Bronfenbrenner's (1977) ecological theory, Sameroff and Chandler's (1975) transactional perspective, and Cicchetti and Lynch's (1993) integrative ecological-transactional model of development. In the ecological-transactional model, contexts (such as culture, neighborhood, family) are conceptualized as consisting of a number of nested levels varying in proximity to the individual. These levels transact with each other over time in shaping ontogenic development and adaptation. Such theoretical accounts, in which contextual surrounds and transactional interchanges are emphasized, have formed the conceptual bases for resilience research involving diverse risks including family poverty, experiences of maltreatment, and others (Baldwin et al., 1993;Cicchetti & Lynch, 1993;Cicchetti et al., 1993;Connell, Spencer, & Aber, 1994;Crittenden, 1985;Leadbeder & Bishop, 1994).

A third pertinent theory is the structural-organizational perspective (Cicchetti & Schneider-Rosen, 1986;Sroufe, 1979), central to which is the belief that there are generally continuity and coherence in the unfolding of competence over time. Although distal historical factors and current influences are both viewed as important to the process of development, active individual choice and self-organization are believed to exert critical influences on development (Cicchetti & Tucker, 1994). Again, a number of resilience researchers have adopted the organizational perspective as their guiding theoretical approach (e.g., Cicchetti & Rogosch, 1997;Cicchetti et al., 1993;Egeland et al., 1993;Egeland & Farber, 1987;Luthar, 1995;Luthar & Suchman, 2000;Gest et al., 1993;Masten et al., 1995,1999;Wyman et al., 1993).

The preceding discussions might elicit objections among some that the theories enumerated are not unique to resilience; although clearly true, we do not view this issue as constituting a problem. Many fundamental developmental processes operate in similar ways among low- and high-risk children (Graham & Hoehn, 1995;Graham & Hudley, 1994;Luthar, 1999), so that attempting to derive theories that would apply only to “poor children” or at-risk families is unnecessary (or even unwise; Garcia Coll et al., 1996).

What *is* critical, on the other hand, is that when broad developmental theories are brought to bear in resilience research, they are specifically expanded to consider features that are prominent within the particular adversity circumstance under study (Luthar, 1999). Such theory-extension efforts are well exemplified in an integrative model for studying minority youth, presented by Garcia-Coll et al. (1996). Anchored within social stratification theory, this model posits that eight major constructs affect the development of minority children: *social position* variables (e.g., race, gender); *racism* and discrimination; *segregation* (residential and psychological); *promoting/inhibiting environments* (e.g., school and health care); *adaptive culture* (traditions and legacies); *child characteristics* such as age or temperament; *family values* and beliefs; and children's *developmental competencies*. The attractiveness of this model lies both in the centrality accorded to several constructs that are salient in and often unique to the lives of minority youth, as well as in the clear specification of paths of influence, which in turn yields theoretical hypotheses amenable to testing in research.

In sum, future empirical studies on resilience must be presented within cogent theoretical frameworks. Additionally, when existing developmental theories are applied in studying resilience, there needs to be explicit conceptual consideration of how interrelations among the

matrix of constructs examined may be affected by the nature of the specific adversity condition under study.

2. Some scholars who advocate for scientific parsimony contend that the notion of resilience adds nothing to the more general term "positive adjustment" and argue that the focus on resilience does not augment developmental theory— Although we concur that resilience and the broader construct of positive adjustment overlap (see, e.g., Tarter & Vanyukov, 1999), we believe that there is considerable value in retaining resilience as a distinct construct. The notion of resilience represents a helpful heuristic in developmental science, for it provides a framework for thinking about development that differs from many classical theories (Luthar, 1996). Through specifying the achievement of positive adjustment in the face of significant adversity, resilience encapsulates the view that adaptation can occur through trajectories that defy "normative" expectations (cf. Cicchetti, 1996).

A second reason for retaining the conceptual distinctiveness of resilience lies in evidence that positive adjustment patterns occurring with, versus without, conditions of adversity often have different correlates and thus reflect distinct constructs (Luthar, 1998,1999). Several studies have indicated varying antecedents of resilience as compared with positive adjustment in general (cf. Rutter, 1990). To illustrate, Dubois and colleagues found that the salutary effects of support from school staff were more pronounced among poor youth than others, which suggests that for children facing multiple adversities, the relative dearth of positive experiences outside school may render those that occur within school even more salient (DuBois, Felner, Brand, Adan, & Evans, 1992;DuBois, Felner, Meares, & Krier, 1994). Similarly, differing antecedents of resilience have been found among maltreated versus nonmaltreated disadvantaged children (Cicchetti & Rogosch, 1997). Relationship factors were significant predictors among the latter but not the former, which probably reflects the relative salience of seriously disturbed parent–child relationships in the lives of the maltreated youngsters (Cicchetti & Toth, 1995).

The preceding illustrations presume interactive effects in resilience research; however, how should main effect findings on protective factors be handled? If high- and low-risk groups were each helped by informal social supports, for example (see Dubow & Tisak, 1989;Pryor-Brown & Cowen, 1989;Sandler & Barrera, 1984), should this evidence not be viewed as a subset of data on general positive adjustment, rather than as a subset of evidence on resilience?

Whereas discussing such findings as correlates of "positive adjustment" may be scientifically parsimonious in some ways, retaining resilience as a distinct notion serves parsimony in other respects: Doing so excludes from consideration a sizable body of evidence of questionable relevance. Most existing evidence on developmental processes is based on work with middle-class, white samples (Graham, 1992; Spencer, 1988). Some of these results may be of little relevance for investigators interested in resilience, for many forces that are powerful in benign life circumstances can lose their relative salience in the context of serious external stressors. To illustrate, maternal perceptions of behavior problems in children seem to affect the parenting behaviors of mothers low on socioeconomic disadvantage, but not those of chronically disadvantaged mothers. Among the latter, the (frequently high) levels of life stress and personal distress they experience seem to be far more potent in affecting the quality of their parenting (Dumas & Wekerle, 1995).

As relevant research accumulates over time, it is certainly possible that pathways to "resilience" and "positive adjustment" will be judged to be more similar than different; yet recent findings suggest that assuming such congruence at this time would be premature. For example, there is a growing body of evidence that Baumrind's typology of parenting does not operate among the

poor as it does among the middle class (see Luthar, 1999 for a review). Rather than democratic, authoritative behaviors, the behaviors most adaptive in inner cities are often those reflecting high strictness and monitoring of children. Similarly, success at some of the classic developmental tasks of adolescence—e.g., doing well academically and getting along with peers—are not necessarily mutually facilitative but can be mutually inhibitory within the setting of the poor urban neighborhood (Luthar, 1999).

Turning to the question of whether resilience research can contribute to developmental theory, we see substantial potential in this regard. A cardinal tenet of the rapidly growing field of developmental psychopathology is that the study of the normal and the atypical are mutually beneficial (Cicchetti, 1989,1993;Sroufe & Rutter, 1984). Understanding processes contributing to positive adjustment under conditions of adversity can help to broaden the understanding of developmental processes that may not be evident in "good enough" normative environments. Further, understanding cases that do not succumb to the negative outcome engendered by a risk process can be critical in expanding our understanding of how the risk process functions. In recent years, several scholars have explicated ways in which their studies of diverse atypical trajectories have led to expanded theories of "normal" human development (see Cicchetti & Cohen, 1995; Luthar, Burack, Cicchetti, & Weisz, 1997).

In summary, we believe that at this point in the ontogenesis of developmental research, retaining distinctions between resilience as opposed to positive outcomes in general is important. Discrete scientific categories help to direct inquiry toward relevant domains, and findings on positive outcomes occurring in the absence of known environmental stressors—although potentially useful heuristically—cannot always be assumed to generalize to processes in resilience among individuals facing adversities. Additionally, we believe that the continued study of resilient trajectories carries substantial potential for ongoing refinements of existing theories of normal human development.

FUTURE DIRECTIONS AND CONCLUSIONS

In consolidating directions for future research on resilience, we first briefly summarize those that derived from our preceding review of criticisms of the construct. Following this summary, we present some additional directions for work in the area, which pertain to the scientific exploration of underlying processes; the use of multidisciplinary research designs; and the interface between intervention studies and efforts to understand processes in resilience.

Directions Stemming from Extant Criticisms

Clarity and consistency in the use of definitions and terminology—All scientific reports must include precise statements of the criteria used to operationalize resilience, that is, the specific methods employed to measure both competence and adversity. With the accumulation of empirical findings over time, there is a need for periodic scholarly integration of evidence on protective processes, with a consolidation of those that inhere across diverse approaches to operationalizing risk and competence versus those largely unique to particular groups or research designs.

The term "resilience" should always be used when referring to the process or phenomenon of competence despite adversity, with the term "resiliency" used only when referring to a specific personality trait. In describing processes that alter the effects of adversity, the terms "protective" and "vulnerability" should be used to describe overall effects that are beneficial versus detrimental, with more elaborated labels (e.g., with suffixes to these two primary terms) employed to label different interactive processes in resilience.

Cognizance of the multidimensional nature of resilience—Evidence that at-risk children excel within particular adjustment domains should never obscure the possibility of significant problems within other spheres. Investigators must avoid overly global statements while describing their findings, limiting their conclusions to the precise domains in which resilience is manifested.

The selection of specific competence criteria to operationalize resilience within particular studies must always be conceptually driven. The nature of adversity examined and developmental theory should conjointly guide researchers' decisions about the most relevant domains and degrees of competence, as well as the value of combining diverse adaptational domains versus examining them individually.

Attention to issues of stability and conceptual coherence—Within any given study, the stability of statistical findings on resilience will vary according to the criteria used to define both risk and competence as well as the relationship between these. When findings on resilience are based on a small number of children and on interactive (rather than main) effect models, possible limits to the stability of findings must be clearly stated.

Short- and long-term longitudinal studies on resilience are critical because resilience is a dynamic developmental construct. Longitudinal studies must investigate not only the stability of resilience over time, but also the ability of formerly resilient individuals to “bounce back” after difficult periods, to achieving earlier resilient adaptation.

Theoretical considerations—Resilience researchers must present their studies within a clearly delineated theoretical framework within which hypotheses about salient vulnerability and protective processes are considered vis-à-vis the specific adversity under study. Investigators should also elucidate theoretical postulates that *derive* from their own findings, when considered collectively with other related results, to use fully guide future inquiry in the area. Wherever possible, lessons gleaned for understanding normal developmental processes should be clearly articulated.

Additional Considerations for Future Research

Exploration of processes underlying protective/vulnerability factors—Research on resilience must accelerate its move from a focus on description to a focus on elucidating developmental process questions. With accumulated evidence that a particular variable does affect competence levels within a specific at-risk group, investigators need to focus their inquiry on understanding the mechanisms by which such protection (or vulnerability) might be conferred.

Concretely, such efforts can be explored by examining the degree to which various mechanisms might mediate the effects of a given “protective factor.” Once scientists have accumulated evidence that certain constructs are reliably linked with positive outcomes among particular at-risk groups, potential mechanisms would need to be delineated on the basis of prior empirical and theoretical evidence. For example, if religious faith were the protective factor in question, possible underlying mechanisms might include (1) increases in informal supports, and (2) reductions in dysfunctional coping patterns (e.g., alcohol use) for negotiating everyday stressors (Brody, Stoneman, & Flor, 1996;Luthar, 1999). The relative importance of each hypothesized mediator could then be statistically examined by means of processes outlined by Baron and Kenny (1986), which essentially involve determining the degree to which associations between antecedent (protective) and outcome variables are attenuated after considering shared variance between these and the hypothesized mediators.

The importance of integrative, multidisciplinary research—For the field of resilience to grow in ways commensurate with the complexity inherent to the construct, efforts to understand underlying processes will be facilitated with the increased implementation of multidisciplinary research designed within a developmental psychopathology framework. Research of this nature entails a consideration of psychological, social, and biological/genetic processes from which varied pathways to resilience might eventuate (equifinality), as well as those that result in diverse outcomes among at-risk individuals (multifinality).

Notably lacking in existing research on resilience is attention to the role of *biology*. Not only do biological factors affect psychological processes, but in addition, psychological experiences can modify brain structure and functioning (Cicchetti & Tucker, 1994;Eisenberg, 1995;Nelson & Bloom, 1997). The role of biological factors in resilience is also suggested by evidence on neural, neuroendocrine, and immune system functions in relation to stress reactivity (Maier & Watkins, 1998;McEwen & Stellar, 1993), and in behavior–genetic research on nonshared environment effects (Plomin, Rende, & Rutter, 1991;Rende & Plomin, 1993).

There also is value in cross-disciplinary research integrating insights from developmental psychology with expertise from anthropology, sociology, and cultural psychology. Such research can substantially augment our understanding of *context-specific* protective and vulnerability processes in child development, that is, those relatively unique to particular subcultural groups (Luthar, 1999).

Finally, there is value in research on resilience at *different points in human development*. Most existing research in this area has been focused on children. Yet resilience can be achieved at any point in the life cycle (cf. Cicchetti & Tucker, 1994;Luthar, 1999), and there is a need for additional work on at-risk individuals' achievement of positive outcomes in later life (cf. Rutter, 1993;Schulz & Heckhausen, 1996;Staudinger, Marsiske, & Baltes, 1993,1995).

Interface between research and interventions—Much can be gained by greater interface between “pure” research on protective processes and the application of accumulated knowledge to deriving interventions. Research-based understanding of resilience can allow practitioners to capitalize on periods of developmental change as unique opportunities for promoting positive adaptation (Cicchetti, 1993;Cicchetti & Toth, 1992). In recent years, developmental psychopathologists have increasingly begun to harness research findings on resilience in designing interventions for diverse at-risk groups (e.g., Cowen et al., 1997;Egeland & Erickson, 1990;Luthar & Suchman, 2000).

In future efforts, there also is a need for greater attentiveness to the *bidirectional* nature of links between the pursuit of knowledge on protective processes in resilience and intervention efforts to foster these. Prevention research can be conceptualized as true experiments in altering the course of development (Cicchetti & Toth, 1992;Kellam & Rebok, 1992), thereby offering opportunities to test extant developmental theories as well as insights into the etiology and course of adaptational outcomes (e.g., by verifying the importance of postulated “protective processes”).

CONCLUSIONS

This critique of research on resilience has led us to two broad conclusions. First, we believe that despite many challenges linked with studying this complex construct, the continuation of scientific work in this area is of substantial value. Important advances have been made in understanding resilience over the past few decades, and the continued investigation of risk and protective processes carries much potential to expand developmental theory and to suggest

useful avenues for intervention. In short, we disagree with global negative judgments on resilience, such as, "resilience may have served its purpose and may be permitted to retire from the field gracefully and with honor" (Kaplan, 1999, p. 109, original manuscript), or "(This) is not a very useful term for studies of development of children and for related intervention and policy efforts" (Tolan, 1996, p. 13).

Our second conclusion, in some ways, constitutes a significant caveat to the first, that is, there is clearly a need for resilience researchers to enhance the scientific rigor of their work. As Kitcher (1985) has noted, standards of evidence and of self-scrutiny must be extremely high whenever scientific claims bear on matters of social policy. We believe that the field of resilience owes a substantial debt to those scholars who have articulated concerns about the construct, for their critiques have drawn attention to many important issues that warrant serious consideration in future scientific efforts.

Current controversies surrounding resilience are reminiscent of concerns that have been voiced about many other psychological constructs (see Pedhazur & Schmelkin, 1991), particularly those connoting a promise for redressing human suffering or social inequities (cf. Cowen, 1994). Discussing a somewhat similar notion, Sarason (1993, p. 260) cautioned, "Empowerment has become a fashionable word. It has the ring of virtue and unquestioned morality…. If the empowerment movement is to avoid the worse excesses of sloganeering and conceptual superficiality, it will have to come to grips with issues that are as complex conceptually as they are at the level of action." The inherent apprehension, as Cowen (1994) has cautioned, is that the eminent good sense of concepts such as empowerment—and resilience—may come to outpace their scientific bases in rigorous empirical and theoretical efforts.

ACKNOWLEDGMENTS

This paper is dedicated to Norman Garmezy, pioneer in the field of childhood resilience. Portions of this paper were presented at the 104th Annual Convention of the American Psychological Association, Toronto, August 9–13, 1996. Preparation of this manuscript was funded in part by NIH grants RO1-DA10726, RO1-DA11498, and Research Scientist Development Award K21-DA00202 to Suniya Luthar; a grant jointly funded by the NIMH and the Administration on Children, Youth, and Families to Dante Cicchetti; grants from the William T. Grant Foundation to Suniya Luthar and to Dante Cicchetti; and grants from the Office of Child Abuse and Neglect and the Spunk Fund, Inc., to Dante Cicchetti. We gratefully acknowledge Mary Spagnola and Kimberly Doyle for their assistance with background research for this paper and three anonymous reviewers for their helpful comments on a previous draft.

REFERENCES

Achenbach TM. Taxonomy and comorbidity of conduct problems: Evidence from empirically based approaches. Development and Psychopathology 1993;5:51–64.

Achenbach TM, McConaughy S, Howell CT. Child / adolescent behavioral and emotional problems: Implications of cross-informant correlations for situational specificity. Psychological Bulletin 1987;87:213–232. [PubMed: 3562706]

Anthony, EJ. Introduction: The syndrome of the psychologically vulnerable child. In: Anthony, EJ.; Koupernik, C., editors. The child in his family: Children at Psychiatric Risk. 3. Wiley; New York: 1974. p. 3-10.

Baldwin, AL.; Baldwin, CP.; Cole, R. Stress-resistant families and stress-resistant children. In: Rolf, J.; Masten, A.; Cicchetti, D.; Nuechterlein, K.; Weintraub, S., editors. Risk and protective factors in the development of psychopathology. Cambridge University Press; New York: 1990. p. 257-280.

Baldwin AL, Baldwin CP, Kasser T, Zax M, Sameroff A, Seifer R. Contextual risk and resiliency during late adolescence. Development and Psychopathology 1993;5:741–761.

Baron RM, Kenny DA. The moderator-mediator variable distinction in social psychological research: Conceptual strategies and statistical considerations. Journal of Personality and Social Psychology 1986;51:1173–1182. [PubMed: 3806354]

Bartlett, DW. On resilience: Questions of validity. In: Wang, MC.; Gordon, EW., editors. Educational resilience in inner-city America: Challenges and prospects. Erlbaum; Hillsdale, NJ: 1994. p. 97-108.

Beeghly M, Cicchetti D. Child maltreatment, attachment and the self system: Emergence of an internal state lexicon in toddlers at high social risk. Development and Psychopathology 1994;6:5–30.

Bergman LR, Magnusson D. A person-oriented approach in research on developmental psychopathology. Development and Psychopathology 1997;9:291–319. [PubMed: 9201446]

Block J. Parents of schizophrenic, neurotic, asthmatic, and congenitally ill children. Archives of General Psychiatry 1969;20:659–674. [PubMed: 4388965]

Block, JH. Studying personality the long way. In: Funder, D.; Parke, R.; Tomlinson-Keasey, C.; Widaman, K., editors. Studying lives through time: Personality and development. American Psychological Association; Washington, DC: 1993. p. 3-41.

Block, JH.; Block, J. The role of ego-control and ego resiliency in the organization of behavior. In: Collins, WA., editor. Minnesota Symposium on Child Psychology. 13. Erlbaum; Hillsdale, NJ: 1980. p. 39-101.

Brody GH, Stoneman Z, Flor D. Parental religiosity, family processes, and youth competence in rural,two-parent African American families. Developmental Psychology 1996;32:696–706.

Bronfenbrenner U. Toward an experimental ecology of human development. American Psychologist 1977;32:513–531.

Carnap, R. Testability and meaning. Yale University Graduate Philosophy Club; New Haven, CT: 1950. (Original work published 1936–1937)

Carpentieri SC, Mulhern RK, Douglas S, Hanna S, Fairdough J. Behavioral resiliency among children surviving brain tumors: The neuropsychological basis of disorders affecting children and adolescents [Special issue]. Journal of Clinical Child Psychology 1993;22:236–246.

Cicchetti, D. Developmental psychopathology: Past, present, and future. In: Cicchetti, D., editor. Rochester Symposium on Developmental Psychopathology: Vol. 1. The emergence of a discipline. Erlbaum; Hillsdale, NJ: 1989. p. 1-12.

Cicchetti D. Developmental psychopathology: Reactions, reflections, projections. Developmental Review 1993;13:471–502.

Cicchetti D. Child maltreatment: Implications for developmental theory. Human Development 1996;39:18–39.

Cicchetti D, Garmezy N. Milestones in the development of resilience [Special issue]. Development and Psychopathology 1993;5(4):497–774.

Cicchetti D, Lynch M. Toward an ecological / transactional model of community violence and child maltreatment: Consequences for children's development. Psychiatry 1993;56:96–118. [PubMed: 8488217]

Cicchetti D, Rogosch FA. Equifinality and multifinality in developmental psychopathology. Development and Psychopathology 1996;8:597–600.

Cicchetti D, Rogosch FA. The role of self-organization in the promotion of resilience in maltreated children. Development and Psychopathology 1997;9(4):799–817.

Cicchetti D, Rogosch FA, Lynch M, Holt K. Resilience in maltreated children: Processes leading to adaptive outcomes. Development and Psychopathology 1993;5:629–647.

Cicchetti, D.; Schneider-Rosen, K. An organizational approach to childhood depression. In: Rutter, M.; Izard, C.; Read, P., editors. Depression in young people, clinical and developmental perspectives. Guilford; New York: 1986. p. 71-134.

Cicchetti, D.; Toth, SL. The making of a developmental psychopathologist. In: Cantor, J.; Spiker, C.; Lipsitt, L., editors. Child behavior and development: Training for diversity. Ablex; Norwood, NJ: 1991. p. 34-72.

Cicchetti D, Toth SL. The role of developmental theory in prevention and intervention. Development and Psychopathology 1992;4:489–493.

Cicchetti, D.; Toth, SL. Developmental psychopathology and disorders of affect. In: Cicchetti, D.; Cohen, DJ., editors. Developmental Psychopathology: Risk, disorder, and adaptation. 2. Wiley; New York: 1995. p. 369-420.

Cicchetti, D.; Toth, SL. Perspectives on research and practice in developmental psychopathology. In: Sigel, I.; Renninger, KA.; Damon, W., editors. Handbook of child psychology: Vol. 4. Child psychology in practice. 5th ed.. Wiley; New York: 1998a. p. 479-593.

Cicchetti D, Toth SL. The development of depression in children and adolescents. American Psychologist 1998b;53:221–241. [PubMed: 9491749]

Cicchetti D, Tucker D. Development and self-regulatory structures of the mind. Development and Psychopathology 1994;6:533–549.

Coie JD, Jacobs MR. The role of social context in the prevention of conduct disorder. Development and Psychopathology 1993;5:263–275.

Coie JD, Watt NF, West SG, Hawkins D, Asarnow JR, Markman HJ, Ramey SL, Shure MB, Long B. The science of prevention. American Psychologist 1993;48:1013–1022. [PubMed: 8256874]

Connell JP, Spencer MB, Aber JL. Educational risk and resilience in African-American youth: Context, self, action, and outcomes in school. Child Development 1994;65:493–506. [PubMed: 8013236]

Conrad M, Hammen C. Protective and resource factors in high and low-risk children: A comparison of children with unipolar, bipolar, medically ill, and normal mothers. Development and Psychopathology 1993;5:593–607.

Cowen EL. The enhancement of psychological wellness: Challenges and opportunities. American Journal of Community Psychology 1994;22:149–179. [PubMed: 7977176]

Cowen, EL.; Work, WC.; Wyman, PA. Developmental psychopathology: Perspectives on adjustment, risk, and disorder. Luthar, SS.; Burack, JA.; Cicchetti, D.; Weisz, JR., editors. Cambridge; New York: 1997. p. 527-547.

Cowen EL, Wyman PA, Work WC, Kim JY, Fagen DB, Magnus KB. Follow-up study of young stress-affected & stress-resilient urban children. Development and Psychopathology 1997;9:564–577.

Crittenden PM. Social networks, quality of child rearing, and child development. Child Development 1985;56:1299–1313.

Cronbach LJ, Meehl PE. Construct validity in psychological tests. Psychological Bulletin 1955;52:281–302. [PubMed: 13245896]

DuBois DL, Felner RD, Brand S, Adan AM, Evans EG. A prospective study of life stress, social support, and adaptation in early adolescence. Child Development 1992;63:542–557. [PubMed: 1600821]

DuBois DL, Felner RD, Meares H, Krier M. Prospective investigation of the effects of socioeconomic disadvantage, life stress, & social support on early adolescent adjustment. Journal of Abnormal Psychology 1994;103:511–522. [PubMed: 7930051]

Dubow EF, Tisak T. The relation between stressful life events and adjustment in elementary school children: The role of social support and social problem solving skills. Child Development 1989;60:1412–1423. [PubMed: 2612250]

Dumas JE, Wekerle C. Maternal reports and child behavior problems and personal distress as predictors of dysfunctional parenting. Development and Psychopathology 1995;7:465–479.

Egeland B, Carlson E, Sroufe LA. Resilience as process. Development and Psychopathology 1993;5:517–528.

Egeland B, Erickson MF. Rising above the past: Strategies for helping new mothers break the cycle of abuse and neglect. Zero to Three 1990;11:29–35.

Egeland, B.; Farber, E. Invulnerability among abused and neglected children. In: Anthony, EJ.; Cohler, B., editors. The invulnerable child. Guilford Press; New York: 1987. p. 253-288.

Eisenberg L. The social construction of the human brain. American Journal of Psychiatry 1995;152:1563–1575. [PubMed: 7485618]

Fergusson DM, Horwood LJ, Lynskey MT. The childhoods of multiple problem adolescents: A 15-year longitudinal study. Journal of Child Psychology and Psychiatry 1994;35:1123–1140. [PubMed: 7995847]

Fergusson DM, Lynskey MT. Adolescent resiliency to family adversity. Journal of Child Psychology and Psychiatry 1996;37:281–292. [PubMed: 8707911]

Fischer K. A theory of cognitive development: The control and construction of hierarchies of skills. Psychological Review 1980;87:477–531.

Fischer, K.; Bidell, T. Dynamic development of psychological structures in action and thought. In: Lerner, R.; Damon, W., editors. Handbook of child psychology. 5th ed.. Wiley; New York: 1998. p. 467-561.

Fischer, KW.; Lawrence, D.; Kokes, RF.; Cole, RE.; Perkins, PM.; Wynne, LC. Competent children at risk: A study of well-functioning offspring of disturbed parents. In: Anthony, EJ.; Cohler, B., editors. The invulnerable child. Guilford Press; New York: 1987. p. 221-228.

Garcia-Coll C, Lamberty G, Jenkins R, McAdoo HP, Crnic K, Wasik BH, Vasquez-Garcia H. An integrative model for the study of developmental competencies in minority children. Child Development 1996;67:1891–1914. [PubMed: 9022222]

Garmezy N. Process and reactive schizophrenia: Some conceptions and issues. Schizophrenia Bulletin 1970;2:30–74.

Garmezy N. Vulnerability research and the issue of primary prevention. American Journal of Orthopsychiatry 1971;41:101–116. [PubMed: 5539483]

Garmezy, N. The study of competence in children at risk for severe psychopathology. In: Anthony, EJ.; Koupernik, C., editors. The child in his family: Children at Psychiatric risk: III. Wiley; New York: 1974. p. 547

Garmezy N. The NIMH-Israeli high-risk study: Commendation, comments, and cautions. Schizophrenia Bulletin 1985;11:349–353.

Garmezy, N. A closing note: Reflections on the future. In: Rolf, J.; Masten, A.; Cicchetti, D.; Nuechterlein, K.; Weintraub, S., editors. Risk and protective factors in the development of psychopathology. Cambridge University Press; New York: 1990. p. 527-534.

Garmezy N. Resilience in children's adaptation to negative life events and stressed environments. Pediatrics 1991;20:459–466.

Garmezy, N. Development and adaptation: The contributions of the MacArthur Foundation and William Bevan. In: Kessel, F., editor. Psychology, science, and human affairs: Essays in honor of William Bevan. Westview Press; Boulder, CO: 1995. p. 109-124.

Garmezy N, Masten AS, Tellegen A. The study of stress and competence in children: A building block for developmental psychopathology. Child Development 1984;55:97–111. [PubMed: 6705637]

Garmezy N, Streitman S. Children at risk: The search for the antecedents of schizophrenia: Conceptual models and research methods. Schizophrenia Bulletin 1974;8:14–90. [PubMed: 4619494]

Gest SD, Neemann K, Hubbard JJ, Masten AS, Tellegen A. Parenting quality, adversity, and conduct problems in adolescence: Testing process-oriented models of resilience. Development and Psychopathology 1993;5:663–682.

Gest SD, Reed M, Masten AS. Measuring developmental changes in exposure to adversity: A life chart and rating scale approach. Development and Psychopathology 1999;11:171–192. [PubMed: 10208361]

Glantz, MD.; Johnson, J. Resilience and development: Positive life adaptations. Plenum; New York: 1999.

Gordon EW, Rollock D, Miller F. Coping with communicentric bias in knowledge production in the social sciences. Educational Researcher 1990;19(3)

Gordon, EW.; Song, LD. Variations in the experience of resilience. In: Wang, MC.; Gordon, EW., editors. Educational resilience in inner-city America: Challenges and prospects. Erlbaum; Hillsdale, NJ: 1994. p. 27-43.

Gordon, EW.; Wang, MC. Epilogue: Educational resilience—Challenges and prospects. In: Wang, MC.; Gordon, EW., editors. Educational resilience in inner-city America: Challenges and prospects. Erlbaum; Hillsdale, NJ: 1994. p. 191-194.

Graham S. Most of the subjects were white and middle class. American Psychologist 1992;47:629–639.

Graham S, Hoehn S. Children's understanding of aggression and withdrawal as social stigmas: An attributional analysis. Child Development 1995;66:1143–1161.

Graham S, Hudley C. Attributions of aggressive and nonaggressive African American male early adolescents. A study of construct accessibility. Developmental Psychology 1994;30:365–373.

Haggerty, R.; Sherrod, L.; Garmezy, N.; Rutter, M., editors. Stress, risk, and resilience in children and adolescents. Cambridge; New York: 1994.

Hart EL, Lahey BB, Loeber R, Hanson KS. Criterion validity of informants in the diagnosis of disruptive behavior disorders in children: A preliminary study. Journal of Consulting and Clinical Psychology 1994;62:410–414. [PubMed: 8201081]

Havighurst, RJ. Developmental tasks and education. David McKay; New York: 1952.

Kaplan, HB. Toward an understanding of resilience: A critical review of definitions and models. In: Glantz, MD.; Johnson, JR., editors. Resilience and development: Positive life adaptations. Plenum; New York: 1999. p. 17-83.

Kaufman J, Cook A, Arny L, Jones B, Pittinsky T. Problems defining resiliency: Illustrations from the study of maltreated children. Development and Psychopathology 1994;6:215–229.

Kazdin AE. Childhood depression. Journal of Child Psychiatry and Psychology 1990;31:121–160.

Kellam, SG.; Rebok, GW. Building developmental and etiological theory through epidemiologically based preventive intervention trials. In: McCord, J.; Tremblay, RE., editors. Preventing antisocial behavior: Interventions from birth through adolescence. Guilford Press; New York: 1992. p. 162-195.

Kline BE, Short EB. Changes in emotional resilience: Gifted adolescent boys. Roeper Review 1991;13:184–187.

Leadbeder B, Bishop A. Predictors of behavior problems in preschool children of inner-city Afro-American and Puerto Rican adolescent mothers. Child Development 1994;65:638–648. [PubMed: 8013244]

Liddle, HA. Contextualizing resiliency. In: Wang, MC.; Gordon, EW., editors. Educational resilience in inner-city America: Challenges and prospects. Erlbaum; Hillsdale, NJ: 1994. p. 167-177.

Luthar SS. Vulnerability and resilience: A study of high-risk adolescents. Child Development 1991;62:600–616. [PubMed: 1914628]

Luthar SS. Annotation: Methodological and conceptual issues in the study of resilience. Journal of Child Psychology and Psychiatry 1993;34:441–453. [PubMed: 8509489]

Luthar SS. Social competence in the school setting: Prospective cross-domain associations among inner-city teens. Child Development 1995;66:416–429. [PubMed: 7750374]

Luthar, SS. Resilience: A construct of value?; Paper presented at the 104th Annual Convention of the American Psychological Association; Toronto. Aug. 1996

Luthar, SS. Resilience among at-risk youth: Ephemeral, elusive, or robust?; Boyd McCandless Young Scientist Award presentation, 106th Annual Convention of the American Psychological Association; San Francisco. Aug. 1998

Luthar, SS. Poverty and children's adjustment. Sage; Newbury Park, CA: 1999.

Luthar, SS.; Burack, JA.; Cicchetti, D.; Weisz, JR., editors. Developmental Psychopathology: Perspectives on adjustment, risk, and disorder. Cambridge; New York: 1997.

Luthar SS, Cushing G. Substance use and personal adjustment among disadvantaged teenagers: A six-month prospective study. Journal of Youth and Adolescence 1997;26:353–372.

Luthar, SS.; Cushing, G. Measurement issues in the empirical study of resilience: An overview. In: Glantz, MD.; Johnson, JL., editors. Resilience and development: Positive life adaptations. Plenum; New York: 1999. p. 129-160.

Luthar SS, Cushing G, Merikangas KR, Rounsaville BJ. Multiple jeopardy: Risk / protective factors among addicted mothers' offspring. Development and Psychopathology 1998;10:117–136. [PubMed: 9524811]

Luthar SS, Doernberger CH, Zigler E. Resilience is not a unidimensional construct: Insights from a prospective study on inner-city adolescents. Development and Psychopathology 1993;5:703–717.

Luthar SS, McMahon T. Peer reputation among inner city adolescents: Structure and correlates. Journal of Research on Adolescence 1996;6:581–603.

Luthar SS, Suchman NE. Relational Psychotherapy Mothers' Group: A developmentally informed intervention for at-risk mothers. Development and Psychopathology 2000;12:235–253. [PubMed: 10847626]

Luthar SS, Zigler E. Vulnerability and competence: A review of research on resilience in childhood. American Journal of Orthopsychiatry 1991;61:6–22. [PubMed: 2006679]

Luthar SS, Zigler E. Intelligence and social competence among high-risk adolescents. Development and Psychopathology 1992;4:287–299.

Maier S, Watkins L. Cytokines for psychologists: Implications of bidirectional immune-to-brain communication for understanding behavior, mood, and cognition. Psychological Bulletin 1988;105:83–107.

Masten, AS. Resilience in individual development: Successful adaptation despite risk and adversity. In: Wang, MC.; Gordon, EW., editors. Educational resilience in inner-city America: Challenges and prospects. Erlbaum; Hillsdale, NJ: 1994. p. 3-25.

Masten A, Best K, Garmezy N. Resilience and development: Contributions from the study of children who overcome adversity. Development and Psychopathology 1990;2:425–444.

Masten, A.; Coatsworth, JD. Competence, resilience, and psychopathology. In: Cicchetti, D.; Cohen, D., editors. Developmental psychopathology: Vol. 2. Risk disorder and adaptation. Wiley; New York: 1995. p. 715-752.

Masten A, Coatsworth JD. The development of competence in favorable and unfavorable environments: Lessons from research on successful children. American Psychologist 1998;53:205–220. [PubMed: 9491748]

Masten A, Coatsworth JD, Neemann J, Gest S, Tellegen A, Garmezy N. The structure and coherence of competence from childhood through adolescence. Child Development 1995;66:1635–1659. [PubMed: 8556890]

Masten, A.; Garmezy, N. Risk, vulnerability, and protective factors in developmental psychopathology. In: Lahey, B.; Kazdin, A., editors. Advances in clinical child psychology. 8. Plenum Press; New York: 1985. p. 1-52.

Masten AS, Garmezy N, Tellegen A, Pellegrini DS, Larkin K, Larsen A. Competence and stress in school children: The moderating effects of individual and family qualities. Journal for Child Psychiatry and Psychology 1988;28:745–764.

Masten AS, Hubbard JJ, Gest SD, Tellegen A, Garmezy N, Ramirez M. Adaptation in the context of adversity: Pathways to resilience and maladaptation from childhood to late adolescence. Development and Psychopathology 1999;11:143–169. [PubMed: 10208360]

McAdoo, HP. Upward mobility and parenting in middle-income Black families. In: Burlew, KH.; Banks, WC.; McAdoo, HP.; Azibo, DA., editors. African American Psychology: Theory, research and practice. Sage; Newbury Park, CA: 1992. p. 63-86.

McEwen B, Stellar E. Stress and the individual: Mechanisms leading to disease. Archives of Internal Medicine 1993;153:2093–2101. [PubMed: 8379800]

Meehl PE. Specific etiology and other forms of strong influence: Some quantitative methods. Journal of Medicine and Philosophy 1977;2:33–53.

Moran PB, Eckenrode J. Protective personality characteristics among adolescent victims of maltreatment. Child Abuse and Neglect 1992;16:743–754. [PubMed: 1393733]

Morison P, Masten AS. Peer reputation in middle childhood as a predictor of adaptation in adolescence: A seven year follow-up. Child Development 1991;62:991–1007. [PubMed: 1756670]

Murphy, LB.; Moriarty, A. Vulnerability, coping, and growth: From infancy to adolescence. Yale University Press; New Haven, CT: 1976.

Nelson CA, Bloom FE. Child development and neuroscience. Child Development 1997;68:970–987.

O'Connor TG, Rutter M. Risk mechanisms in development: Some conceptual and methodological considerations. Development and Psychopathology 1996;5:567–579.

O'Dougherty-Wright, M.; Masten, AS.; Northwood, A.; Hubbard, JJ. Long-term effects of massive trauma: Developmental and psychobiological perspectives. In: Cicchetti, D.; Toth, SL., editors. Rochester Symposium on Developmental Psychopathology: Vol. 8. Developmental perspectives on trauma. University of Rochester Press; Rochester, NY: 1997. p. 181-225.

Pap A. Reduction—sentences and open concepts. Methodos 1953;5:3–30.

Parker GR, Cowen EL, Work WC, Wyman PA. Test correlates of stress affected and stress resilient outcomes among urban children. Journal of Primary Prevention 1990;11:19–35.

Pedhazur, EJ.; Schmelkin, LP. Measurement, design, and analysis: An integrated approach. Erlbaum; Hillsdale, NJ: 1991.

Pellegrini DS, Masten AS, Garmezy N, Ferrarese M. Correlates of social and academic competence in middle childhood. Journal of Child Psychology and Psychiatry and Allied Disciplines 1987;28:699–714.

Pianta, RC.; Egeland, B.; Sroufe, LA. Maternal stress and children's development: Prediction of school outcomes and identification of protective factors. In: Rolf, J.; Masten, AS.; Cicchetti, D.; Nuechterlein, KH.; Weintraub, S., editors. Risk and protective factors in the development of psychopathology. Cambridge University Press; New York: 1990. p. 215-235.

Plomin, R.; Rende, R.; Rutter, M. Quantitative genetics and developmental psychopathology. In: Cicchetti, D.; Toth, SL., editors. Rochester Symposium on Developmental Psychopathology: Vol. 2. Internalizing and externalizing expressions of dysfunction. Erlbaum; Hillsdale, NJ: 1991. p. 155-202.

Pryor-Brown L, Cowen EL. Stressful life events, support, and children's school adjustment. Journal of Clinical Child Psychology 1989;18:214–220.

Radke-Yarrow, M.; Sherman, T. Hard growing: Children who survive. In: Rolf, J.; Masten, A.; Cicchetti, D.; Nuechterlein, K.; Weintraub, S., editors. Risk and protective factors in the development of psychopathology. Cambridge University Press; New York: 1990. p. 97-119.

Rende R, Plomin R. Families at risk for psychopathology: Who becomes affected and why? Development and Psychopathology 1993;5(4):529–540.

Reynolds A. Resilience among black urban youth: Prevalence, intervention effects, and mechanisms of influence. American Journal of Orthopsychiatry 1998;68:84–100. [PubMed: 9494645]

Reynolds WM, Graves A. Reliability of children's reports of depressive symptomatology. Journal of Abnormal Child Psychology 1989;17:647–655. [PubMed: 2607056]

Richters JE, Martinez PE. Violent communities, family choices, and children's chances: An algorithm for improving the odds. Development and Psychopathology 1993;5:609–627.

Richters, JE.; Weintraub, S. Beyond diathesis: Toward an understanding of high-risk environments. In: Rolf, J.; Masten, AS.; Cicchetti, D.; Nuechterlein, KG.; Weintraub, S., editors. Risk and protective factors in the development of psychopathology. Cambridge University Press; New York: 1990. p. 67-96.

Rigsby, L. The Americanization of resilience: Deconstructing research practice. In: Wang, M.; Gordon, E., editors. Educational Resilience in inner-city America. Erlbaum; Hillsdale, NJ: 1994. p. 85-92.

Rolf, J.; Johnson, J. Protected or vulnerable: The challenges of AIDS to developmental psychopathology. In: Rolf, JE.; Masten, AS.; Cicchetti, D.; Nuechterlein, KH.; Weintraub, S., editors. Risk and protective factors in the development of psychopathology. Cambridge University Press; New York: 1990. p. 384-404.

Rolf, J.; Masten, A.; Cicchetti, D.; Nuechterlein, K.; Weintraub, S., editors. Risk and protective factors in the development of psychopathology. Cambridge; New York: 1990.

Rothbaum F, ; Weisz JR. Parental caregiving and child externalizing behavior in nonclinical samples: A meta-analysis. Psychological Bulletin 1994;116:55–74. [PubMed: 8078975]

Rutter, M. Protective factors in children's responses to stress and disadvantage. In: Kent, MW.; Rolf, JE., editors. Primary prevention in psychopathology: Social competence in children. 8. University Press of New England; Hanover, NH: 1979. p. 49-74.

Rutter, M. Statistical and personal interactions, facets and perspectives. In: Magnusson, D.; Allen, V., editors. Human development: an interactional perspective. Academic Press; New York: 1983. p. 295-319.

Rutter, M. Parental mental disorder as a psychiatric risk factor. In: Hales, R.; Frances, A., editors. American Psychiatric Association annual review. 6. American Psychiatric Press, Inc.; Washington, DC: 1987. p. 647-663.

Rutter, M. Psychosocial resilience and protective mechanisms. In: Rolf, J.; Masten, AS.; Cicchetti, D.; Nuechterlein, KH.; Weintraub, S., editors. Risk and protective factors in the development of psychopathology. Cambridge; New York: 1990. p. 181-214.

Rutter M. Resilience: Some conceptual considerations. Journal of Adolescent Health 1993;14:626–631. [PubMed: 8130234]

Sameroff, AJ.; Chandler, MJ. Reproductive risk and the continuum of caretaking casualty. In: Horowitz, FD.; Hetherington, M.; Scarr-Salapatek, S.; Siegel, G., editors. Review of child development research. University of Chicago Press; Chicago: 1975. p. 187-243.

Sandler IN, Barrera M. Toward a multimethod approach to assessing the effects of social support. American Journal of Community Psychology 1984;12:37–52. [PubMed: 6711491]

Sarason, SB. The case for change: Rethinking the preparation of educators. Jossey-Bass; San Francisco: 1993.

Schulz R, Heckhausen J. A life-span model of successful aging. American Psychologist 1996;51:702–714. [PubMed: 8694390]

Seidman E, Allen L, Aber JL, Mitchell C, Feinman J. The impact of school transitions in early adolescence on the self-system and perceived social context of poor urban youth. Child Development 1994;65:507–522. [PubMed: 8013237]

Seifer R. Perils and pitfalls of high-risk research. Developmental Psychology 1995;31:420–424.

Seifer R, Sameroff AJ, Baldwin CP, Baldwin AL. Child and family factors that ameliorate risk between 4 and 13 years of age. Journal of the American Academy of Child and Adolescent Psychiatry 1992;31:893–903. [PubMed: 1400123]

Spencer MB. The influence of physical maturation and hassles on African American adolescents' learning behaviors. Journal of Comparative Family Structure 1998;29:189–200.

Sroufe LA. The coherence of individual development: Early care, attachment, and subsequent developmental issues. American Psychologist 1979;34:834–841.

Sroufe LA, Egeland B, Kreutzer T. The fate of early experience following developmental change: Longitudinal approaches to individual adaptation in childhood. Child Development 1990;61:1363–1373. [PubMed: 2245730]

Sroufe LA, Rutter M. The domain of developmental psychopathology. Child Development 1984;55:17–29. [PubMed: 6705619]

Staudinger UM, Marsiske M, Baltes PB. Resilience and levels of reserve capacity in later adulthood: Perspectives from life-span theory. Development and Psychopathology 1993;5:541–566.

Staudinger, UM.; Marsiske, M.; Baltes, PB. Resilience and reserve capacity in later adulthood: Potentials and limits of development across the life span. In: Cicchetti, D.; Cohen, D., editors. Development and Psychopathology: Vol. 2. Risk, disorder, and adaptation. Wiley; New York: 1995. p. 801-847.

Stouthamer-Loeber M, Loeber R, Farrington DP, Zhang Q, van Kammen W, Maguin E. The double edge of protective and risk factors for delinquency: Interrelations and developmental patterns. Development and Psychopathology 1993;5:683–701.

Tarter, RE.; Vanyukov, M. Re-visiting the validity of the construct of resilience. In: Glantz, MD.; Johnson, JL., editors. Resiliency and development: Positive life adaptations. Plenum; New York: 1999. p. 85-100.

Tolan PT. How resilient is the concept of resilience? The Community Psychologist 1996;29:12–15.

Voelker S, Shore D, Hakim-Larson J, Bruner D. Discrepancies in parent teacher ratings of adaptive behavior of children with multiple disabilities. Mental Retardation 1997;35:10–17. [PubMed: 9046782]

Wang, MC.; Haertel, GD.; Wahlberg, HJ. Educational resilience in inner cities. In: Wang, MC.; Gordon, EW., editors. Educational resilience in inner-city America: Challenges and prospects. Erlbaum; Hillsdale, NJ: 1994. p. 45-72.

Weisz JR, Suwanlert S, Chaiyasit W, Weiss B, Walter B, Anderson W. Thai and American perspectives on over- and undercontrolled child behavior problems: Exploring the threshold model among parents, teachers, and psychologists. Journal of Consulting and Clinical Psychology 1988;56:601–609. [PubMed: 3198820]

Wells RD, Schwebel AI. Chronically ill children and their mothers: Predictors of resilience and vulnerability to hospitalization and surgical stress. Journal of Developmental and Behavioral Pediatrics 1987;18:83–89. [PubMed: 2953762]

Werner EE. Resilient children. Young Children 1984;1:68–72.

Werner, EE. Protective factors and individual resilience. In: Meisells, R.; Shonkoff, J., editors. Handbook of early intervention. Cambridge; Cambridge, UK: 1990.

Werner EE. Overcoming the odds. Journal of Developmental and Behavioral Pediatrics 1994;2:131–136. [PubMed: 8034766]

Werner EE. Resilience in development. Current Directions in Psychological Science 1995;3:81–85.

Werner, EE.; Bierman, JM.; French, FE. The children of Kauai Honolulu. University of Hawaii Press; Hawaii: 1971.

Werner, E.; Smith, R. Kauai's children come of age. University of Hawaii Press; Honolulu: 1977.

Werner, E.; Smith, R. Vulnerable but invincible: A study of resilient children. McGraw-Hill; New York: 1982.

Werner, EE.; Smith, RS., editors. Overcoming the odds: High risk children from birth to adulthood. Cornell University Press; Ithaca, NY: 1992.

Wertlieb D, Weigel C, Feldstein M. Stressful experiences, temperament, and social support: Impact on children's behavior symptoms. Journal of Applied Developmental Psychology 1989;10:487–503.

Wyman PA, Cowen EL, Work WC, Kerley JH. The role of children's future expectations in self-system functioning and adjustment to life stress: A prospective study of urban at-risk children. Development and Psychopathology 1993;5:649–661.

Wyman PA, Cowen EL, Work WC, Parker GR. Developmental and family milieu interview correlates of resilience in urban children who have experienced major life-stress. American Journal of Community Psychology 1991;19:405–426. [PubMed: 1892136]

Zigler, E.; Glick, M. A developmental approach to adult psychopathology. Wiley; New York: 1986.

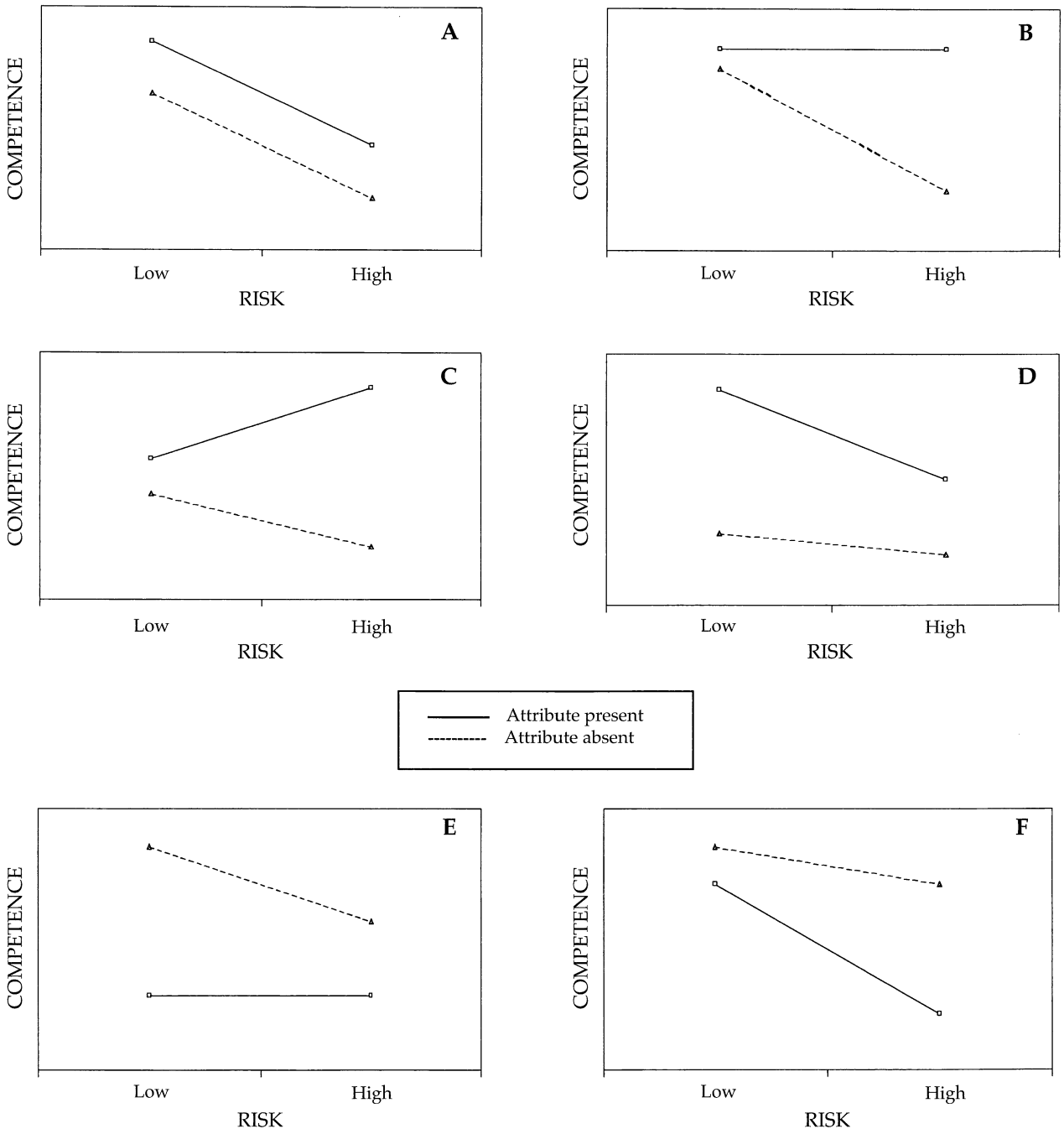

Figure 1.
Illustrative effects of moderator variables, in interaction with risk status, in relation to competence outcomes: (A) protective, (B) protective-stabilizing, (C) protective-enhancing, (D) protective-reactive, (E) vulnerable-stable, (F) vulnerable-reactive.