

## CHAPTER 20

# *Resilience in Development: A Synthesis of Research across Five Decades*

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In the field of developmental psychopathology, resilience, a construct representing positive adaptation despite adversity, has received increasing attention over the past several decades. Since its introduction in the scientific literature during the second half of the twentieth century, this construct has been increasingly recognized as one of considerable importance from a theoretical and an applied perspective. Theoretically, knowledge of all “deviant” or atypical processes has great potential to promote understanding of normative development (Cicchetti & Cohen, 1995). Resilience by definition encompasses atypical

processes, in that positive adaptation is manifested in life circumstances that usually lead to maladjustment. From an applied perspective, similarly, there is broad consensus that in working with at-risk groups, it is far more prudent to promote the development of resilient functioning early in the course of development rather than to implement treatments to repair disorders once they have already crystallized (Cowen, 1991, 1994; Knitzer, 2000a, 2000b; Luthar, Cicchetti, & Becker, 2000a; Rutter, 2000; Werner, 2000). Knowledge about resilient processes in specific at-risk circumstances can be critical in pointing to the particular issues that most urgently warrant attention in the context of particular types of adversity.

In this chapter, we describe the major developments in the field of resilience since its inception more than 40 years ago. The chapter is organized in four sections, the first one presenting a brief history of work on resilience. The second section is devoted to elucidating critical features of research on this construct, highlighting three sets of issues: definitions and operationalization of the two constructs at its core, protective and vulnerability factors; distinctions between the construct of resilience and related

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This chapter is dedicated to Chanchal Wadhwa and Zena Vijay-Kumar, two teachers who so generously gave of themselves in fostering adolescent resilience.

constructs, such as competence and ego resiliency; and differences between resilience research and related fields, including risk research, prevention science, and positive psychology.

The third section of the chapter is focused on major findings on vulnerability and protective factors. These are discussed not only in terms of the specific factors found to modify risk within three broad categories—attributes of the family, community, and child—but also in terms of factors that exert strong effects across many risk conditions and those more idiosyncratic to specific risk contexts. The final section includes a summary of extant evidence in the field along with major considerations for future work on resilience across the life span.

## HISTORICAL OVERVIEW OF CHILDHOOD RESILIENCE

The roots of resilience research can be traced back to pioneering research with children of schizophrenics during the 1960s and 1970s. In studies intending to capture the etiology and prognosis of severe psychopathology, Norman Garmezy (1974) found that among these children at high risk for psychopathology was a subset of children who had surprisingly healthy adaptive patterns. Whereas these youngsters had been dismissed by scientists as being atypical cases, Garmezy and colleagues sought to identify factors associated with their unusually high well-being. This approach reflected a notable departure from the symptom-based medical models of the time in its focus on positive outcomes and the factors that foster them in the context of life's adversity.

Along with Garmezy, two other prominent scientists who studied resilience among children of schizophrenics at the time were E. James Anthony and Michael Rutter. Anthony (1974) described a set of "invulnerable" children who resisted becoming engulfed by a parent's psychopathology while still maintaining compassion for the affected parent. Rutter (1979) also identified a distinct subgroup of resilient children in this population, reporting them to be characterized by traits such as high creativity, effectiveness, and competence.

In research with groups other than families of schizophrenics, Murphy and Moriarty (1976) examined vulnerability and coping patterns in children exposed to naturally occurring stressors such as deaths or injuries in the family. Based on rich clinical observations, these authors described resilient youth as having several attributes in

common, including social charisma and the capacity to relate well to others, the ability to experience a range of emotions, and the ability to regulate the expression of these emotions.

Emmy Werner's (Werner & Smith, 1982, 1992, 2001) study of infants at risk on the Hawaiian island of Kauai is a landmark in the scientific study of resilience. The study was begun in 1954 with a cohort of all known pregnancies on the island, with several follow-up assessments that continue up to the present time. The earliest reports on this cohort showed that children manifested significant deficits when family poverty was accompanied by perinatal risk. Furthermore, effects of poverty status seemed to operate via disruptions in the quality of the caregiving environment, particularly instability and disorganization of the family. Major protective factors, distinguishing well-functioning at-risk children from those faring more poorly, included affectional ties with the family, informal support systems outside the home, and dispositional attributes such as sociability.

The 1980s saw the publication of several scholarly papers on resilience, two of which were particularly influential; one was a research report by Garmezy, Masten, and Tellegen (1984) at the University of Minnesota, and the other was an analysis of conceptual issues in the study of this construct by Michael Rutter (1987). The former reported on Project Competence, a study of competence among children who experienced life stressors (Garmezy et al., 1984). The conceptualization of major constructs, methods, and data analytic strategies in this article (described later in this chapter) came to serve as models for scores of subsequent research seeking to illuminate vulnerability and protective factors.

Rutter's (1987) article was seminal in clarifying major conceptual issues in the study of resilience. In this paper, he provided several examples of a particularly intriguing class of protective processes, those with interactive components (also examined by Garmezy et al., 1984). Boys, for example, reacted more severely to family discord than did girls such that being female was "protective," and having a supportive spouse was more strongly related to good parenting among ex-institutionalized women than comparison mothers. Rutter also provided one of the first discussions on the importance of identifying processes in resilience and delineated various ways via which risk effects can be reduced: by altering the *experience* of risk itself (e.g., preparing a child before hospitalization); by altering *exposure* to the risk (e.g., via strict parental supervision in high-risk environments); by averting *negative*

*chain reactions* (which serve to perpetuate risk effects, as harsh discipline perpetuates oppositionality); by *raising self-esteem* (through secure relationships and tasks well done); and through *turning points* or opportunities (such as entry into army service).

During the 1980s and early 1990s, there were several changes in conceptual approaches to studying the construct, two of which were particularly salient. The first concerned perspectives on the “locus” of resilience. In early studies in this area, the effort had been to identify personal qualities of resilient children such as autonomy or belief in oneself. As work in the area evolved, however, researchers acknowledged that resilient adaptation may often derive from factors external to the child. Three sets of factors thus came to be commonly cited as implicated in the development of resilience: attributes of the children themselves, aspects of their families, and characteristics of their wider social environments (Garmezy, 1987; Rutter, 1987; Werner & Smith, 1982, 1992).

The second change involved conceptions of resilience as potentially fluctuating over time rather than fixed forever. In some early writings, those who did well despite multiple risks were labeled “invulnerable” (Anthony, 1974). Recognizing that this term implied that risk evasion was absolute and unchanging, researchers gradually began to use the more qualified term “resilience” instead. Implicit in this change of terminology was the recognition that positive adaptation despite adversity is never permanent; rather, there is a developmental progression, with new vulnerabilities and strengths emerging with changing life circumstances (Garmezy & Masten, 1986; Werner & Smith, 1982).

A related qualifier was that children can seem resilient in terms of their behaviors but still might struggle with inner distress in the form of problems such as depression and anxiety. First reported in work on maltreated children (Farber & Egeland, 1987) and subsequently among inner-city adolescents (Luthar, 1991), this finding has since been replicated in various at-risk groups. Among children of depressed mothers, for instance, there is a distinct adaptation pattern involving adoption of the caretaker role: a kind of false maturity, which may initially appear to be healthy but is likely to have negative consequences over time (see Hammen, 2003; Hetherington & Elmore, 2003). In work with children of alcoholics, Zucker and colleagues (Zucker, Wong, Puttler, & Fitzgerald, 2003) found that children who showed little outward disturbance as preschoolers generally continued to show low behavioral deviance several years later. On the other hand, these preschoolers, initially

identified as resilient, came to show internalizing symptoms as high as those of the initially most troubled group. Recognizing that (1) children can retain their manifest resilience but still experience inner distress, and (2) internalizing problems, if left unattended, can eventually derail apparently resilient trajectories (Luthar & Cicchetti, 2000; Raver, 2002), scholars now underscore the need to consider the unique profiles, and the associated intervention needs, of youth who are behaviorally stellar but at the same time psychologically vulnerable (D’Imperio, Dubow, & Ippolito, 2000; Luthar & Zelazo, 2003; Zucker et al., 2003).

Finally, it was recognized that even considering only domains of behavioral competence, resilience is never an across-the-board phenomenon, but inevitably shows some domain-specificity. Much as children in general do not manifest uniformly positive or negative adaptation across different areas of adjustment, researchers cautioned that at-risk children, too, can display remarkable strengths in some areas but, at the same time, show notable deficits in others (Luthar, Doernberger, & Zigler, 1993). In view of the accumulated evidence, therefore, scientists have—prudently—begun to use more circumspect terms that specify domains in which resilience is seen, referring, for example, to educational resilience (Wang & Gordon, 1994) or emotional resilience (Denny, Clark, Fleming, & Wall, 2004).

By the turn of the century, the burgeoning popularity of the resilience construct was reflected not only in the number of scientific publications on this topic but also the breadth of at-risk circumstances examined. Several scholarly articles were published about critical conceptual issues in studying resilience and summarizing the research findings until that time (e.g., Cohler, Stott, & Musick, 1995; Luthar, 1993; Luthar & Zigler, 1991; Masten, 2001; Masten, Best, & Garmezy, 1990; Masten & Coatsworth, 1998; Rutter, 1993, 2000). Resilience was the focus of a special issue of the journal *Development and Psychopathology* (Cicchetti & Garmezy, 1993) as well as several books encompassing diverse topics and scientific methods (e.g., Cicchetti, Rappaport, Sandler, & Weissberg, 2000; Glantz & Johnson, 1999; Haggerty, Sherrod, Garmezy, & Rutter, 1996; Hetherington, 1999; Luthar, 2003; McCubbin, Thompson, Thompson, & Futrell, 1999; Rolf, Masten, Cicchetti, Nuechterlein, & Weintraub, 1990; R. D. Taylor & Wang, 2000; Ungar, 2004; Wang & Gordon, 1994). In terms of diversity of risks examined, by the year 2000, resilience had been examined in the context of adversities ranging from parental mental illness (Masten & Coatsworth, 1998), maltreatment (Cicchetti & Rogosch, 1997), and chronic illness (Wells & Schwebel, 1987), to socioeconomic disadvantage and associated risks

(Garmezy, 1993; Luthar, 1999; Rutter, 1979; Werner & Smith, 1982, 1992), community violence (Richters & Martinez, 1993), and catastrophic life events (O'Dougherty-Wright, Masten, Northwood, & Hubbard, 1997).

Alongside the rapid proliferation of studies on resilience, however, were increasing concerns about the rigor of methods used in this body of work (e.g., Cicchetti & Garmezy, 1993; Glantz & Johnson, 1999; Luthar, 1993; Rutter, 2000). In particular, critics alleged (and with good reason) that the literature on resilience reflected considerable confusion around pivotal constructs and definitions, about criteria used to label people as resilient, and about the definition and measurement of protective and vulnerability processes (Luthar, Cicchetti, & Becker, 2000a). Given the centrality of these notions and the fact that there are still some uncertainties about them in the field, they are discussed at some length in the section that follows.

## RESILIENCE RESEARCH: CENTRAL FEATURES

Resilience is defined as a phenomenon or process reflecting relatively *positive adaptation despite experiences of significant adversity or trauma*. Resilience is a superordinate construct subsuming two distinct dimensions—significant adversity and positive adaptation—and thus is never directly measured, but is indirectly inferred based on evidence of the two subsumed constructs.

Considering the two component constructs in turn, risk is defined in terms of statistical probabilities: A high-risk condition is one that carries high odds for measured maladjustment in critical domains (Masten, 2001). Exposure to community violence, for example, constitutes high risk given that children experiencing it reflect significantly greater maladjustment than those who do not (Margolin & Gordis, 2000). Similarly, maternal depression is a risk factor in that children of mothers with depressive diagnoses can be as much as 8 times as likely as others to develop depressive disorders themselves by adolescence (Wickramaratne & Weissman, 1998).

In addition to discrete risk dimensions such as community violence, poverty, and parent mental illness, researchers have examined composites of multiple risk indices such as parents' low income and education, their histories of mental illness, and disorganization in their neighborhoods. Seminal research by Rutter (1979) demonstrated that when risks such as these coexist (as they often do in the real world), effects tend to be synergistic, with children's outcomes being far poorer than when any of these risks existed in isolation. Use of this cumulative risk

approach is exemplified in work by Sameroff and his colleagues (e.g., Gutman, Sameroff, & Cole, 2003; Sameroff, Gutman, & Peck, 2003). These authors computed a total risk score across 10 different dimensions, assigning for each one a score of 1 (versus zero) if the child fell in the highest quartile of continuous risk dimensions and, for dichotomous dimensions such as single-parent family status, if they were present in that child's life. Masten and colleagues (Masten, Morison, Pellegrini, & Tellegen, 1990) used a somewhat different approach to deriving total risk based on continuous scores; these researchers standardized the values on different risk scales and added them to obtain a composite.

Decisions regarding the use of single or multiple risk indices in resilience research depend on the substantive research questions. The former is used, obviously, when applied researchers seek to identify factors that might modify the effects of *particular* environmental risks known to have strong adverse effects, so as to eventually derive specific directions for interventions. Examples are parental divorce and bereavement; knowledge of what ameliorates the ill effects of these particular adversities has been valuable in designing appropriate interventions (C. R. Martinez & Forgatch, 2001; Sandler, Wolchik, Davis, Haine, & Ayers, 2003). Additive approaches are more constrained in this respect, precluding identification, for example, of which of the indices subsumed in the composite are more influential than others. On the other hand, composite risk indices generally explain more variance in adjustment than do any of them considered alone, and as noted earlier, they may be more realistic in that many of these risks do co-occur in actuality (Luthar et al., 2000a; Masten, 2001).

*Positive adaptation*, the second component in the construct of resilience, is adaptation that is substantially better than what would be expected given exposure to the risk circumstance being studied. In many studies of resilience across diverse risk circumstances, this has been defined in terms of behaviorally manifested social competence, or success at meeting stage-salient developmental tasks (Luthar et al., 2000a; Masten, 2001; Masten & Coatsworth, 1998). Among young children, for example, competence was operationally defined in terms of the development of a secure attachment with primary caregivers (Yates, Egeland, & Sroufe, 2003), and among older children, in terms of aspects of school-based functioning such as good academic performance and positive relationships with classmates and teachers (Masten & Coatsworth, 1998; Wyman et al., 1999).

In addition to being developmentally appropriate, indicators used to define positive adaptation must be conceptu-



ally of high relevance to the risk examined in terms of domains assessed and stringency of criteria used (Luthar, 1993). When communities carry many risks for antisocial problems, for example, it makes sense to assess the degree to which children are able to maintain socially conforming behaviors (Seidman & Pedersen, 2003), whereas among children of depressed parents, the absence of depressive diagnoses would be of special significance (Beardslee, 2002; Hammen, 2003). With regard to stringency of criteria, similarly, decisions must depend on the seriousness of the risks under consideration. In studying children facing major traumas, it is entirely appropriate to define risk evasion simply in terms of the absence of serious psychopathology rather than superiority or excellence in everyday adaptation (Masten & Powell, 2003).

Whereas approaches to measuring risk can involve one or multiple negative circumstances, *competence* must necessarily be defined across multiple spheres, for overly narrow definitions can convey a misleading picture of success in the face of adversity. Adolescents, for example, might be viewed very positively by their peers but, at the same time, perform poorly academically or even demonstrate conduct disturbances (Luthar & Burack, 2000; O'Donnell, Schwab-Stone, & Mueeed, 2002). Statistical examination of different outcome domains can, again, be done via various strategies. In variable-based analyses such as regressions, some researchers have simply examined each one in separate analyses, for example, predicting to scores on school achievement, peer acceptance, and emotional well-being (Zucker et al., 2003). An alternative approach, parallel to that previously described for cumulative risk scores, is to standardize scores across different adjustment domains and then add these to gauge overall competence across multiple spheres (Bolger & Patterson, 2003).

An innovative approach to defining competence is seen in research by Kim-Cohen, Moffitt, Caspi, and Taylor (2004), who statistically computed competence scores that were better than what would be expected given the presence of risk. In their sample of largely low-income children, these authors assessed several dimensions of risk: socioeconomic disadvantages, housing problems, and mothers' perceptions of economic deprivation. Multiple regression analyses were used with the three scores of deprivation predicting to two outcomes—conduct problems and intelligence scores—and the residuals from these analyses were standardized and saved. These residual scores represented, for each child, the difference between what would be expected given the level of risk, and what was actually observed (see also Elder & Conger, 2000). The investigators therefore arrived at two scores, behavioral resilience

and cognitive resilience (residuals of low conduct and high intelligence scores, respectively), and these were used as outcome variables in statistical analyses.

It should be noted that in some situations, competence is most appropriately operationalized in terms of “better than expected” functioning of families or communities rather than of the children themselves. As Seifer (2003) has argued, infants and even toddlers are still too young to reliably be judged as manifesting resilience because their functioning is so integrally regulated by others. At these young ages, therefore, it may be more logical to operationalize positive adjustment in terms of the mother-child dyad or family unit. In a similar vein, the label resilience can be most appropriate for communities of well-functioning at-risk youth. Research on neighborhoods, for example, has demonstrated that some low-income urban neighborhoods reflect far higher levels of cohesiveness, organization, and social efficacy than others (Leventhal & Brooks-Gunn, 2000; Sampson, Raudenbush, & Earls, 1997), with the potential, therefore, to serve as important buffers against negative socializing influences.

### Vulnerability and Protective Processes

The central objective of resilience researchers is to identify *vulnerability* and *protective factors* that might *modify* the negative effects of adverse life circumstances, and, having accomplished this, to identify *mechanisms* or *processes* that might underlie associations found (Luthar & Cicchetti, 2000; Masten, 2001; Rutter, 2000, 2003). Vulnerability factors or markers encompass those indices that exacerbate the negative effects of the risk condition. Among youth living in the ecology of urban poverty, for example, male gender can be a vulnerability marker, for boys are typically more reactive than girls to negative community influences (see Luthar, 1999; Spencer, 1999). For children experiencing severe and chronic life adversities, those with low intelligence are more vulnerable to adjustment difficulties over time than are those with higher intelligence (Masten, 2001). Protective factors are those that modify the effects of risk in a positive direction. Examples include an internal locus of control and having a positive relationship with at least one adult; in groups of youngsters exposed to significant adversities, those with such attributes frequently fare better than youth who lack them (Luthar & Zigler, 1991; Masten, 2001; Rutter, 1999; Werner & Smith, 1992).

In the literature on resilience, discussions on the notions of vulnerability and protection have reflected considerable confusion around definition, measurement, and interpretation of statistical findings. As these processes form the

crux of what resilience researchers are interested in, salient issues in this regard are addressed individually in discussions that follow.

### ***Identifying Protective and Vulnerability Factors: Variable-Based Approaches***

In the resilience literature, there have been two major approaches to identifying protective or vulnerability factors, the first involving variable-based statistical analyses such as multivariate regressions. One of the first empirical efforts to use this approach was the previously mentioned groundbreaking paper by Garmezy et al. (1984). In this research, risk was considered on a continuous scale of cumulative life stress scores, and competence was defined in terms of three dimensions: good school grades and two dimensions of classroom behavior as rated by both classmates and teachers, engaged-disengaged and classroom disruptiveness. Hypothesized protective factors included the child's female sex, high intelligence, and high socioeconomic status (SES). These were examined not only in terms of direct links with competence outcomes (main effects) but also in interaction with stress (to determine if they might benefit children at high stress more than those at low stress). Hierarchical multiple regressions were performed, which showed significant main effect links for all hypothesized protective factors as well as a significant  $IQ \times$  stress interaction effect (Garmezy et al., 1984). Thus, high SES, female sex, and high IQ were each advantageous for children with high life stress as well as those at low stress. The lone interaction effect showed that high IQ children maintained a generally high level of competence regardless of stress levels, whereas low IQ youth did far more poorly at high than low stress.

Garmezy and colleagues (1984) initially used the terms "compensatory" to describe their main effect findings and "protective" to describe the interaction effect they found, but other researchers have commonly used protective to refer to main effect links as well. In two other major programs of research, Werner's (Werner & Smith, 1982) study in Hawaii and Cowen, Wyman, and colleagues' Rochester Child Resilience Project (Cowen et al., 1996; Wyman et al., 1999), protective factors were simply those that distinguished between high-risk children who did well and those who did poorly (what this variable did or did not do for low-risk youth was not relevant). Given this differential use of the term, there were increasing exhortations for researchers to enhance specificity in how they referred to interactive effects (e.g., Luthar et al., 2000a; Luthar & Zelazo, 2003), with terms such as "protective-stabilizing" for trends such as those in the Garmezy et al. study and

"protective-enhancing," when at-risk children with the attribute performed much better than all others. Encouragingly, researchers are in fact using more differentiated terms in describing interactive effects (e.g., Brody, Dorsey, Forehand, & Armistead, 2002; Gerard & Buehler, 2004; Hammack, Richards, Luo, Edlynn, & Roy, 2004); despite some continuing variations in the labels used, there is a growing convention of clearly specifying what exactly the terms resilience, risk, vulnerability, and protection signify as operationally defined in particular studies.

### ***Person-Based Analyses***

Person-based analyses in resilience research essentially involve comparisons between a group of children who experience high risk and show high competence—a manifestly resilient group—and others varying on these two dimensions. Of particular interest are comparisons with youth at high risk and low competence, as these can illuminate factors that might confer protection against adversity. Comparisons with low risk and high competence groups, conversely, are particularly useful in determining whether the high competence of manifestly resilient children is actually commensurate with the levels shown by youth with relatively benign life circumstances.

Demarcating groups of manifestly resilient children is a little more complicated when there are multiple aspects of competence involved, as is the preferred approach; two strategies have been used in such instances (see Luthar & Zelazo, 2003). One involves standardizing and adding the scores across the different dimensions to obtain an overall competence score, and then allotting children to groups based on distribution of these composites. An advantage of this approach is that it takes into account where exactly people fall on the continuum of scores across various outcomes, so that a person extremely high on multiple domains of everyday competence, for example, would fall well above the sample mean on the composite score, even if he or she had significant problems in one particular symptom domain. The alternative strategy is to stipulate cutoffs that represent positive and negative adjustment on each indicator and designate children into different groups depending on where they fall across all of these, that is, in terms of competence scores that are above the sample mean and symptom levels that are below clinically significant levels. The subgroup of children who meet these success criteria across all indices is identified, and these children—again, ostensibly resilient—are compared with others who do not meet these criteria.

In the recent past, researchers have begun to use both variable- and person-based approaches in their analyses of

multiple competence domains. Buckner, Mezzacappa, and Beardslee (2003), for instance, conducted a study with 155 children from very low-income families and considered five different competence outcomes: a global rating of overall adaptive functioning and one of behavioral competence, and symptom levels on externalizing behaviors, depression, and anxiety. For their variable-based analyses, these authors derived a continuum of adaptation scores by converting into z-scores values on all five dimensions, adding these, and then computing an average. Hierarchical regressions were then conducted, with the hypothesized protective factors predicting to the continuous adaptation scores. In person-based analyses, the authors identified a subgroup of manifestly resilient children ( $n = 45$ ) who had better than average adaptation and competence scores and symptom levels below clinically significant levels on all three domains. Nonresilient children ( $n = 70$ ) were those who had at least one elevated symptom measure as well as global adjustment scores that fell below the very good range (40 children did not fit in either group). Again, the manifestly resilient youth were compared with others on the hypothesized protective factors.

Whereas person-based analyses have commonly been used to compare resilient and nonresilient groups, as in the preceding example, another useful application in resilience research, and one less often explored, is to ascertain conditional effects of influences as an alternative to using interaction terms. The latter strategy is exemplified in Seidman and Pedersen's (2003) work with low-income adolescents. These authors hypothesized that the benefits of adolescents' engagement in particular extracurricular domains—peer relations, academics, athletics, religion, employment, and culture—would depend on whether they were simultaneously invested in other activities as well. Cluster analyses yielded nine distinct groups of youth with varying profiles of activity involvement. Two clusters represented “pan-competence”: high engagement and high quality across most domains. Others included children high in one domain but low in others, such as the “academically disengaged athletes” (high in athletics but very low in academics). Cluster comparisons showed that the benefits of engagement in any one domain did in fact depend on engagement in the others: Youth with positive experiences in two or more domains showed significantly better adjustment than those with high-quality engagement in only one domain. To have examined the conditional links via variable-based analyses would have necessitated an impossibly high number of interaction terms (i.e., different combinations of seven engagement domains). In future resilience research, person-based analyses such as these carry much

promise for exploring the implications of different combinations of vulnerability and protective influences in individuals' lives.

### *Longitudinal Analyses: Resilience as “Bouncing Back”*

Much of resilience research has involved identification of factors that correlate with relatively positive outcomes among at-risk youth, but in some instances, the approach has been to see what determines who will “bounce back” from earlier dysfunction (e.g., Ackerman, Brown, & Izard, 2003; Sroufe, Egeland, & Kreutzer, 1990). Long-term prospective studies are critical in illuminating turning points not only in childhood but across the life span, and at this time, data are available from a growing number of studies. Exemplary in this regard is Emmy Werner's (Werner & Smith, 2001) study of children in Hawaii followed from infancy through their 40s. Also spanning multiple decades is Laub and Sampson's (2003) follow-up of the Glueck and Glueck (1950) sample of low-income delinquent boys, originally assessed when they were 10 to 17 years old and most recently in their 60s, as well as George Vaillant's (Vaillant & Davis, 2000) parallel follow-up of the nondelinquent (but also low-income) comparison group. Hauser and Allen (Allen & Hauser, 1996; Hauser, 1999), similarly, have followed a group of psychiatrically hospitalized adolescents well into their adult years. Outside of the United States, critical longitudinal studies, all still ongoing, include the Isle of Wight study in England, where a 2-year-old birth cohort was followed to the age of 44 to 45 years (Collinshaw, Maughan, Pickles, Messer, & Rutter, 2004), the Dunedin Multidisciplinary Health and Development Study in New Zealand, where a cohort of 1,037 children were assessed through age 26 years (Moffitt, Caspi, Rutter, & Silva, 2001), and the Christchurch Health and Development Study, also in New Zealand, involving an unselected birth cohort of 1,265 children followed until the age of 21 years (Fergusson & Horwood, 2003).

Increasingly used in prospective studies are newer analytic techniques such as hierarchical linear modeling (HLM; Bryk & Raudenbush, 1987, 1992). HLM has the advantage of being able to accommodate data with some missing data points in different assessments over time and uneven time gaps between assessment points. Traditional methods such as multivariate repeated measures of analyses of variance require complete data for all subjects across all points of assessment as well as equal intervals between all points. Guttman et al. (2003) demonstrate the effective use of HLM in resilience research, showing academic trajectories between grades 1 through 12 among youth who

had been at high versus low levels of risk when they were assessed at the age of 4 years.

Another useful approach is that developed by Nagin and colleagues (Jones, Nagin, & Roeder, 2001; Nagin, 1999), which allows examination of different growth trajectories within a given group. Even when study samples consist of individuals who are similar on broad demographic indices, their growth trajectories over time can show some heterogeneity, and Nagin's procedure enables identification of disparate subgroups of individuals who each show the same distinct trajectories (e.g., those who increase, decrease, or remain stable on symptom or competence indices). Other advantages of this approach are that it can be used with both continuous and frequency data, and it allows for determination of links between different vulnerability or protective indices on the one hand, with diverse trajectories of maladjustment on the other (where harsh parenting, for example, is highly represented in trajectories of high stable or sharply increasing psychopathology, but not in others; see Latendresse & Luthar, 2005).

#### ***Interpretation of Findings on Risk Modifiers: Common Questions, Concerns, and Solutions***

In variable-based analyses, a complication of interpretation has to do with whether significant main effect associations imply that low levels of the hypothesized asset imply unusually poor adjustment, or that high levels imply excellence in functioning, or both. There are, admittedly, a few "pure" vulnerability indices that can only create disorder when present but not excellence when absent, such as child maltreatment, whereas others can be beneficial when present without conferring vulnerability when absent, such as artistic or musical talents (Rutter, 2003). Many, if not most, indices, however, are bipolar in nature, with the potential for effects at both extremes (Masten, 2001). To illustrate, a significant main effect for extraversion among high-risk youth could imply either that high levels lead to exceptional competence (protection), or that low levels lead to unusual maladjustment (vulnerability).

Although researchers have often used these terms interchangeably, choosing somewhat arbitrarily between labels of vulnerability or protection for such bipolar variables, it can be useful to examine the distribution of scores to guide choices in this regard (Luthar & Zelazo, 2003). To continue with the same example, this could be done by demarcating, for interpretive purposes, a group high on extraversion (e.g., as defined by the top tertile) and one with low extraversion. Depending on the degree to which the mean competence scores of the low and high extraversion groups each deviate from the sample mean, this could illuminate

whether low extraversion connoted significant vulnerability (with competence scores much poorer than average), or whether high extraversion reflected protection (with competence well above the sample average). If both points deviated equally from the mean, the terms protection and vulnerability could in fact be used interchangeably. This type of scrutiny of mean competence scores—associated with high and low levels of the hypothesized risk modifier—can be useful not only in clarifying the nature of linear links, but also in detecting curvilinear links, where extraversion, for instance, is most adaptive at moderate levels with very high and low levels each being maladaptive. Use of this strategy is exemplified in Luthar and Latendresse's (2005b) study on the risk-modifying potential of different family processes (see also Stouthamer-Loeber et al., 1993).

Although there has been some confusion surrounding main effect findings, there has been a great deal more confusion around interaction effects; these have often been viewed as being at the crux of research on resilience, sometimes inappropriately emphasized as more important for inferring protection than direct, main effects (Luthar et al., 2000a, 2000b). It is certainly true that in the now classic papers of Garmezy et al. (1984) and Rutter (1987), protective effects were, in fact, defined in terms of interactions. On the other hand, neither of these scholars was dismissive of main effect findings. In point of fact, soon after publication of the 1984 Project Competence paper discussed earlier, Masten and Garmezy (1985, p. 14) defined protective factors as representing "a broader term. . . . [They are generally] associated with a lower than expected incidence of negative outcome, or, to take the more appropriate positive perspective, these factors are associated with better than expected outcomes." In another paper, Garmezy (1987, p. 170) characterized early main effect findings from Project Competence for both SES and IQ as being "protective factors against disruptive-aggressive responses to stress." None of these statements implies that factors cannot be "protective" unless they are in statistical interaction terms.

Over 2 decades ago, Rutter (1983) warned against an inappropriately high emphasis on statistical interactions because they are confused with interactions between the *person* and the environment. Discussing this problem in some depth, he noted that

personal interactions are not synonymous with statistical interaction effects. Most of the (person-environment) interactions that I have considered would not be detectable in terms of the conventional testing for multiplicative interactions in multivariate analyses. . . . [Further,] because interactions can take many forms and cannot be examined satisfactorily



through any one overall multivariate analysis, there is a considerable danger that spurious interactions will be detected as a consequence of looking at the data in numerous alternative combinations and permutations. (p. 315)

Similarly, in discussing interactional models, Masten and Garmezy (1985, pp. 36–37) underscored the importance of transactional perspectives, which involve “recognition that adaptation is an ongoing process of interactions between the systems of individual, family, social network, community, and society.” At the same time, these authors warned against an overreliance on multiple interaction terms to detect meaningful ways in which individual attributes transact with aspects of the environment to affect adjustment outcomes.

Aside from the fact that they typically have small effect sizes and thus are hard to detect, another concern about using interaction terms is that considering them might constrain detection of important *main effect* links. In contemporary studies involving analyses like those of Garmezy et al. (1984), it is not uncommon to see five or more protective factors explored in a given sample. When these variables are all considered as main effects, along with each of them in interaction with risk (as well as controls for demographics such as age, ethnicity, or gender), the resultant loss of statistical power, due to use of a large number of variables, renders Type III errors quite likely, with the potential of failing to detect main effect links that do actually exist. Unless researchers have specific *a priori* hypotheses predicting particular patterns of links between hypothesized risk modifiers and outcomes, therefore, it may be more prudent to omit them.

This suggestion is resonant with increasingly heard suggestions (García Coll, Akerman, & Cicchetti, 2000; García Coll et al., 1996; Hobfoll, Ritter, Lavin, Hulsizer, & Cameron, 1995; Luthar, 1999; Tucker & Herman, 2002) that in working with groups who have been little studied so far, as many at-risk groups are, it is best to focus intensively on how different processes operate *within* that sample, rather than seeking to document how they compare with patterns in other mainstream (or low-risk) groups. To be sure, many forces will show similar patterns—maltreatment hurts all children, as good parenting benefits all—but there are also several forces that are highly salient in some contexts but not others (Wyman, 2003). Experiences of discrimination, for example, are potent negative forces for minority children (García Coll et al., 1996; Szalacha et al., 2003) but do not apply to Caucasians. Optimism is related to life satisfaction and low depression among Caucasians but not among Asians (E. C. Chang, 2001). In other in-

stances, processes may actually reflect diametrically opposed patterns in different samples. Parental strictness is generally seen as detrimental for mainstream children but often benefits inner-city teens (Cauce, Stewart, Rodriguez, Cochran, & Ginzler, 2003; Sameroff et al., 2003). In cases such as these, it would likely be a mistake for researchers to explore main and interaction effects with high- and low-risk samples combined. Nonsignificant main effect associations may well be found—with opposing direction of links in the two samples canceling each other out—and interaction effects also statistically nonsignificant, given their instability and small effect sizes.

As resilience researchers consider using or not using interaction terms to assess samples including both high-risk and comparison groups, therefore, it is critical that they carefully consider the substantive questions of interest. What within-group multivariate analyses of at-risk samples illuminate is the *relative significance of particular protective process*, for example, school safety or neighborhood patrolling, vis-à-vis other influences in the same population. Knowledge such as this can be far more useful, conceptually and practically (in prioritizing intervention themes), than is evidence that a particular set of links is statistically stronger or weaker than parallel associations in a low-risk group. Even if a researcher's goals were to examine the generalizability of processes identified among youth facing high adversity, this could easily be accomplished with separate analyses of the comparison group (by contrasting of beta weights in regressions, if necessary, to determine whether links differ significantly in strength). In sum, within-group analyses are often the strategy of choice when seeking to learn about intervention priorities in subgroups of the population about whom we currently understand little. The conceptual appeal of interaction effects must not obscure the fact that including multiple interaction terms for “exploratory” purposes can sacrifice much in terms of statistical power, possibly reducing the likelihood of detecting main effects that do exist in reality.

A final cautionary note regarding the joint consideration of high- and low-risk groups is the potential for spurious findings on protection. In other words, statistically significant main effect terms might be erroneously labeled as compensatory or protective against risk even when the effects occur only in the *low-risk* group (Luthar & Goldstein, 2004). To illustrate, a series of studies on children varying in level of violence exposure showed significant overall links with competence for various positive family variables, such as high family support and high levels of monitoring (Hammack et al., 2004; Kliewer et al., 2004; Sullivan, Kung, & Farrell, 2004). More in-depth analyses,

however, revealed that in many cases, the family assets were helpful only among children with low exposure to community violence. Among children whose scores were at the higher end of the violence exposure measures, the benefits of variables such as family support were essentially negligible (Luthar & Goldstein, 2004). For circumstances such as these, Sameroff and colleagues (Gutman et al., 2003; Sameroff et al., 2003) have argued that terms such as “promotive”—which do not imply that any benefits are conferred at high-risk levels—are more appropriate than is “protective.” Other terms that avoid implying effects at high risk include “beneficial” and “salutary” (Luthar & Zelazo, 2003); researchers could also simply refer to the attributes as “assets” (Masten & Powell, 2003).

### Understanding Underlying Processes

A hallmark of the current generation of resilience research is attention to process: If studies are truly to be informative to interventions, they must move beyond simply identifying variables linked with competence to explain the specific underlying processes (Cowen et al., 1996; Luthar & Cicchetti, 2000; Masten, 2001; Rutter, 2000, 2003; Werner & Johnson, 1999; Wyman et al., 1999). This need to “unravel” underlying mechanisms applies to the risk condition itself as well as to hypothesized protective and vulnerability indices. With regard to risk transmission, for example, maternal depression can affect children through various environmental processes, including conflict between parents, stressful events in the family, children’s modeling of ineffective coping styles, and negative parenting behaviors (Hammen, 2003); biological processes such as diffuse reductions in cortical activation or generally lowered left frontal activation, may also be implicated (see Dawson et al., 2003). Similarly, the negative effects of maternal drug abuse on children may derive from various problems that tend to co-occur with women’s addiction, such as depressive and anxiety disorders and high life stress, as much as or more than from the drug abuse per se (Luthar, D’Avanzo, & Hites, 2003). Disaggregating or unpacking the relative contributions of each of these family processes is critical not only for theory and research, but also for designing interventions.

Although many global sociodemographic and psychological constructs (such as family SES and parents’ mental illness) are commonly thought of as connoting high versus low risk, attention to processes has sometimes led to findings belying commonplace assumptions. To consider family SES, for example, material wealth is generally viewed as

connoting low risk. However, an accumulating body of literature indicates that (1) among adults, high preoccupation with wealth and status may often compromise well-being (see Kasser, 2002), and (2) children of the wealthy and well-educated can show elevated maladjustment in some domains, particularly substance use and internalizing symptoms, possibly as a result of high achievement pressures and isolation from parents (Luthar, 2003; Luthar & Latendresse, 2005a; Luthar & Sexton, 2004). Findings such as these support what elders in developmental psychology cautioned us about decades ago: Global indicators of children’s “social addresses” are limited in what they can tell us about children’s family lives (Bronfenbrenner, 1986; Zigler, Lamb, & Child, 1982). In trying to illuminate who is at risk and why, we need direct attention to the processes that actually exist within their families.

Turning to mechanisms underlying protective and vulnerability factors, examples of possibilities in this regard are seen in Criss and colleagues’ (Criss, Pettit, Bates, Dodge, & Lapp, 2002) descriptions of various processes via which peer acceptance might confer advantages for children with disturbed family functioning. When parents are highly stressed, good peer relationships can provide alternative ways to meet needs for connectedness or concrete help. They may also serve to modify inappropriate child behaviors, such as aggression, that distressed parents cannot discipline adequately. Indirect effects on adults may also be involved; children’s peer relationships may lead their parents to network with the other children’s parents, which in turn may confer benefits such as illuminating new approaches to discipline. Finally, positive peer relations in the school context may promote bonding with school and teachers.

With regard to vulnerability factors, an example of diverse underlying mechanisms is seen in research on hostile, coercive family environments (e.g., Compton, Snyder, Schrepferman, Bank, & Shortt, 2003). These are likely to exacerbate further the vulnerability of children in high-risk groups via various conduits, including ineffective parenting, unresolved conflict and discord, insufficient child monitoring and supervision, and lack of close relationships with one or both parents (Rutter, 2000).

### *Moving beyond Psychological Processes: The Importance of Biology and Interdisciplinary Work*

The preceding examples—like most of resilience research thus far—generally encompass psychological variables; there is a critical need for scientists to increase consideration also of biological indices, again, both as mediators of

risk itself and as processes underlying vulnerability and protective factors (Cicchetti, 2003; Rutter, 2002b). In a seminal overview paper, Curtis and Cicchetti (2003) have explained the importance of diverse biological processes ranging from neuroendocrinology to capacities to regulate emotions. Modern neuroscience, for example, has established the phenomenon of neural plasticity, where there is structural and functional reorganization of the brain in response to environmental inputs. These physical changes in the brain, in turn, can have substantive implications in determining vulnerability and protective processes to future psychopathology (Curtis & Nelson, 2003). Evidence such as this points to several issues worthy of investigation by future resilience researchers, such as whether stressful or challenging tasks might evoke activation in different areas of the brain (e.g., as assessed by functional magnetic resonance imaging) among competent and noncompetent performers, or whether resilient and nonresilient children, matched on adversity type and level, might show differing patterns of brain structure and functioning.

In terms of protective processes, the capacity to regulate or modulate negative emotions in the face of threats is of obvious importance for managing well in the face of threat (e.g., Aspinwall & Taylor, 1997; Buckner et al., 2003; Eisenberg, Champion, & Ma, 2004), and here again, biological processes can be salient. Various environmental influences likely affect whether individuals become adept or inept at regulating their emotions, such as significant adults' responses to and tolerance of displays of negative affect in the early childhood years. However, at least three biological processes might also be implicated. The first is the capacity to recover relatively quickly from negative events experienced (Davidson, 2000). Such "rapid recovery" tendencies can be gauged by studying the startle reflex, which is an involuntary response (a fast twitch of facial and body muscles) to a sudden and intense visual, tactile, or acoustic stimulus. Studies have shown that adverse environmental influences affect not only the startle reflex, but also the neural network that underlies this response (Curtis & Cicchetti, 2003).

A second aspect of brain functioning that might affect emotion regulation, according to Curtis and Cicchetti (2003), is hemispheric electroencephalograph (EEG) activity. In general, the right hemisphere participates more heavily in negative affect and the left hemisphere more in positive emotion. Individuals who show relatively high activation of the left prefrontal cortex have been found to report more positive affect both when at rest and in response to positive stimuli, and also show less negative emotion in

responding to negative stimuli (Sutton & Davidson, 1997; Wheeler, Davidson, & Tomarken, 1993). Thus, asymmetry in brain functioning might be implicated in differing capacities to regulate emotions.

A third biological mechanism that might be implicated is neuroendocrinal in nature. Chronic exposure to stressful experiences tends to lead to excessive activation of the hypothalamic-pituitary-adrenal (HPA) axis and the resultant elevation of the stress hormone cortisol. Hypercortisolism in turn can cause damaging and sometimes pathogenic effects on neurons (McEwen & Sapolsky, 1995; Sapolsky, 2000) and can also affect the synthesis and reuptake of neurotransmitters as well as the density of sensitivity of receptors (McEwen, 1994; Watson & Gametchu, 1999). Again, these findings point to the possibility that resilient individuals are those who, in the face of various stressors, tend to return relatively quickly to baseline levels of neuroendocrine functioning and thus avoid the damage conferred by hypercortisolism.

Aside from the aforementioned categories, another important set of biological processes are those involving genetic influences. Noteworthy in this regard are works of Rutter, Caspi, and their colleagues (Caspi et al., 2003; Kim-Cohen et al., 2004; Rutter, 2003) on genetic factors potentially involved in resilience. Discussed at some length in the next section of this chapter (under "Family-Level Processes"), recent studies have identified G-E interactions—wherein both genes and child-specific environmental influences contribute to behavioral resilience—as well as specific gene markers that contribute to protection or vulnerability in the face of childhood adversities.

In the years ahead, it is imperative that resilience researchers begin to pay concerted attention to biological processes such as these, in addition to psychological ones. Thus far, the neglect of biology in this literature could be attributed to at least two factors: (1) The technology for assessing many of these processes is relatively new and complicated, and (2) most resilience researchers have little formal training in biological processes, and those who do have such training have not studied resilience (Curtis & Cicchetti, 2003). Admittedly, there are few who will develop skills and expertise across both of these realms, as is exemplified by Rutter (2002a, 2002b) and Cicchetti (2003), but interdisciplinary collaborations provide a viable route to bringing together both bodies of knowledge. Concerted movement toward such collaborations must be treated as an imperative for the continued vitality of the science of resilience in future years.

Another type of interdisciplinary collaboration that will be critical in moving the field of resilience forward is with qualitative researchers from fields such as anthropology. Ethnographic, qualitative research is critical, particularly in guiding our exploration of groups little studied thus far (Garcia Coll, 2005; Luthar, 1999). Being generative, inductive, and focused on *describing* salient processes in naturally occurring phenomena (LeCompte & Preissle, 1993), this type of research can provide critical directions for future quantitative studies (typically favored by psychologists) involving hypothesis testing of resilience processes. Put simply, meaningful hypothesis testing presupposes knowledge of the web of interrelated forces that can affect the phenomenon under study: "We must understand how persons within a culture or ethnic group symbolically construct concepts such as self and others before we can understand factors attributed to vulnerability and resilience" (Cohler et al., 1995, p. 781).

Ethnographic studies involving at-risk families have illuminated several potentially important processes that merit further scrutiny in verificative or predictive research on resilience (see Hauser, 1999). To illustrate, interviews with inner-city families led Burton and colleagues (Burton, Allison, & Obeidallah, 1995) to identify several aspects of adolescent adaptation, all rarely considered in psychological research, that might promote long-term resilience. These include contribution to cohesion at the family and the community level (e.g., helping elderly folk in the community) and development of creative talents in contextually relevant models (such as rapping or doing hair and nails well).

It should be noted, too, that qualitative research is particularly critical in trying to translate findings from basic research on vulnerability and protective processes into interventions. The importance of this is exemplified in work on benefit finding in the face of bereavement. In the aftermath of bereavement, it has been found that some individuals report some positive outcomes, such as feelings of having grown personally, developed new perspectives on life, and increased closeness in other relationships (Affleck, Tennen, & Rowe, 1991; Davis, Nolen-Hoeksema, & Larson, 1998). However, any intervention efforts to help people identify such benefits following bereavement can be counterproductive, perceived by the bereaved individuals as insensitive and personally offensive (Nolen-Hoeksema & Davis, 2002; Tennen & Affleck, 2002).

In addition to the biological and qualitative literatures, evidence on clinical interventions also subsumes potentially valuable lessons on processes in resilience. Examples are seen in studies of the companionship provided by pets as well as therapeutic properties of music and art. With re-

gard to the former, almost 2 decades ago, the National Institutes of Health (NIH; 1988) convened the NIH Technology Assessment Workshop on the Health Benefits of Pets, as research had demonstrated that pet owners experienced increased 1-year survival after discharge from a coronary care unit (Friedmann, Katcher, Lynch, & Thomas, 1980). A decade later, scientific papers reported that pet owners had slightly lower systolic blood pressure, plasma cholesterol, and triglyceride values than non-pet owners (Anderson, Reid, & Jennings, 1992) and that dog ownership was associated with an increased likelihood of 1-year survival after a myocardial infarction (Friedmann & Thomas, 1995). Findings on pet ownership were seen as operating through the reduction of psychosocial risk factors (Patronek & Glickman, 1993), and the final report of the NIH Technology Assessment Workshop proposed that future studies of human health should consider the nature of relationships with pets as significant variables (Beck & Glickman, 1987). A series of recent papers in the *American Behavioral Scientist* (e.g., Barker, Rogers, Turner, Karpf, & Suthers-McCabe, 2003; Beck & Katcher, 2003; Meadows, 2003) underscore the value of pursuing such research.

In a similar vein, therapeutic interventions suggest that creative self-expression warrants some attention by resilience researchers. In a meta-analysis published in the *Journal of Child Psychology and Psychiatry and Allied Disciplines*, Gold, Voracek, and Wigram (2004) included 11 studies on music therapy that resulted in a total of 188 subjects for analyses. Effect sizes from these studies were combined, with weighting for sample size, and their distribution was examined. Results showed that music therapy has a medium to large positive effect ( $ES = .61$ ) on clinically relevant outcomes. The finding was statistically significant at  $p < .001$  and statistically homogeneous, and no evidence of a publication bias was identified.

## Resilience and Related Constructs

Aside from confusion about aspects of research on resilience itself, there also have been questions about whether it is truly a unique scientific construct or redundant with others. The reality is that there are in fact similarities but also some important differences. Of the psychological constructs with which resilience has some overlap, social competence is perhaps the most salient. The roots of this dimension lie in Havighurst's theory of developmental tasks, where social competence is defined as a track record of effective performance in developmental tasks that are salient for people of a given age, society or context, and historical time (Masten & Coatsworth, 1998).



As Masten (2001, p. 716) has noted, competence and resilience may be described as closely related subconstructs within the broader construct of adaptation; both constructs represent “doing okay.” Furthermore, both are relative terms, in that social competence is defined relative to what society expects of the average child, whereas resilience is defined relative to expectations of the average child given exposure to a particular risk (i.e., “better than expected functioning”). Finally, in themselves, the terms competence and resilience do not imply exceptional performance in any *specific* domain; rather, they allude to adjustment domains that are salient within a particular developmental and ecological context.

There are four major differences between the two concepts. First, resilience, but not competence, presupposes risk. Second, resilience encompasses both negative and positive adjustment indices (absence of disorder and presence of health), and competence chiefly the latter. Third, resilient outcomes are defined in terms of emotional and behavioral indices, whereas competence usually involves manifest, observable behaviors. Fourth, resilience is a superordinate construct that subsumes aspects of competence (along with high levels of risk).

A second overlapping construct—and one with which resilience is often confused—is *ego resiliency*, which is a trait reflecting general resourcefulness and sturdiness of character and flexibility of functioning in response to varying environmental circumstances (see Eisenberg, Spinrad, et al., 2004). Commonalities with resilience are that both involve strengths; illustrative descriptors of ego resiliency (Block, 1969) include “engaged with the world but not subservient to it” and “integrated performance under stress.” Differences are that (1) only resilience presupposes conditions of risk, and (2) resilience is a phenomenon, not a personality trait. Finally, just as competence is subsumed within resilience, ego resiliency has been examined as a potential predictor, that is, a personality trait that may protect individuals against stressful experiences (Cicchetti & Rogosch, 1997).

*Hardiness* is a construct in the adult literature that shares some attributes with resilience—it, too, presupposes risk—but also with ego resiliency; it refers to a specific set of traits in the individual rather than the combination of risk plus competence, as does resilience. Proposed by Kobasa and colleagues (Kobasa, Maddi, & Kahn, 1982) to account for individual differences in responses to life stressors, hardiness is defined as the presence of three personality dispositions: commitment (feeling connected, having a purpose, being active, etc.), control (feelings of being able to control what happens in one’s environment),

and challenge (welcoming change instead of perceiving it as disruptive).

### Resilience and Related Disciplines

As the construct of resilience has some features overlapping with others, such as competence and hardiness, the scientific study of resilience has much in common with other disciplines in terms of central research questions and the constructs and samples assessed; similarities are most pronounced with risk research, prevention science, applied psychology, and positive psychology. Considering *risk research* to begin with, there are more similarities than differences, which is not surprising as resilience research grew out of the risk paradigm (Luthar & Zelazo, 2003). In both these traditions, researchers are concerned with children who face notable life adversities, seeking to understand the types of forces that might lead to variability in adjustment outcomes. A major point of difference, however, is that resilience researchers are explicitly concerned with positive forces as well as negative ones—assets as well as deficits in both socializing forces and child outcomes—whereas risk research is focused primarily on negative forces.

A second difference is that studies of resilience entail concerted attention to process. At the core of both risk and resilience research is the common goal of identifying correlates of adjustment among children at risk, but for resilience researchers, this represents but a fraction of the overall task. As noted earlier, once statistically significant associations are found, there must be an in-depth scrutiny of processes that might underlie statistical links with an eye toward informing future interventions.

Similar distinctions apply with *prevention science* as traditionally defined, although in current conceptualizations, differences are much smaller, pertaining less to substantive areas of interest than to the degree of attention to the development and implementation of programs. Prevention science has long been seen as having as its core objective the reduction of disorder or disease among individuals at risk and not the promotion of health or competence (see Munoz, Mrazek, & Haggerty, 1996). In resilience research, there is explicit consideration of maximization of positive outcomes as well as the minimization of pathology or disease (Luthar et al., 2000b). However, several senior scientists have sought to broaden the scope of the prevention discipline to include positive outcomes as well (Cowen & Durlak, 2000; Elias, 1995; Weissberg & Greenberg, 1998), arguing that efforts to reduce problems are most effective when coordinated

with explicit attempts to also foster competence (Weissberg, Kumpfer, & Seligman, 2003). In point of fact, the terms prevention and resilience coexisted in a task force, Seligman's American Psychological Association Presidential Task Force on Prevention: Promoting Strength, Resilience, and Health in Young People (Weissberg et al., 2003). Thus, at this time, the only minor difference between the fields of resilience and prevention is that the former is focused equally on basic and applied research, whereas the latter is more strongly focused on applications of research findings in programs for youth and families.

*Applied developmental science* (ADS) is a relatively new discipline, which is defined as "scholarship that seeks to advance the integration of developmental research with actions—policies and programs—that promote positive development and/or enhance the life chances of vulnerable children and families" (Lerner, Fisher, & Weinberg, 2000). ADS and the study of resilience are, again, highly overlapping: Both involve a focus on children and families at risk, on positive outcomes and assets among them, on normative and atypical developmental processes as they emerge in different cultural settings, and on interventions and policies to promote positive development. In both instances, furthermore, there is a strong emphasis on collaborations between universities and communities to ensure the relevance of research activities and components of interventions and policies to the needs and values of people in that community (Luthar & Cicchetti, 2000). A minor point of difference is that ADS places somewhat more emphasis on outreach interventions conducted under real-world circumstances and constraints, whereas resilience research more equally emphasizes such efforts and the more traditional laboratory-based clinical trials, which allow for more stringent documentation and evaluation even though they are conducted under highly controlled, contrived conditions that cannot be replicated in the real world (Lerner et al., 2000; Weisz, Hawley, Pilkonis, Woody, & Follette, 2000).

Also closely related is the applied science of *early childhood intervention*. Major points of emphasis in this discipline are the interchange between biology and experience, on cultural variations in child-rearing beliefs and practices, on relationships as the building blocks of healthy development, on children's self-regulation as a critical capacity affecting all domains of behavior, and on the potential to shape human development by reducing risk and promoting protective influences. The construct of resilience is specifically mentioned among the core concepts guiding the science of early childhood intervention (Shon-

koff & Phillips, 2000). Again, the differences between this and the field of resilience are minor; early childhood interventions concern children up to 5 years of age and their families, whereas resilience research thus far has been focused as much on middle childhood and adolescence as on early childhood (if not more so). Furthermore, early childhood interventions have often been focused on cognition, intelligence, and language development and, in some instances, behavioral conformity; there is relatively little attention to mental health or psychiatric disturbances. Resilience research, by contrast, is concerned with psychological, emotional, social, and psychiatric outcomes among children and parents; cognition and language are not considered outcome domains.

Turning from developmentally based disciplines with a focus on children to one focused primarily on adults, resilience has features in common with *positive psychology*, also a relatively new field. Martin Seligman (2002, p. 3), who played a seminal role in the emergence of this discipline, defined it thus:

The field of positive psychology at the subjective level is about positive subjective experience: well-being and satisfaction (past); flow, joy, the sensual pleasures, and happiness (present); and constructive cognitions about the future—optimism, hope, and faith. At the individual level it is about positive personal traits—the capacity for love and vocation, courage, interpersonal skill, aesthetic sensibility, perseverance, forgiveness, originality, future-mindedness, high talent, and wisdom. At the group level it is about the civic virtues and the institutions that move individuals toward better citizenship: responsibility, nurturance, altruism, civility, moderation, tolerance, and work ethic.

Unlike the minor differences with the three fields previously discussed, there are several factors that set the field of resilience apart from positive psychology, the first of which concerns the presence of life adversities. As noted earlier, resilience research presupposes exposure to significant adversity, whereas positive psychology concerns all individuals, not just those who have experienced major risks.

The second difference concerns the presence of developmental issues. Emerging as a part of the discipline of developmental psychopathology, resilience research has involved concerted attention to developmental themes (Luthar & Cicchetti, 2000; Masten, 2001), with a focus generally on childhood and adolescence, but recently, on processes among adults as well (e.g., Bonnano, 2004; Collinshaw et al., 2004; Staudinger, Freund, Linden, & Maas, 1999; Vaillant & Davis, 2000). In positive psychol-

ogy research thus far, by contrast, developmental issues are not highlighted, and the focus is overwhelmingly on adults. In a chapter discussing children in the *Handbook of Positive Psychology* (Snyder & Lopez, 2002), the authors noted: “We strongly urge that positive psychology theorists and researchers consider a developmental perspective rather than focusing only on adults (and children as ‘smaller humans’) or giving minimal attention to development by considering childhood *only* as a period preceding adulthood” (Roberts, Brown, Johnson, & Reinke, 2002, p. 671).

The third difference pertains to operationalization of positive outcomes, and there are two issues relevant here. One is that, as its name suggests, positive psychology is concerned only with positive aspects of adjustment and health promotion and not with the evasion of mental illness. Resilience encompasses both poles. As noted earlier, positive adaptation is defined as the best possible outcomes that can be achieved given the risk experienced; in the face of severe trauma, risk evasion has—appropriately—been defined in terms of the avoidance of major psychiatric problems.

Another difference concerns the use of behavioral versus psychological dimensions to operationalize positive adaptation. Resilience researchers have strongly emphasized overt behavioral success as judged by others: “adaptive behaviors” as rated by teachers, classmates, friends, parents, or others. Whereas there is some effort to ascertain subjective feelings of unhappiness, there have been no attempts, to our knowledge, to ask children about their own subjective feelings of happiness (see also Roberts et al., 2002). And these are the constructs that form the very crux of positive psychology; interestingly, in this case, there do not seem to be efforts to ascertain *others’* opinions on whether the individual is “doing well,” as a good spouse or parent, for example, or a colleague at work. In fact, even when there are constructs tapping into interpersonal themes, these largely involve the individual’s own reports, with social acceptance defined in terms of *their* having positive attitudes toward others, and social integration as their feelings of being supported by their community (Keyes & Lopez, 2002).

The reasons for this differential emphasis are not entirely clear, although it could derive partly from the fact that much of the work on positive psychology has been done in Western countries, where individualism is highly emphasized. It is possible that in Eastern cultures with a strong emphasis on collectivism, positive psychology would be defined as much in terms of *others’* judgments of adults’ doing right by significant others (as resilience is

commonly described among children in contemporary research). This could be a direction usefully explored in future positive psychology research. By the same token, there is a need for childhood resilience researchers to consider not only the degree to which young people conform to adults’ expectations and evade personal psychopathology, but also the degree to which they themselves subjectively experience feelings of happiness.

Despite these areas of difference, it should be emphasized again that resilience research has many similarities to all the other disciplines considered here, and researchers in each of these traditions have much to learn from those in the others. The excessive splintering of psychology as a field has increasingly been deplored (e.g., Catalano, Hawkins, Berglund, Pollard, & Arthur, 2002; Sternberg & Grigorenko, 2001); to remain insulated from others’ research that clearly overlaps with one’s own is ill-advised. Encouragingly, there have been increasing efforts to bring together the major themes and ideas from these fields. Two recent compendia of articles (Sheldon & King, 2001; Snyder & Lopez, 2002) included, along with several articles on positive psychology among adults, papers on resilience in childhood (see Masten, 2001; Masten & Reed, 2002). More recently, in a book on children facing familial and community adversities (Luthar, 2003), senior investigators in the risk, resilience, and prevention science traditions came together, allowing a distillation of major findings across all of these disciplines. In future efforts, the choice of terms that each of us chooses to characterize our respective research efforts is, in essence, not substantively important (i.e., whether we call ourselves resilience researchers, prevention scientists, or applied developmental scientists). What is much more important is that we remain aware of the body of knowledge, highly relevant to our own research efforts, subsumed in the other literatures mentioned (Garcia Coll, 2005). In the pithy words of Shonkoff and Phillips (2000, p. 339), we must guard against “narrow parochial interests that invest more energy in the protection of professional turf than in serving the best interests of children and families.”

## VULNERABILITY AND PROTECTIVE PROCESSES: SUMMARIZING EXTANT EVIDENCE

This section of the chapter encompasses major findings from almost half a decade of research on resilience. In describing the forces that might modify effects of high-risk

life circumstances, discussions are focused largely on research with children, as there are still relatively few studies of resilience among adults. Additionally, the effort is toward prioritization of different categories of risk modifiers. Resilience researchers have been criticized for producing lists of sundry protective and vulnerability factors (see Gorman-Smith & Tolan, 2003; Luthar et al., 2000a); although possibly comprehensive, such lists are of limited practical use because all itemized indicators (ranging from parents' intelligence, to neighborhood safety, to children's social skills) can never be addressed in a given intervention. From an intervention standpoint, what is needed is some type of prioritization of domains in terms of overall likelihood of yielding substantial benefits (Luthar & Zelazo, 2003).

Accordingly, organization of this section is based on the following considerations. In general, primacy in discussions is given to the most *influential* vulnerability and protective factors, that is, those whose effects are relatively enduring, robust, or hard to overcome by others. Second, more emphasis is placed on *modifiable modifiers*. Whereas intrinsic characteristics like gender and race certainly can affect outcomes, these are afforded less prominence than are those that are more amenable to change, such as parental discipline and teacher support.

Third, discussions focus, in sequence, on vulnerability and protective forces in the domains of the family, the community, and the children themselves. The family is not only the most proximal of children's external environments but also the most enduring; it therefore makes sense to focus on this first in the triad of factors (Luthar & Zelazo, 2003). The community, in turn, affects children both directly and indirectly through their parents, so that modifying aspects of the wider environment can have benefits through both routes. With regard to children's own attributes, these obviously do play a major role in resilient adaptation, but many child attributes (such as self-efficacy and even intelligence) are themselves shaped by forces in the environment. Accordingly, these are discussed third in the sequence (cf. Luthar & Zelazo, 2003).

Rather than describing findings of individual studies in the research literature, the emphasis in this section is on summarizing major themes that have emerged regarding salient vulnerability and protective processes, with a few investigations briefly described for illustrative purposes. Along with empirical evidence on the three sets of risk modifiers, relevant evidence from intervention efforts is also considered. As Cicchetti and Hinshaw (2002) have noted, basic research must inform interventions; at the same time, data from interventions can provide valuable

lessons for science by showing, for example, whether targeting hypothesized protective factors does in fact predicate resilient adaptation.

### Family Relationships: Effects of Maltreatment

Of the many factors that affect the trajectories of at-risk individuals, among the most potent is maltreatment by primary caregivers. Maltreatment co-occurs with many high-risk circumstances, including parent mental illness, parental conflict, community violence, and poverty (Eckenrode et al., 2000; Lynch & Cicchetti, 1998), thus serving as a rampant vulnerability factor. Maltreated children show deficits spanning multiple domains; as Cicchetti (2002, p. 1416) has noted, "Child maltreatment exerts deleterious effects on cognitive, social, emotional, representational, and linguistic development, as well as disrupts the development of emotion regulation, secure attachment relationships, an autonomous and integrated self-system, effective peer relations, and the successful adaptation to school."

Even when positive profiles of adaptation are displayed among maltreated children, they tend to be unstable over time. In their longitudinal study of low-income children, Farber and Egeland (1987) found that, of 44 children identified as maltreated, *none* maintained competent functioning across the period from infancy to preschool. Cicchetti and Rogosch (1997) examined resilience in a sample of 213 maltreated and nonmaltreated low-income children. On a composite measure of adaptive functioning, only 9.8% of maltreated children were ever classified as high-functioning during any of the three annual assessments; fewer than 2% were classified as high-functioning across time. Similarly, Bolger and Patterson (2003) identified maltreated children who showed positive adjustment in at least one of four domains (peer acceptance, internalizing, externalizing, and academic achievement) without doing very poorly in any, and only 1 of the 107 maltreated children met these criteria across multiple assessments over time.

This degree of dysfunction is not surprising given that maltreatment connotes serious disturbances in the most proximal level of the child's ecology, with the caregiving environment failing to provide multiple expectable experiences essential for normal development (Cicchetti, 2002,). In maltreating families, parental care does not meet children's basic needs for physical sustenance and protection, emotional security, and social interaction. Parents interact with their children less than do others and display more negative affect to them. Anger and conflict are often pervasive, both between parents themselves and between the adults and the children, and the family system as a whole is



characterized by chaos and instability. Thus, it is unsurprising that the “social, biological, and psychological conditions that are associated with maltreatment set in motion a probabilistic path of epigenesis for maltreated children characterized by an increased likelihood of failure and disruption in the successful resolution of major stage-salient tasks of development” (Cicchetti, 2002, p. 1416).

Despite evidence that resilience is rare among maltreated children, profiles of adjustment are obviously not homogeneous, and the degree of diversity that is observed might rest largely on the heterogeneity of maltreatment experiences in terms of severity, pervasiveness, age at onset, or chronicity (Cicchetti & Rogosch, 1997). To illustrate, studies have shown that children experiencing maltreatment early in life and continuing into the adolescent years tend to show early onset, persistent behavior problems (such as conduct problems, substance use, and early sexual activity), and difficulties in different aspects of peer relationships (Aguilar, Sroufe, Egeland, & Carlson, 2000; Bolger & Patterson, 2003; Eckenrode et al., 2001).

Other forces that can make a difference include positive relationships with others (see Reis & Collins, 2004). As will be discussed later in this section, quality parenting is the single most robust of protective factors for children exposed to various adversities (Luthar & Zelazo, 2003; Masten & Coatsworth, 1998), so that positive relationships with alternative caregivers could serve protective functions for maltreated youth (although this has not yet been systematically examined, to our knowledge). The potential of other relationships is seen in Bolger and Patterson’s (2003) longitudinal data showing that friendship—though not a substitute for adult caregiving—may play a protective role. Among chronically maltreated children, having a positive, reciprocal friendship was associated with an increase over time in self-esteem, possibly due to a mediating process such as decreases in loneliness, increases in perceived acceptance, improved social skills, and changes in working models of attachment.

Personality factors may also make a difference. Cicchetti and Rogosch (1997) found that ego resiliency and ego control as well as positive self-esteem predicted relatively competent functioning in maltreated children, as Bolger and Patterson (2003) found that maltreated children with higher internal control had lower symptom levels than others. The mechanisms underlying such “protective child attributes” are discussed later in this section, but for the moment, a critical caveat bears explicit mention: The experience of maltreatment also compromises the very personal attributes that could serve protective functions (Bolger & Patterson, 2003). As Cicchetti (2002) notes, maltreated

children as a group show many deficits in emotional regulation, either showing excessive amounts of negative affect or blunted affect with little positive or negative emotion. As a result of difficulty in effectively modulating physiological arousal, they also have trouble coping with emotionally stressful situations. In other words, the repeated developmental disruptions of a maltreating environment not only directly increase risk for maladjustment, but tend to work against positive personal attributes that could have served protective functions.

### **Protective Family Forces: Attachment, Nurturance, and Support**

Whereas chronic maltreatment is pernicious, child abuse is obviously not inevitable among parents facing major life adversities, and positive family relationships can do much to promote resilience in children faced with challenging circumstances (Conger & Conger, 2002; Elder & Conger, 2000). The critical importance of strong family relationships has been emphasized by child development theorists from diverse perspectives. This theme is at the core of classic psychodynamic perspectives ranging from Bowlby’s (1988) attachment theory and the Eriksonian emphasis on trust versus mistrust (Erikson, 1993), to Freud’s (Freud & Gay, 1995) stages of psychosexual development and Mahler’s (1986) notion of human symbiosis. Outside of psychodynamic viewpoints, Havighurst’s (1948) earliest developmental tasks—learning to walk, talk, and distinguish right from wrong—presuppose the presence of an attentive adult to foster these, as learning theorists have long emphasized the role of parents’ reinforcement patterns as well as modeling particular behaviors to powerfully shape the child’s emerging personality (Bandura, 1977; B. F. Skinner, 1974).

Consistent with these theories of normative child development, strong family relationships have long been seen as critical in maintaining good adjustment in the face of adversities. The earliest studies of resilience indicated that the presence of a close relationship with at least one parent figure was highly protective across risks ranging from early institutionalization and serious parent mental illness, to chronic family poverty and multiple coexisting adversities (Anthony & Koupernik, 1974; Garmezy, 1974; Murphy & Moriarty, 1976; Rutter, 1979; Werner & Smith, 1977). Similarly, recent reviews of the existing literature continue to point to supportive and responsive parenting as being among the most robust predictors of resilient adaptation (Luthar & Zelazo, 2003; Masten, 2001; Rutter, 2000; Werner, 2000).

Particularly important in shaping long-term resilient trajectories are early family relationships. In their comprehensive review of the early childhood literature, Shonkoff and Phillips (2000, pp. 27–28) emphasized, “From the moment of conception to the finality of death, intimate and caring relationships are the fundamental mediators of successful human development. Those that are created in the earliest years . . . constitute a basic structure within which all meaningful development unfolds.” The critical role of early relationships has been effectively established by Egeland, Sroufe, and their colleagues in their work with children of low-income mothers. Based in Bowlby’s (1988) attachment theory, these scholars argue that individuals’ adaptation is always a product of both their developmental histories and current life circumstances—never of just one of these. Early experience places people on probabilistic trajectories of relatively good or poor adaptation, shaping the lens through which subsequent relationships are viewed and the capacity to utilize support resources in the environment. Thus, if early attachments are insecure in nature, at-risk children tend to anticipate negative reactions from others and can eventually elicit these; these experiences of rejection further increase feelings of insecurity (Allen, Hauser, & Borman-Spurrell, 1996; Sroufe, 2002; Weinfield, Sroufe, & Egeland, 2000). Conversely, at-risk children with at least one good relationship are able to take more from nurturant others subsequently encountered in development (Conger, Cui, Bryant, & Elder, 2000; Shonkoff & Phillips, 2000; Sroufe, 2002; Yates et al., 2003).

Among young children, the benefits of secure attachment have been demonstrated in diverse research paradigms. Research by Gunnar and her colleagues has shown that strong, secure attachments to caregivers can buffer or prevent elevations of stress hormones in situations that usually elicit distress in infants. In contrast, children with insecure attachments to caregivers tend to react to potentially threatening situations with increased levels of the stress hormone, cortisol (see Gunnar, 2000). In a literature review on the ontogeny of the two arms of the stress system, the limbic-hypothalamic-pituitary-adrenocortical and brain stem norepinephrine/sympathetic-adrenomedullary systems, the authors concluded that individual differences in the reactivity and regulation of both these systems are related not only to temperamental characteristics but also to quality of caregiving (Gunnar & Davis, 2003).

Even among older children and adolescents, competent parenting plays a critical role in promoting competent child outcomes over and above the effects of contextual factors such as parents’ socioeconomic status (Werner & Smith, 1982, 1992). To illustrate, among 6- to 12-year-old African

American youth in poverty, supportive mother-child relationships were linked both concurrently and prospectively with children’s depressive mood and disruptive behavior (Klein & Forehand, 2000). In two cohorts of low-income, urban youth (of 7- to 9-year-olds and 9- to 12-year-olds) in the Rochester Child Resilience Project, resilient status was significantly more likely among those dyads where parents were emotionally responsive and had relatively good mental health and high psychosocial resources (Wyman, Cowen, Work, & Parker, 1991; Wyman et al., 1999).

Even when risk factors stem from within the family, as when one parent has a mental illness, a strong relationship with the other parent can be substantially protective. Among children of alcoholics, Berlin and Davis (1989) found that the mother’s support and nurturance were important in leading to nonalcoholic outcomes of offspring during adulthood. Similarly, McCord (1988) demonstrated the critical role of the nonalcoholic spouse as someone who could help the child to differentiate from the father’s alcoholism, and Beardslee (2002) underscored the importance of strong, supportive relationships with at least one parent in families affected by parental depression.

The protective potential of strong relationships has been demonstrated not only for mothers but also for fathers and father figures, as seen in several studies of low-income, African American families. Fathers who were nurturant, satisfied with parenting, and employed had children with fewer behavior problems (Black, Dubowitz, & Starr, 1999). In addition, warm, close relationships with fathers (even those not living in the same house) benefited children in terms of lower levels of behavioral problems and higher self-esteem and less depression (Zimmerman, Salem, & Maton, 1995). In her review of the literature on low-income, unmarried, and minority fathers, Coley (2001) noted the widespread but insufficiently studied phenomenon of “social fathering,” wherein men other than biological fathers fulfill the father-figure role. Among low-income, African American preschoolers, between a third to half had a father figure involved with them; among adolescents, 24% nominated a nonbiological father figure when asked to name a man who was “most like a father” to them (Coley, 2001).

Whereas several studies have shown that children benefit from close involvement with fathers, some also have indicated that father involvement can sometimes be related to negative outcomes (see Coley, 2001; Leadbeater, Way, & Raden, 1996). Such findings may reflect elevated conflict between highly involved fathers and mothers, deriving, for example, from disagreements about disciplinary practices for their young children (Shaw, Owens, Vondra, Keenan, &

Winslow, 1996). Additionally, some young children of highly involved fathers in poverty may be exposed to high levels of paternal problem behaviors, such as antisocial behaviors and substance abuse (Jaffee, Moffitt, Caspi, & Taylor, 2003; Leadbeater et al., 1996). As Coley has noted, we need more research to disentangle these findings, teasing apart, for example, the effects of different types of father involvement such as emotional and financial involvement, as well as the amount of time spent with the child.

Apart from primary caregivers, siblings can help modify the effects of high-risk circumstances. In their research with sibling pairs in rural African American families, Brody (2004) and his colleagues demonstrated that the older siblings' competent behaviors at school were linked with increases in younger siblings' competence over time, through the intervening variable of younger siblings' self-regulation. Conversely, siblings also can exacerbate vulnerability in at-risk families. In families with one child already at high risk for deviant behaviors, Bullock and Dishion (2002) found that the deviance of siblings was promoted by collusion in the presence of adult caregivers. Furthermore, sibling collusion was found to uniquely predict adolescent problem behavior over and above associations with deviant peer groups.

A potentially critical source of support to at-risk children lies in extended kin, with the beneficial effects occurring directly as well as indirectly via their parents' adjustment (Elder & Conger, 2000; McLoyd, 1997). Grandparents often provide substantial emotional and material support directly to their grandchildren; in fact, they may sometimes be more willing to offer support to grandchildren than to their own children, such as when the latter have problems of substance abuse (Apfel & Seitz, 1997). Indirect effects involving parents are evident in findings that kin support can bolster authoritative parenting behaviors, feelings of well-being, and involvement in children's schools, benefits that are reflected, in turn, in positive child adaptation (R. D. Taylor, 1996; R. D. Taylor, Casten, & Flickinger, 1993).

### *Correcting Lack of Parent Nurturance*

Whereas early relationships are critical in shaping the lens through which people view their subsequent interactions, a faulty lens can be corrected to some degree. In general, developmental psychopathologists maintain that there is continuity and coherence in development so that positive adaptation in early years determines, in probabilistic rather than determinative fashion, the likely success at later stages (Carlson, Sroufe, & Egeland, 2004; Sroufe, Carlson, Levy, & Egeland, 1999; Yates et al.,

2003). At the same time, scholars acknowledge that lawful discontinuities often do occur, and in the context of attachment status these frequently derive from changes in the caregiving environment (Egeland & Sroufe, 1981; Sroufe et al., 1999; Thompson, 2000; Waters, Weinfield, & Hamilton, 2000).

Such lawful discontinuities are illustrated by findings that children show a shift from secure to insecure patterns if the availability of the primary caregiver becomes attenuated due to circumstances such as maternal depression or chronic illness or life events such as parental divorce (Waters, Merrick, Treboux, Crowell, & Albersheim, 2000; Waters, Weinfield, et al., 2000). In longitudinal research spanning infancy through adulthood, individuals' insecure attachment at the age of 18 years was not related to insecure status at 1 year, but it was significantly related to experiences of parental divorce in the intervening years (Lewis, Feiring, & Rosenthal, 2000).

Intervention studies also provide consistent evidence with regard to the possibility of shifting attachment status, as seen in work by Heinicke and his colleagues (Heinicke, Rineman, Ponce, & Guthrie, 2001). Among young children of low-income mothers, these investigators offered a relationship-based intervention aimed at fostering mother's encouragement of infants' autonomy and self-regulation, as well as development of a secure attachment. Children of intervention mothers were in fact more securely attached, more autonomous, and more task-oriented 2 years later. Similar evidence is seen in Cicchetti and colleagues' (Cicchetti, Toth, & Rogosh, 1999) intervention for young children of depressed mothers.

Parallel lawful discontinuities have been documented in terms of shifts from insecure to secure attachment status as a function of ameliorative relationship experiences. Dozier (Dozier, Albus, Fisher, & Sepulveda, 2002; Dozier, Stovall, Albus, & Bates, 2001) has shown that among children entering foster care, all of whom experienced significant disruptions in relationships with caregivers during the 1st year and a half, insecure early attachments were remediated to some degree by intervention services and foster caregivers' positive qualities of nurturance, responsiveness, and their own attachment state of mind. Similarly, among low-income children with insecure and avoidant patterns of early attachment, several came to show secure attachments by adulthood, manifesting good parenting behaviors themselves and close relationships with romantic partners (Roisman, Padron, Sroufe, & Egeland, 2002). Again, the shift in attachment status was seen as deriving from positive experiences with caregivers through the later childhood and adolescent years.

In other longitudinal research, the corrective power of good relationships is seen in Rutter's (1987) classic study of women who had been institutionalized as young children. When these women were grown, those who had good marital relationships—characterized by harmony and a warm, supportive spouse—showed good parenting behavior much more frequently than did ex-care women who lacked such marital support. More recently, among delinquent adolescent boys followed through the age of 70 years, Laub and Sampson (2003) found that changes in rates of crime over time were generally unrelated to childhood risk factors but were systematically linked with adult transitions to marriage, unemployment, and military service. The effects for marriage were the strongest, accounting for as much as a 40% reduction in the rate of criminal offending. The authors viewed the effects as involving nurturance as well as informal social control: "Men who desisted from crime were embedded in structured routines, socially bonded to wives, children, and significant others, drew on resources and social support from their relationships, and were virtually and directly supervised and monitored" (p. 279; see also Conger, Rueter, & Elder, 1999; Vaillant & Davis, 2000).

Research with adults also has yielded some biological evidence on the benefits of good relationships. In one study mapping quality of adults' relationships and their physical health, the researchers derived cumulative relationship pathways encompassing prior relationships with parents and current ones with spouses. Individuals were defined as being on the positive relationship pathway if they had had at least one parent who was affectionate and caring and, as adults, had at least one of two forms of intimacy with their spouse: sexual or intellectual/recreational. Those on the negative relationship trajectory had poor bonds with both parents and/or had a marriage low on both intimacy dimensions. The investigators then examined whether cumulative relationship profiles were related to levels of allostatic load (a measure of the cumulative wear and tear on multiple physiological systems, including metabolic, cardiovascular, HPA axis, and sympathetic nervous system). As predicted, people on the positive relationship pathways were significantly less likely than those on negative pathways to show high allostatic load. Furthermore, positive relationships were found to serve as buffers against persistent economic adversities: In the presence of economic risks, only 22% of those with positive relationship pathways showed high allostatic load, compared with 69% of those with negative relationship pathways. Although the authors conceded the relatively preliminary nature of their findings, the findings were seen as illustrating

a type of biopsychosocial pathway of resilience warranting further empirical attention (Ryff & Singer, 2002; see also Evans, 2003; Reis & Collins, 2004).

The reversibility of early insecure attachments depends on the duration and severity of early deprivation, as seen in research on children adopted into United Kingdom families following early severe deprivation in Romanian orphanages, and a comparison sample of nondeprived within-UK adoptees. In the sample of deprived adoptees, dose-response associations were found between duration of deprivation (as indexed by age at which children were adopted) and atypical patterns of attachment to adoptive parents (O'Connor & Rutter, 2000). Research by Gunnar and colleagues (Gunnar, Morison, Chisholm, & Schuder, 2001) showed similar dose-response effects with levels of the stress hormone cortisol as the outcome of interest. Six and a half years after adoption, children reared in Romanian orphanages for more than 8 months in their first years of life had higher cortisol levels over the daytime hours than did those adopted before 4 months of age. For the former group, furthermore, the longer the period of institutionalization beyond 8 months, the higher their cortisol levels.

Over a longer developmental period, dose-response associations are evident in findings on ramifications of family climate during early childhood, middle childhood, and early adolescence for intergenerational relationships between participants at age 26 years and their parents (Belsky, Jaffee, Hsieh, & Silva, 2001). Results showed that unsupportive child rearing during one of the three developmental periods could be offset if family relations in the other two periods were relatively supportive. Such amelioration was not found if two of the three periods reflected disruptions.

It is unclear, however, whether the quality of these "corrected" relationships is entirely comparable to that experienced by individuals who did not face early risks. In another study of the children in Romanian orphanages, Rutter and O'Connor (2004) showed that at the age of 6 years, most of these children showed social and cognitive functioning in the normal range after being adopted into British families. At the same time, a substantial minority manifested major persistent deficits. The pattern of findings was interpreted as suggesting some form of early biological programming or neural damage stemming from institutional deprivation and also, given the heterogeneity in outcome, that the effects are not deterministic (Rutter & O'Connor, 2004). Other research has shown that among ex-institutionalized children, a nontrivial group do fail to develop secure attachments with adoptive or foster parents and have difficulty forming intimate relationships later in



development (Hodges & Tizard, 1989; O'Connor et al., 1999). Treboux, Crowell, and Waters (2004) found that when adults had insecure attachment representations based on early relationships but secure attachments in current relationships with partners, they were more reactive to stress than were those who had secure attachments in both early and current relationships. Finally, in Werner's (Werner & Smith, 1992) 30-year follow-up, children who had initially seemed resilient despite several life adversities came to show some difficulties in achieving intimacy in their adult relationships.

### **Protective Parenting: Discipline and Monitoring**

In addition to dimensions of attachment, another broad parenting construct critical for resilient adaptation falls in the broad domain of discipline: limit setting and monitoring. Limit setting refers to the use of appropriate rules and expectations in shaping socially desirable behavior in the child. The degree to which parents clearly define limits and consistently enforce rules is critical in shaping the child's future compliance (Cavell, 2000; Schneider, Cavell, & Hughes, 2003). Conversely, inappropriately harsh discipline exacerbates vulnerability to maladaptive behaviors. As Patterson (1983) theorized, when parents respond to young children's annoying behaviors in ways that are coercive and based on power assertion, children tend to escalate their own aversive behaviors in attempts to control the parents. As the child's aversive behaviors increase in intensity and frequency, parents sometimes acquiesce, thereby reinforcing the maladaptive behaviors. Conversely, if parents resort again to power-assertive and harsh techniques, they come to serve as role models for hostile behavior patterns.

Patterson's (1983) coercion theory is at the core of Shaw and colleagues' research on the importance of appropriate limit setting for young children (for an overview, see Shaw, Bell, & Gilliom, *in press*). These researchers followed two cohorts of low-income mothers and their children, first assessed when the children were about 1 year of age. The authors postulated that when mother was unresponsive to infant's continued bids for attention, this tended to lead to later coercive exchanges between mother and child by age 2, which in turn would be linked with elevated risk for externalizing behavior problems by age 3. These postulates were supported in analyses based on both cohorts of mother-child dyads (Shaw et al., *in press*).

In another set of studies, the focus was not on maternal unresponsiveness but hostility. Noting toddlers' tendencies to evoke frustration from caregivers (e.g., because of their increase in mobility and assertion of independence), the re-

searchers noted that a critical developmental task for mothers is the capacity to maintain a nonhostile, relatively positive approach while shaping the child's behaviors. During a laboratory clean-up task, when mothers of 2-year-olds were observed to show rejecting behaviors, the children displayed a heightened risk for conduct problems at 3.5 years (Shaw et al., *in press*). When such rejecting, overcontrolling behaviors reflected a general parenting approach, children showed escalated risk for conduct problems not only at home but also at school, with such effects documented during the preteen years and adolescence (Shaw et al., *in press*; see also Dishion & Kavanagh, 2003).

Related to limit setting and also important for resilient adaptation is the construct of parental monitoring, which is defined as a "set of correlated parenting behaviors involving attention to and tracking of the child's whereabouts, activities, and adaptations" (Dishion & McMahon, 1998, p. 61). The salutary effects of consistent parental monitoring across various high-risk circumstances have been demonstrated from the elementary school years onward (Buckner et al., 2003). In a group of inner-city 8- to 10-year-olds, Chilcoat and Anthony (1996) found that those with high parental monitoring manifested a 2-year delay in the subsequent onset of drug use when compared with those in a low parental monitoring group. Other studies have shown links with positive indices of adjustment such as scholastic achievement and self-esteem (see Dishion & Kavanagh, 2003; Romer, 2003).

The benefits of consistent parental monitoring are particularly pronounced among preadolescents and adolescents, who have increasing independence from parents and thus growing exposure to a host of risks in the peer and community environments. Haapasalo and Tremblay (1994) reported that high parental supervision was a distinctive characteristic among low SES boys who consistently displayed low levels of physical aggression between the ages 6 and 12 years. More so than their aggressive counterparts, these nonfighters indicated that their parents were constantly aware of where and with whom they spent their free time through the period spanning the preadolescent years. Among low-income 8- to 17-year-olds, Buckner et al. (2003) found that of several variables external to the child, only parental monitoring significantly differentiated resilient from nonresilient youths, and a study of sixth graders with deviant peers showed that firm parental control inhibited the development of externalizing problems in later years (Galambos, Barker, & Almeida, 2003; see also Brody et al., 2002; Lloyd & Anthony, 2003). Studies have shown also that when their parents tend to know of their daily activities and associations, adolescents are less likely

to engage in delinquent behavior, drug use, risky sexual activity, and association with gangs (Dishion & Kavanagh, 2003; Romer, 2003).

Links between parent monitoring and adolescent adjustment are not always simple linear ones, but can depend on coexisting risks in the environment or even be curvilinear. To illustrate, Mason, Cauce, Gonzales, and Hiraga (1996) showed that in terms of ramifications for children's problem behaviors, optimal levels of control exerted by African American parents varied according to negative influences in the community. When adolescents reported relatively high problem behaviors in their peer groups, for example, optimal levels of parental control tended to be higher than when children's peer problem behaviors were low.

In terms of underlying processes, ethnographers (Burton et al., 1995; Jarrett, 1999) have delineated several expeditious limit-setting strategies used by inner-city families. These include the avoidance of dangerous areas, temporal use of the neighborhood (e.g., avoiding being outside in the evening hours), and restriction of children's relationships with deviant peers. Other posited mechanisms include those resting on psychological processes: Continuity and structure in the adolescent's environment can promote the development of effective coping skills, and when parents impart a sense of interest and concern for the adolescent's well-being, this tends to enhance children's self-esteem (Buckner et al., 2003; Luthar, 1999).

Related to monitoring—in some ways, the converse of it—is autonomy granting, also important for resilient adaptation. Observational research involving mother-infant interactions suggests that maternal support of exploration and autonomy (versus maternal restriction and control) is associated with the child's mastery motivation, persistence at tasks, competence, self-regulation, and positive affect through subsequent years (see Bornstein, Davidson, Keyes, & Moore, 2003; Shonkoff & Phillips, 2000). Among older children, perceptions of their own autonomy are linked with various indices of adaptive development such as academic engagement and prosocial behavior (Bornstein et al., 2003).

Autonomy has high significance during the teen years as well. A major developmental task of adolescence is to negotiate the struggle between the development of autonomy on the one hand, and the maintenance of close bonds with parents on the other. Among youth at high risk by virtue of psychiatric hospitalization, observed autonomy and relatedness displayed by both parents and adolescents were related to high levels of adolescents' self-esteem as well as their ego development (Allen, Hauser, Bell, & O'Connor, 1994). In a subsequent study of this cohort 11 years later,

maternal behaviors promoting adolescent autonomy and relatedness were also associated with coherence/security of attachment during adulthood (Marsh, McFarland, Allen, McElhaney, & Land, 2003).

As was seen in relation to parental monitoring, the optimal level of autonomy granted to adolescents can vary as a function of sociodemographic disadvantage. This is seen in McElhaney and Allen's (2001) research with adolescents living in urban poverty. Among these youth, maternal behaviors undermining of children's autonomy (i.e., interrupting them to shut down discussions) was positively linked with mother-adolescent relationship quality, whereas among low-risk comparison youth, links were inverse in nature. The authors suggest that behaviors potentially seen as overprotective might be seen as expressions of care and concern among youth in high-risk contexts, although they tend to be seen as inappropriately inhibiting and even guilt producing by adolescents in low-risk settings. Finally, the possibility of curvilinear effects is seen in research on adolescents at risk because of problems at school (such as grade retention or school suspension). When mothers were low in autonomy granting, adolescents with insecure preoccupations were found to be vulnerable to high internalizing problems. Conversely, if mothers were excessively high on autonomy granting, vulnerability to externalizing behaviors was pronounced (Marsh et al., 2003).

### Coexisting Warmth and Appropriate Control

Whereas high levels of warmth and appropriate control each have protective functions, the benefits of each depend to some degree on levels of the other: High warmth with lax discipline can be linked with poor adjustment, as can strict discipline without affection. The authoritative parenting style, characterized by the appropriate balance of parental warmth and control (Baumrind, 1989), is generally optimal; authoritative parents are defined as those who "are warm, supportive, communicative, and responsive to their children's needs, and who exert firm, consistent, and reasonable control and close supervision" (Hetherington & Elmore, 2003, p. 196).

Among low-income mothers, efforts to facilitate warm and responsive interactions with infants or toddlers enhanced the quality of future discipline techniques, in turn serving as a powerful force against externalizing disorders in childhood and adolescence (Shaw et al., 1996). In a related vein, among rural African American families, the development of adaptive self-regulatory behavior was significantly enhanced by mothers who provided support along with structure and clear behavioral expectations,

even among children with difficult temperaments. Moreover, positive parenting promoted greater self-regulation than both individual child and community protective factors (Murry & Brody, 1999). Authoritative parenting also has repeatedly been found to promote resilience in children facing disruptions in family life due to divorce (Hetherington & Elmore, 2003).

Timothy Cavell (2000) has emphasized the importance of an appropriate balance of warmth and discipline in the notion of parental *containment*, which is “any behavior that fosters in children a sense of restraint while not threatening their relationship security” (p. 131). Recent studies have pointed to the protective potential of this construct. Building on Cavell’s arguments on the significance of children’s beliefs about the likelihood of being disciplined, Schneider et al. (2003) defined perceived containment as the child’s beliefs concerning the parent’s capacity to enforce firm limits and the likelihood that the parent will prevail in conflict. They found that children with a particularly strong sense of containment had a mother who applied effective discipline in the context of an emotionally positive relationship. Furthermore, high perceived containment was protective against externalizing behaviors as rated by parents and teachers (Schneider et al., 2003).

Intervention studies with at-risk youth further buttress the conclusions from basic research on the importance of firm, consistent discipline in the context of supportive parent-child relationships (see Biglan & Taylor, 2000; Webster-Stratton & Taylor, 2001). In a review of the literature, Kumpfer and Alvarado (2003, p. 457) note, “Effective parenting is the most powerful way to reduce adolescent problem behaviors”; they describe three approaches that have generally been successful. The first includes behavior training approaches that are highly structured and involve working only with parents; the second entails an integration of parent behavior training and children’s social skills training, both administered in group format; and the third involves family therapy programs that are administered with individual families.

### **Underlying Processes and Other Potentially Important Dimensions: Future Research Needs**

Whereas good relationships are clearly critical for resilience, there remain several questions about the active ingredients therein: What are the core processes that might explain this effect? The most obvious mechanism is that discussed earlier: that early attachments shape the lens through which later interactions are viewed. However, there are various other parenting constructs that probably

coexist with generally good parenting and warrant further study, one of which is children’s trust that the parent will shield or protect them against danger (an interesting parallel to perceived containment, children’s beliefs that the parents will be able to discipline effectively). In their research with children who experienced foster care, Dozier and colleagues (Dozier, Lindhiem, & Ackerman, in press) found that possibly even more than security of early attachment, foster parents’ investment in their children was particularly powerful. When foster parents were highly invested in their children (as assessed through an interview), the children fared better not only in terms of neuroendocrine regulation but also, several years later, in self- and other representations. Among children who have experienced the considerable disruptions of early foster placement, therefore, the authors speculate that an important factor might be the child’s confidence that the caregiver will stand between him or her and danger, rather than whether the caregiver will comfort the child when distressed. They suggest that this component of the attachment system is not assessed in the standard assessment of attachment among human young (the Strange Situation), but is a key component of attachment assessed among non-human primates.

Also warranting more attention is the role of simple family routines. In their study of rural, single-parent African American families, Brody, Flor, and Gibson (1999) defined effective parenting not only in terms of mother-child relationship quality and school involvement, but also family routines, as measured by variables such as “Family has a ‘quiet time’ each evening when everyone talks or plays quietly,” and “Working parents come home from work at the same time every day.” Among youth at the two extremes of family socioeconomic status, Luthar and Latendresse (2005b) showed that even after considering indices such as emotional closeness and parental supervision, a simple indicator of time spent together—eating dinner with at least one parent most evenings—was significantly related to several child outcomes (see also National Center on Addiction and Substance Abuse, 2002). In terms of underlying mechanisms, the findings could reflect either of two patterns: that parents are typically not at home late in the evenings, or that they are present but do not eat with their children. Both options could lead the average 12-year-old to feel psychologically adrift and to do things that parents would disallow had they been at home, including experimentation with substances and the blatant neglect of homework (Luthar & Latendresse, 2005b).

Beyond these specific parenting constructs, Rutter (1987) noted various possible mechanisms to explain why,

in the context of family adversity, a good relationship with one parent can confer protection processes. There could, for example, be less overall disruption when one relationship in the family is harmonious; the “close” parent can ensure that the child is away from the home at times when things became particularly difficult; this parent can help the child understand the origins and nature of the family’s problems; or the security of the good relationship can increase the child’s self-esteem, and this in turn confers protection. Despite exhortations almost 2 decades ago that underlying processes need to be understood (Rutter, 1987), there has been relatively little headway in disentangling the relative importance of such processes in conferring protection not only during childhood but also beyond, extending into the adult years. Much more needs to be done on this front.

### *Parenting as a Dependent Variable*

Another set of issues critically needing more empirical attention pertains to the ways children affect parents’ mental health. By far most of child development research has been focused on the ways parents’ behaviors influence children, but some have shown that children’s behaviors might affect parents’ behaviors and even their psychological functioning (e.g., Garcia Coll, Surrey, & Weingarten, 1998; Luthar, Doyle, Suchman, & Mayes, 2001). A study of more than 300 families showed that young children’s difficult temperaments were associated with their mother’s sense of parent competence and depressed affect, which in turn were related to their work outcomes—work role quality and rewards from combining work and family (Hyde, Else-Quest, Goldsmith, & Biesanz, 2004). In their study of sibling pairs in rural, African American families, Brody (2004) and his colleagues found that older siblings’ competence levels significantly contributed to changes in mother’s psychological well-being over time and that children’s competence forecast mother’s supportive and involved parenting a year later.

More broadly, we need more research focusing squarely on the parents’ functioning, understanding what it is that allows some individuals to be effective parents in spite of serious stressors affecting their family. Juxtaposed with findings on the protective power of good parenting, unfortunately, is the inescapable fact that this very factor is substantially imperiled under the risk circumstances commonly considered in resilience research (Luthar & Zelazo, 2003). Adverse effects on parenting have been documented for risks ranging from chronic poverty (Owens & Shaw, 2003) to parental mental illness (Seifer, 2003) and family disruptions such as divorce (Hetherington & Elmore,

2003); child maltreatment by definition implies a disturbed parent-child relationship. Despite knowledge of these threats to parenting, it is curious that among at-risk families, good parenting is relatively rarely examined as an outcome domain, but far more often examined in terms of its associations with children’s developmental outcomes.

Little is understood also about pathways or mechanisms to positive parenting; although families are commonly viewed as engines of change in early interventions, the mechanisms by which parenting improves remains largely opaque. Reviewing the early childhood intervention literature, Brooks-Gunn, Berlin, and Fuligni (2000) note that several programs have led to improvements in parenting dimensions, but most programs do not encompass explicit theories on pathways through which improvements actually occur. It is conceivable, for example, that change essentially occurs because mothers receive increased emotional support (which in turn can lead to reduced stress and improved mental health), or because mothers have learned new coping skills and parenting behaviors (which leads them to feel more efficacious and empowered), or some combination of these possibilities (e.g., Bishop & Leadbeater, 1999). Disentangling the relative salience of such mechanisms should be a priority in future research on resilience.

### *Processes Unique to Ethnic Minority Subgroups*

Families’ ethnic minority status often represents a salient vulnerability factor in today’s world, yet there continues to be a troubling dearth of studies that explicitly address socializing influences and challenges specifically among minority families. There are clearly some universals in children’s social-emotional development—the previously highlighted power of supportive caregiving is but one—but at the same time, one-model-fits-all perspectives are of limited value (García Coll et al., 1996; Luthar, 1999). Ethnic minority parents contend with several unique challenges in socializing their children.

In a seminal article on these issues, García Coll and colleagues (1996) provide a useful framework that can guide researchers in studying critical socializing influences in ethnic minority groups. Anchored in social stratification theory, the integrative model posits that there are eight major sets of constructs that affect the development of minority children: (1) social position variables (e.g., race or social class, gender); (2) racism and discrimination; (3) segregation; (4) promoting/inhibiting environments (school, neighborhoods, and health care); (5) adaptive culture (traditions and legacies); (6) child characteristics such as age and temperament; (7) family values and beliefs; and



(8) developmental competencies in the cognitive and social-emotional domains.

Of the various challenges they confront, perhaps the single greatest is poverty: Families of color are highly over-represented in poverty groups. In 2002, 58% of all African American children and 62% of Hispanic children live below the national poverty level, as compared with 25% of White children ([http://www.nccp.org/pub\\_cpf04.html](http://www.nccp.org/pub_cpf04.html)). Furthermore, their low-income status accounts for much of the psychosocial maladjustment that has been documented. Studies show that once income is taken into account, African American youth can fare not just as well as but even better than their Caucasian peers in terms of mental health indices as well as competent behaviors (see Luthar, 1999). Similarly, Hashima and Amato (1994) showed that with income controlled, ethnic minority parents were no different from their White counterparts in terms of the frequency of harsh or punitive parenting behaviors.

Aside from poverty, racism and discrimination are powerful challenges in the daily lives of minority families, so much so that they are now considered to be essential ingredients in research on minority children's development (Bigler, Averhart, & Liben, 2003; Garcia Coll, Meyer, & Brillion, 1995; D. Hughes, 2003; Oyserman, Bybee, & Terry, 2003; Spencer, Fegley, & Harpalani, 2003; Spencer, Noll, Stoltzfus, & Harpalani, 2001). In a literature review, Szalacha and colleagues (2003) cite nationwide survey findings that 44.4% of non-Hispanic Whites reported that they had never experienced day-to-day discrimination, in contrast to only 8.8% of non-Hispanic Blacks; parallel frequencies for often experiencing discrimination were 3.4% and 24.8%, respectively. In a sample of African American adults, 98% reported personally having experienced a racist event in the prior year—such as being treated badly by various people or having one's intentions misunderstood because of being Black—and 100% had experienced such in their lifetime (Landrine & Klonoff, 1996). Research with Hispanics similarly showed that 94% reported that they experienced some racist event in the past year; over 70% reported being treated unfairly by people in service jobs; and 50% indicated that their lives would be different if they had not been treated in a racist manner during the past year (Szalacha et al., 2003).

Racial and ethnic discrimination experiences are de-meaning and degrading, inducing stress as well as feelings of frustration, depression, and anxiety (Brown et al., 2000; Williams, Yu, Jackson, & Anderson, 1997). In survey research of teens from various ethnic backgrounds, all of the minority youth in the sample reported distress associated with perceived racial prejudice in educational contexts,

and their self-esteem scores were negatively correlated with that distress (Fisher, Wallace, & Fenton, 2000). Similarly, Szalacha and colleagues (2003) report that among Puerto Rican children, perceived discrimination was related to high levels of depression, stress, and conduct problems, as well as low self-esteem. Furthermore, even worrying about discrimination (reported by nearly half the youth in this sample) was a risk factor for lower self-esteem. These findings resonate with Franklin's (1999) arguments that ethnic minority individuals' inner vigilance for racial slights can create a state of constant watchfulness, leading to chronic tension and feelings of stress.

Studies of adults also have shown that institutional racism has powerful effects on minority mental health (see Rollock & Gordon, 2000). In a nationwide study, Kessler, Mickelson, and Williams (1999) found that reports of day-to-day and lifetime discrimination were related to general psychological distress and depression. Landrine and Klonoff (1996) found that the individuals reporting racist events had relatively high depression and anxiety, as well as somatization and obsessive-compulsive symptoms. In a review of the public health literature, Krieger (1999) found recurrent links between perceived discrimination and levels of stress, psychological distress, and depression.

In terms of underlying mechanisms, vulnerability is likely to be conferred by two processes: (1) the internalization of negative feedback and the stress attributable to repeated exposure to discrimination, and (2) the associated anxiety that one will be a victim of discrimination (see Szalacha et al., 2003). Furthermore, bidirectional links are possible, wherein psychological factors—such as high depression and anxiety, or low intergroup competence—can predispose people to perceive discrimination (e.g., Phinney, Madden, & Santos, 1998).

The likelihood of perceiving discrimination can be suppressed somewhat by factors such as ethnic pride and biculturalism, as well as attributional ambiguity. Racial socialization, ethnic pride, competence in relating to others of different racial/ethnic groups, and biculturalism have all been documented as mitigating the negative effects of discrimination (García Coll et al., 1995; Phinney et al., 1998; Spencer et al., 2003; Szalacha et al., 2003). Experiments have shown that if people can attribute negativity to another's prejudice, this can render discrimination irrelevant to their self-views (Ruggiero & Taylor, 1997). But it should be emphasized that the likelihood of such attributions obviously diminishes as experiences of discrimination are continually encountered over time (Szalacha et al., 2003).

Other environmental forces involved in heightening risks for minority families are those at the neighborhood level. If they are poor, minority group children are more likely than Caucasians to live in neighborhoods where institutional supports are meager (Duncan, Brooks-Gunn, & Klebanov, 1994). Among African American children more than their Caucasian counterparts, male joblessness in the neighborhood is linked with increased risk for externalizing behavior problems (Chase-Lansdale & Gordon, 1996). Drawing on Wilson's (1991) writings on social isolation, authors of this study reasoned that in inner-city neighborhoods with high male joblessness—areas in which African Americans are disproportionately represented—the dearth of role models of disciplined behaviors, which accompany regular adult employment, can significantly exacerbate behavior problems among African American youth.

Similar suggestions involving social structures have been offered in explaining findings that academic failure can increase risk for subsequent delinquency among Black youth more than among Whites (e.g., Lynam, Moffitt, & Stouthamer-Loeber, 1993). Many of these youngsters are unconvinced that success at school will lead to success in later life due to their ongoing experiences with racism and marginalization and perceptions of job ceilings that deny them access to prestigious jobs (see Arroyo & Zigler, 1995; Ogbu, 1991; Spencer et al., 2001). Even among those minority students who do invest in school, exposure to negative stereotypes about their scholastic abilities tends to trigger high anxiety, which in turn can substantially jeopardize the level of academic success they are able to achieve (Steele, 1997). When African American boys become frustrated with school as a result of academic failure, they often remove themselves from its social control and thus become vulnerable to alternative social influences—often those of delinquents in the unstable, socially isolated neighborhoods in which Blacks are overrepresented (Wilson, 2003).

Immigrant families are among the most vulnerable at many levels. For example, Hispanic parents experience several unique stressors related to migration, acculturation, difficulties with language, and social isolation (Sanders-Phillips, Moisan, Wadlington, Morgan, & English, 1995). As Garcia Coll and Vasquez García (1995) noted, new Hispanic immigrants to the United States must acculturate not only to an alien culture and language but also, frequently, to urban poverty at the same time. In addition, aspects of cultural values can lead to problems. For example, Latino children can find it difficult to negotiate the value placed on individuation and separation in the mainstream White American world with the emphasis on obedience to and respect for elders of Latino culture (Sanders-Phillips et al.,

1995). Among Latino youth, the consistency of values between youth and their parents was the key predictor of low levels of risky sexual behavior (Liebowitz, Castellano, & Cuellar, 1999).

These very differences can also, however, confer protection; the value of family connectedness, for example, brings loyalty and support from kin. Research by Fuligni and his colleagues (Fuligni, Tseng, & Lam, 1999) showed that Asian and Latin American adolescents possessed stronger values about their duty to respect, support, and help their family than their peers of European backgrounds. Furthermore, emphasis on family obligations tended to be associated with more positive relationships with family and peers as well as higher academic motivation among mid- to late adolescents. In other research, educational resilience among Latino youth was strongly associated with supportive relationships in families (Arelano & Padilla, 1996). As Szalacha and colleagues (2003) noted, “la familia,” a core cultural characteristic of Latino cultures, is appropriately beginning to be included in studies of resilience among Latino youth (Falicov, 1996; McNeill et al., 2001). Finally, several studies involving African American families have shown that extended kin support helps promote positive outcomes among both parents and children in poverty (Luthar, 1999). The benefits of social supports for parents are evident in increases in their greater well-being and positive parenting behaviors, benefits that are reflected, in turn, across several domains of child adaptation, including behavioral conformity and school achievement (Burchinal, Follmer, & Bryant, 1996; R. D. Taylor, 1996; R. D. Taylor et al., 1993).

As with strong family values, acculturation to mainstream America can have both positive and negative effects. Among Hispanic individuals, for example, higher level of acculturation is linked with relatively high English fluency and low depression but, at the same time, with higher risk behaviors such as delinquency and pregnancy among youth and substance use among both adolescents and adults (see McQueen, Getz, & Bray, 2003; Rogler, Cortes, & Malgady, 1991). In terms of underlying mechanisms, alienation from the family seems to be implicated to some degree. With increasing acculturation can come some attenuation of familial obligations and influence of families as referents, along with greater family conflict and children's emotional separation from parents (Hill, Bush, & Roosa, 2003; McQueen et al., 2003).

### *Gene-Environment Interactions*

An exciting set of new developments in the field of resilience is inquiry into the role of genetic contributions to

vulnerability and protective mechanisms in the family, as seen in the seminal research by Caspi and his colleagues. Two studies by this group identified specific genes implicated in protecting some maltreated children from developing psychopathology in adulthood. The first of these showed reduced likelihood of antisocial behavior in the presence of a genotype that confers high levels of the monoamine oxidase A enzyme (Caspi et al., 2002). In the second study, likelihood of developing depression was lower in the presence of a genotype conferring the efficient transport of serotonin (Caspi et al., 2003). Although the specific processes through which these gene markers exert their protective effects are unknown, it is possible that they operate by shaping aspects of children's social-cognitive reactions to life stressors, as in their propensity for attributional biases, for example, or capacities for emotion recognition (Kim-Cohen et al., 2004).

A subsequent study by Kim-Cohen and colleagues (2004) was the first to specifically examine both genetic and environmental processes in the resilience framework. The study involved an epidemiological cohort of 1,116 twin pairs from low SES families. Two aspects of resilience were examined—behavioral and cognitive—and results of quantitative genetic models showed that additive genetic effects accounted for approximately 70% of the variation in children's behavioral resilience and 40% of the variation in cognitive resilience.

Further analyses established protective effects of both maternal warmth and child's outgoing temperament, with each factor operating through both genetically and environmentally mediated effects. Specifically, 66% of the phenotypic correlation between maternal warmth and behavioral resilience was accounted for by genetic influences, and the remaining 34% by child-specific environmental influences. Similarly, 71% of the correlation between outgoing temperament and cognitive resilience was accounted for by genetic influences, 17% by environmental influences shared by the siblings, and 12% by environmental influences specific to the child. In addition, familywide environmental influences accounted for 22% of the population variation in cognitive resilience, and a significant contributor to this shared environmental factor was the degree of parents' provision of stimulating activities in the home.

The authors note several important inferences deriving from their findings. First, the additive genetic effects observed could each operate via either passive or active gene-environment correlations (Rutter, 2003; Rutter & Silberg, 2002). In the context of maternal warmth and behavioral resilience associations, for example, passive ge-

netic effects could result because parents who are warm and affectionate transmit genes to their children that promote good behavioral regulation; genes operate as a third variable, as it were, linking the other two. Active gene-environment correlations, by contrast, would derive if children had heritable characteristics that tended to elicit warmth from adults around them, and this in turn would help foster good behavioral regulation. Parallel explanations were provided for genetic contributions to links between outgoing temperament and cognitive resilience. In this case, passive correlations may derive because parents provided genes that affect both the child's disposition and his or her cognitive competence, whereas an active correlation could result if children's genetically inherited dispositions (e.g., sociability) led them to elicit more attention and learning experiences from adults. The disentangling of passive versus active components underlying such genetic effects constitutes an exciting new direction for future research.

A particularly critical conclusion drawn by these researchers, however, has to do with implications for interventions: *Heritability does not imply untreatability* (Plomin & Rutter, 1998; Rutter, 2002b). As Kim-Cohen et al. (2004, p. 14) note, their study entailed "a genetically sensitive design [demonstrating] that environmental effects can make a positive difference in the lives of poor children. . . . Even child temperament promoted resilience through environmental processes." Of vital importance is their conclusion that if families confronting the myriad stresses of poverty are helped to move toward warm, supportive parenting and providing stimulating learning materials, children can be helped to achieve greater behavioral and cognitive resilience.

At this stage, there are several important directions for future work involving gene-environment influences in resilience (Rutter, 2000, 2003). Twin and adoptee studies of at-risk children can be used to (1) examine the relative contributions of genetic versus environmental influences in the ways that different protective and vulnerability factors operate; (2) understand the mechanisms entailed in each of these (e.g., passive or active gene-environment mechanisms and critical influences underlying the environmental component); and (3) identify genetic markers that confer protection or vulnerability and describe processes underlying their effects. Also needed are sibling studies illuminating the relative contributions of shared versus non-shared extrafamilial environments on different outcomes. Finally, genetics research can contribute to new developments in the study of resilience through precise quantification of risk. As noted in the first section of this chapter,

risk is generally inferred based on statistical links between aspects of the environment (e.g., maltreatment or poverty) and children's maladjustment, but this measure of risk is imprecise at best. With knowledge that some children have genes conferring liability to particular disorders, examining factors in the lives of those who do not succumb could contribute vastly to our understanding of processes in resilience.

### **Communities: Effects of Violence**

As with chronic maltreatment in the family, chronic exposure to violence in the community can have overwhelming deleterious effects, difficult for other positive forces to override and affecting multiple domains. Exposure to violence substantially exacerbates risks for internalizing problems such as anxiety, depression, and Posttraumatic Stress Disorder, as well as impaired academic performance due to disruptions in concentration and memory (for reviews, see Caucé et al., 2003; Cooley-Quille, Boyd, Frantz, & Walsh, 2001; Garbarino, 1995; Margolin & Gordis, 2000; Osofsky, 1995). Also heightened is vulnerability to externalizing problems such as delinquent, antisocial behaviors, with prospective associations being significant even when controlling for previous levels of aggression (Gorman-Smith & Tolan, 1998; Miller, Wasserman, Neugebauer, Gorman-Smith, & Kam-boukos, 1999; Schwab-Stone et al., 1995).

There also has been increasing attention to effects on children's neurobiology, with suggestions that violence exposure, particularly repeated exposure early in development, can fundamentally alter neurological system development (e.g., Perry, 1997; Pynoos, Steinberg, Ornitz, & Goenjian, 1997; Pynoos, Steinberg, & Piacentini, 1999). During the early years, the central nervous system is believed to be particularly responsive to traumatic organizing and structuring experiences (Weiss & Wagner, 1998); brain development is seen as particularly sensitive to overarousal affecting the organization and development of specific brain areas (Perry, 1997). Thus, children exposed to trauma may experience abnormal neurological development due to overstimulation of certain brain structures, with the degree of impact depending somewhat on the developmental timing of the event(s). In addition, exposure to violence may also affect children's arousal and ability to react appropriately to stress. To illustrate, children exposed to trauma have been found to have increased overall arousal, increased startle response, sleep disturbance, and abnormalities in cardiovascular regulation (Curtis & Cicchetti, 2003; Perry, 1997).

Several aspects of violence can affect a youth's reaction to it, including proximity and relation to the violence (Gorman-Smith & Tolan, 2003). To illustrate, in a 14-month follow-up of children attending a school where a sniper shot 14 students on the playground, Nader, Pynoos, Fairbanks, and Frederick (1990) found that children on the playground had the most severe symptoms, followed by those in the school building, and then those not at school on that day. Another important factor is the child's relationship to the individuals involved: Children are most affected when the victim is someone close to them. P. Martinez and Richters (1993) found that only those incidents involving people known, as both victims and perpetrators, were significantly related to distress, and Jenkins and Bell (1994) reported that victimization of family members (witnessed or not) was as strongly related to psychological distress as was personal victimization.

In terms of family functioning, there is some modest evidence for the role of parents' functioning as mediators and moderators of community violence effects. When mother can appear calm and effective in the face of danger, children tend to do better than when the parent is either absent or is overwhelmed by the situation (Pynoos, 1993). Linares and colleagues (2001) showed that links between community violence exposure and children's behavior problems were mediated by maternal distress (Posttraumatic Stress Disorder as well as global distress), suggesting, again, that if maternal distress were kept low, this could attenuate the association between violence exposure and child maladjustment.

In the face of community circumstances where people's very survival is continually under threat, however, families are obviously constrained in how much they can confer psychological protection to children. This is evident from results of a collection of studies on violence exposure, all considering whether good family functioning might show "protective-stabilizing" influences: helping children to retain good adaptation even as exposure escalated. Considered together, the findings provided modest support at best for such effects (Hammack et al., 2004; Kliwer et al., 2004; Sullivan et al., 2004; see also Furstenburg, Cook, Eccles, Elder, & Sameroff, 1999; Miller et al., 1999). A common theme across all these studies was that positive family functioning (as represented, for example, by closeness to parents, time spent with them, level of perceived support) were beneficial at low levels of violence exposure. On the other hand, when violence exposure was high, the benefits of these variables tended to diminish, suggesting effects that were promotive in general (Sameroff et al., 2003) but not necessarily protective against the effects of community violence.



By contrast, *poor* family function does clearly exacerbate the risks of community violence: When children experience significant dysfunction in their proximal and their distal environments, their risk for psychopathology becomes substantial. In a study by Gorman-Smith and Tolan (1998), family structure (level of organization and support within the family) and cohesion (emotional closeness and support) were inversely linked to changes in both aggression and anxiety and depression for those exposed to community violence. Overall, the results corroborate the view that lack of a dependable, supportive refuge, or dearth of emotional connectedness to family, tends to exacerbate the risk for maladjustment for children exposed to high levels of community violence.

In view of accumulated evidence, the most obvious intervention direction is to reduce levels of violence, with efforts at both national policy and community levels addressing issues such as gun control and safety in schools (e.g., Bloomberg, Daley, Hahn, & King, 2004; Henrich, Schwab-Stone, Fanti, Jones, & Ruchkin, 2004; Ozer & Weinstein, 2004). As such policy-level initiatives are pursued, it is also critical to mobilize forces within communities and families, and Gorman-Smith and Tolan (2003) have provided some useful directions in this regard. The first involves efforts to shield children from violence through broad-based community efforts, involving coalitions of community groups and agencies (such as police, faith-based organizations). Examples include Operation Ceasefire in Boston, which sought to lower youth homicide through a direct attack on the illegal gun trade and creating a strong deterrent to gang violence (Braga, Kennedy, Waring, & Piehl, 2001), and the Child Development-Community Policing Program in New Haven, Connecticut (<http://info.med.yale.edu/chldstdy/CDCP/programs/overview.html>). The second level entails preventive interventions with families, such as their family-focused preventive SAFE Children intervention, aimed at promoting positive parenting practices within the ecological setting of urban poverty (Tolan, Gorman-Smith, & Henry, 2004). The third level involves therapeutic interventions for those exposed to the violence: services directed to the individual child and to caregivers or systems that can continue to provide support for the child (e.g., Pynoos, 1993).

### **Protective Processes in Communities: Early Intervention and Schools**

Whereas the power of chronic exposure to violence in the community is rarely superseded by other protective processes, there certainly are exosystemic forces that can attenuate the ill effects of other types of adversities. Stud-

ies have pointed to the potential of the broader community to shape outcomes by affecting children themselves not only directly but also indirectly, via their parents.

In the early childhood years, the quality of child care can serve vital ameliorative functions, particularly as the home circumstances of children reflect increasing levels of risk. Reports by the National Institute of Child Health and Development (NICHD) Early Child Care Research Network (1997, 2002) suggest that for families living in or near poverty, mothers whose children are in high-quality child care tend to show more positive interactions with their infants. Furthermore, children of mothers who were very low on maternal sensitivity were more likely to be securely attached to them if the children were in higher-quality child care.

Results of several early childhood interventions also have shown protective effects accruing when highly disadvantaged children are provided with quality care (see Reynolds, 2000; Shonkoff & Meisels, 2000; Shonkoff & Phillips, 2000). A review by Yoshikawa (1994) showed that early intervention programs with long-term effects on chronic delinquency had not only early childhood components but also comprehensive family support. While the early education component attenuated child risks, family support reduced family risks and was deemed a necessary component for inhibiting at-risk children's later delinquency levels.

Of course, obtaining high-quality care is generally the most difficult for the poorest and most needy families. Among the major features defining quality of care, primary are the characteristics of the child care providers (e.g., their education and training), the child-to-adult ratios (e.g., with three or fewer infants per caregiver being advisable; see Shonkoff & Phillips, 2000), and stability of child care providers. Not surprisingly, these aspects of quality are often in jeopardy given the poor working conditions of most child care workers: The average hourly wage of child care workers in the United States is \$8.57 (the hourly wage of school bus drivers is \$11.33 and of animal trainers, \$12.48); turnover rates are among the highest of any profession that is tracked by the U.S. Department of Labor (U.S. Bureau of Labor Statistics, 2004). Improving the quality of child care available to all families, but particularly those at high risk, therefore must be treated as a critical social policy priority.

Exemplary in illustrating the effective use of existing resources for providing quality care for low-income preschoolers is Zigler's "school of the twenty-first century," a comprehensive program that is built into extant school systems (Finn-Stevenson & Zigler, 1999). In this program, public school buildings, which remain unoccupied

for large portions of the day and the calendar year, are used not only to house child care programs for children 3 years and older, but also to host regular support group meetings for parents. Information and referral networks also are developed in schools to help families make better use of the various existing services scattered across their communities, such as those offering counseling, physical health care, or night care for children. In the years ahead, it is critical that preventionists and social policy scholars increase the creative use of existing community resources in mobilizing protective influences to benefit different at-risk groups (Barrera & Prelow, 2000; Knitzer, 2000a, 2000b; Luthar, 1999; Pianta & Walsh, 1998).

Researchers have expanded their definitions of quality need to go beyond indices such as the caregiver-to-child ratio, physical space, and materials to stimulate learning, to consider also the emotional quality of caregiving children receive. It will be important to explore systematically the protective effects of such variables in early child care as the caregiver's personality characteristics, the sensitivity, warmth, and consistency in caregiving, and the quality of the relationship developed (Vandell, Dadisman, & Gallagher, 2000).

With regard to the relative effects of child care versus family characteristics, Shonkoff and Phillips (2000, p. 309) indicated, based on their review of the literature, that "when child care effects are examined net of parental effects on child outcomes, parent's behaviors and beliefs show substantially larger associations with their children's development than do any other features of the child care arrangement." Exemplifying this statement is evidence from the NICHD Early Child Care Research Network (2003), where the most consistent predictor of positive outcomes during the early school years was the sensitivity of mothers' behaviors observed across the infant, toddler, and preschool years (see also Vandell et al., 2000).

Turning to older children: K–12 schools can also bring substantial salutary effects to youth in at-risk circumstances (B. J. Feldman, Conger, & Burzette, 2004). There are several studies corroborating the protective functions of supportive relationships with teachers (e.g., Hamre & Pianta, 2001; NICHD Early Child Care Research Network, 2003; Reddy, Rhodes, & Mulhall, 2003). Assessing more than 3,000 teacher-child relationships, Howes and Ritchie (1999) demonstrated that in a sample of toddlers and preschoolers with difficult life circumstances, the quality of attachment with teachers was significantly related to measures of behavior problems as well as social competence with peers. Meehan, Hughes, and Cavell (2003) found that among a group of aggressive second- and third

graders, African American and Hispanic students benefited more than did Caucasian students from supportive relationships with their teachers. Noting that minority group students typically have lower access to positive relationships with teachers, the authors suggested that they could be more responsive than Caucasians to supportive teachers when such relationships are encountered (see also J. N. Hughes, Cavell, & Jackson, 1999). Similarly, among African American 7- to 15-year-olds from low-income, mother-headed households, Brody et al. (2002) demonstrated protective-stabilizing effects among children whose classrooms reflected organized, predictable environments in which students participated in procedures governing their behaviors. Furthermore, positive classrooms were beneficial even when parent-child relationships were compromised as well as vice versa, indicating unique, significant contributions from both contexts in which children and adolescents spend appreciable amounts of time (Brody et al., 2002; Way & Robinson, 2003).

These findings are entirely consistent with results of interventions targeting features of the school and classroom as well as the family. The Seattle Social Development Project is a case in point; this is a universal intervention designed to work with teachers, parents, and the children themselves to decrease children's problem behaviors. Evaluations have shown gains in several domains, including students' school performance, substance use, delinquency, and commitment to school and the quality of family management practices (Hawkins et al., 2003). Another large-scale, multifaceted school-based intervention is the FAST Track project (Conduct Problems Prevention Research Group, 2004), designed for children at risk for conduct disorders, designed to provide interventions at the levels of the family, child, classroom, peer group, and school setting. High-risk intervention children have shown some improvements in various social, emotional, and academic skills as rated by teachers as well as by parents (Conduct Problems Prevention Research Group, 2004).

### *Attachment-Based Interventions in Schools*

There are many rigorously evaluated programs addressing structure and discipline in the classroom, but there are currently few programs built around the notion of strong attachments to teachers. This is surprising, given recurrent findings that a supportive relationship with adults is critical in resilience and that teachers can play a major socializing role (e.g., L. Chang, 2003; E. A. Skinner, Zimmer-Gembeck, & Connell, 1998; Wentzel, 2002). Writing from an attachment perspective, Robert Pianta (1999) has eloquently described the benefits that can de-

rive from close child-teacher relationships developed and then sustained for as long a period of time as feasible. Commenting on the neglect of attachment-based interventions in schools, he notes the important possibility of broadening the pool of adults in schools who might contribute to such preventive efforts, to go beyond school psychologists or counselors. Pianta argues that there are often enough adults in a given school building to provide some support to children who need it; to some degree, what is needed is creative reassigning of responsibilities and continuity in relationships forged. Thus, in Felner and colleagues' (2001) School Transition Environment Program (STEP), and its successor, the Project on High Performance Learning Communities, the role of homeroom teachers was changed such that they accepted responsibility for counseling and advisory functions and served as a consistent link between students, families, and the school.

Going still further, some have suggested involving not only subject or homeroom teachers but also other adults to whom students are naturally drawn. As Noam and Hermann (2002) note, some at-risk students may actually be inhibited about seeking support from their own teachers, perceiving them primarily as disciplinarians and evaluators of academic progress. Similarly, Luthar and Zelazo (2003) note that students often seek out, as confidants or mentors, diverse school-based adults ranging from sports coaches and music instructors to administrative and support staff (see also Hetherington, 1993). To the degree that such interactions are already occurring in schools, it could be useful to formalize the process to some degree. Adults likely to be most effective as informal mentors could be identified via student nominations (Luthar & Zelazo, 2003). Systematizing their efforts in this regard could be fostered by (1) using student nominations to identify informal mentors (Lindsey & Kalafat, 1998), (2) some creative reassigning of responsibilities, and (3) provision of in-service training and supervision (again, using resources already existing in schools and through collaborative arrangements with applied psychology or social work programs in local universities; see Felner et al., 2001; Luthar & Zelazo, 2003; Pianta, 1999; Pianta & Walsh, 1998).

Although not necessarily tested by the same rigorous designs involving randomized assignments and multiple sites, two programs have in fact attempted to use attachment-based interventions in schools with some promising results. One is Cowen's (Cowen et al., 1996) Primary Mental Health Project, focused on preventing mental health problems among elementary school children, and the second is Noam and colleagues' (Noam & Hermann, 2002) Responsive Advocacy for Life and Learning in Youth (RALLY),

designed for middle school students in high-risk environments. At the core of both interventions are strong relationships. Discussing intervention gains, Cowen and colleagues noted, "The existence of a warm, trusting associate-child relationship is the foundation on which significant attitudinal and behavioral change in children rests" (p. 92). The RALLY intervention is grounded in the core premise that "resilience cannot develop without the personal, interpersonal, and emotional dimensions inherent in relationships" (Noam & Hermann, 2002, p. 874).

Schneider and colleagues (2003) have suggested that children with low perceived containment—who do not believe in adults' capacities to enforce firm limits—and are therefore at risk for Conduct Disorder might actually be better served by interventions focusing on sustained, positive relationships rather than short-term disciplinary techniques designed to counter misbehavior. Similarly, in their literature review of school-based programs effective in fostering resilient outcomes, Forman and Kalafat (1998) emphasized the protective potential of caring adults who hold high expectations and convey positive feedback, school structures that foster the development of relationships between students and adults, and fostering relationships between the school, parents, and community. Accentuating such informal school-based support systems could be particularly critical for the wellness of at-risk junior high and high school students because they face schools that are increasingly impersonal, with diminishing supports infused in daily curricula, and because adolescents can be particularly reluctant to seek professionals to help with even the most serious of adjustment problems (Doll & Lyon, 1998; Eccles et al., 1993; Forman & Kalafat, 1998; Short, 2003).

In considering the enhanced use of school-based interventions in future years, a number of potential impediments must be considered carefully, significant among which is schools' overarching emphasis on developing literacy skills. Although there are in fact ongoing opportunities to foster good problem-solving skills and social competence (Doll & Lyon, 1998), Adelman and Taylor (1999, p. 138) caution, "Schools are not in the mental health business. Their mandate is to educate." To foster more inclusive thinking, the authors underscore that scientists must systematically disseminate evidence that children's psychological problems can substantially impede achievement of literacy goals, and conversely, that mental health services can help in reaching them (Adelman & Taylor, 2003). All major stakeholders—parents, teachers, school administrators, and legislators—are likely to be more receptive of interventions if they clearly understand the evidence that children with social-emotional problems are at elevated

risk for poor academic performance and eventually are at elevated risk for dropping out of school and subsequent problems in adulthood (National Institutes of Health, 2000; Noam & Hermann, 2002; Rones & Hoagwood, 2000; Short, 2003).

Another major impediment to the widespread use of schools to foster mental health has been interventionists' neglect of critical contextual factors. Ringeisen, Henderson, and Hoagwood (2003) argue that the children's mental health literature does encompass multiple evidence-based interventions (such as those previously cited here). In efforts to transfer interventions developed in laboratories to the school setting, however, there has been an unfortunate lack of attention to aspects of the school context that strongly affect intervention delivery (e.g., by involving teachers in the design and implementation of interventions). The third impediment is perhaps the most obvious one, that of burden: Resources are already stretched thin, particularly so in those schools that most need them. For example, it is estimated that the ratio of school psychologists or school social workers to students is about 1 : 2,500; for school counselors, the ratio is 1 : 1,000. Acknowledging these constraints, several authors have indicated that the most urgent task need of the day is not necessarily to provide more resources for mental health services in schools, but to use existing resources more prudently than they typically are used. We need movement away from individually based mental health service delivery to integrated models involving group- and classroom-based approaches, ongoing professional consultations for school personnel, and involvement of families and communities (Atkins, Graczyk, Frazier, & Abdul-Adil, 2003; Doll & Lyon, 1998; Felner et al., 2001; Hoagwood & Johnson, 2003).

### Peers and Social Networks

Aside from adults at school, positive relationships with peers can also serve important ameliorative functions for at-risk children (Benard, 2004; Elder & Conger, 2000; Jackson & Warren, 2000). Among children of divorce, for example, a supportive relationship with a single friend may help to buffer children from the deleterious effects of marital disruption (Hetherington & Elmore, 2003; see also Bolger & Patterson, 2003). Other longitudinal research has shown that peer acceptance and friendships attenuated the association between aspects of family adversity and subsequent externalizing behaviors at the time of entry into elementary school and between fifth and seventh grades (Criss et al., 2002; Lansford, Criss, Pettit, Dodge, & Bates,

2003; Schwartz, Dodge, Pettit, & Bates, 2000). Findings such as these are viewed as reflecting three potential mechanisms: (1) the provision of "remedial" socializing contexts for skills not acquired in dysfunctional homes; (2) modification of parents' and children's negative behaviors by the more well-functioning peers and their parents; and (3) enhanced bonds with the social institution of the school (Lansford et al., 2003).

Intervention studies have also shown that peer-assisted learning can result in significant increases in achievement (Rohrbeck, Ginsburg-Block, Fantuzzo, & Miller, 2003), although there have been relatively few large-scale, randomized trials involving use of peers to promote outcomes. The potential in this regard is seen in Fantuzzo and colleagues' (1996) resilient peer treatment program, a peer-mediated classroom intervention involving pairing of socially withdrawn children with manifestly resilient peers in the classroom. In addition, several elementary and middle schools throughout the country tend to use peer mediation to reduce conflict and promoting positive behaviors (e.g., Johnson & Johnson, 2001; Smith & Daunic, 2002), but again, there is a need for more rigorous evaluations of their effectiveness. Underscoring the socializing potential of peer environments, Kupersmidt, Coie, and Howell (2004) advocate enhanced exploration of programs to prevent the spiraling of problems of aggressive children by promoting contacts between them and their more conventional peers.

Just as positive peer relationships can ameliorate effects of adversity, problems in this domain can exacerbate vulnerability: Children who have been rejected by their peers show relatively poor outcomes across multiple domains in later life, including internalizing problems, school dropout, and delinquency (Kupersmidt & Dodge, 2004). In a series of studies with longitudinal designs, social rejection was a consistent predictor of adolescent and adult criminality, sexual promiscuity, suicide, Schizophrenia, and substance use (McFadyen-Ketchum & Dodge, 1998). The combination of aggression and rejection spells particularly high risk for long-term adjustment outcomes (see Kupersmidt & Dodge, 2004).

Affiliation with deviant peers is a factor well known to exacerbate vulnerability among at-risk youth, particularly in relation to conduct problems and substance use. Among preadolescent children of substance-abusing fathers, affiliation with deviant peers was a robust predictor of child psychopathology (Moss, Lynch, Hardie, & Baron, 2002), as it is among adolescents experiencing stressful life experiences both within and outside the family (e.g., Barrera et al., 2002; Scaramella, Conger, Spoth, & Simons, 2002;



Tyler, Hoyt, Whitbeck, & Cauce, 2001). In the Great Smoky Mountains Study, data on 9- to 15-year-olds interviewed during the first three waves of this project showed that association with deviant peers, along with increasing levels of circulating testosterone, contributed to increases in conduct disorders with age. Furthermore, these associations were mediated primarily by increases in non-physically aggressive behaviors (Rowe, Maughan, Worthman, Costello, & Angold, 2004).

Dishion, McCord, and Poulin (1999) provided powerful evidence on the potentially iatrogenic effects of peer aggregation during early adolescence. These authors reviewed longitudinal research data showing that adolescent friendships can involve "deviancy training," which in turn predicts increases in delinquency, substance use, violence, and adult maladjustment. In addition, they presented findings from two experimentally controlled intervention studies showing that (1) as compared to control conditions, peer-group interventions actually increased adolescent problem behaviors and negative life outcomes in adulthood, and (2) high-risk youth were particularly vulnerable to such peer aggregations (i.e., more so than low-risk youth). Two developmental processes were discussed as possibly accounting for the powerful iatrogenic effects; the first involved active reinforcement for deviant behavior through laughter and social attention, and the second entailed the derivation of meaning and values that provided the cognitive basis for motivation to commit delinquent acts in the future.

The potential for such iatrogenic effects has often been discussed in relation to the ecology of urban poverty. In inner-city neighborhoods and schools, the peer culture tends to reflect the larger community, so that youth growing up in high-crime neighborhoods can be exposed to more delinquent peers than are youth in other environments (Cauce et al., 2003; Leventhal & Brooks-Gunn, 2000; Richters & Cicchetti, 1993). In turn, affiliation with delinquent peers exacerbates the risk for the development of adolescent behavior problems. Furthermore, the personal characteristics valued by peers in inner-city settings are often at odds with those endorsed more conventionally (Jarrett, 1999). For example, high peer popularity can be associated with disruptive, aggressive behaviors at school as well as low academic effort (Fordham & Ogbu, 1986; Luthar, 1995; Luthar & McMahon, 1996), ostensibly reflecting the lack of conviction in poor urban communities that conformity and application at school will actually result in long-term life successes.

Adding still further to the complexities of peer group effects, some have shown that influences of the inner-city

adolescent peer group can be beneficial in some spheres of adjustment, even as they are counterproductive in others. Seidman and Pedersen (2003), for example, reported that inner-city adolescents who were antisocial and highly engaged with friends were in fact at risk for delinquency. At the same time, they were notably less depressed than were comparison youth from the same background. There are also probably varying effects of high status in the wider peer group as opposed to support from close friends. Guttman, Sameroff, and Eccles (2002) found that levels of support from peers, as opposed to popularity with the wider peer group in previously discussed studies, was associated with higher math achievement test scores for high-risk adolescents, but not their lower-risk counterparts. The authors argued that peer support for academic success may in fact be limited for African American adolescents (Steinberg, Dornbusch, & Brown, 1992), but that among African American teens exposed to multiple risks, those who feel that they can depend on peers for help with problems fare better academically than their counterparts with low perceived peer supportiveness.

Aside from members of the peer group, relationships with informal mentors can serve critical protective functions. Evidence in this regard is seen in the Big Brothers Big Sisters of America (BBBSA) movement, a program that typically targets youth ages 6 to 18 years from single-parent homes. Service delivery is by volunteers who interact regularly with a youth in a one-to-one relationship, and supervision is provided on a monthly basis for the 1st year and on a quarterly basis subsequently. An evaluation of the program has shown that as compared to their non-participating peers, BBBSA youth were 46% less likely to initiate illegal drug use, 27% less likely to initiate alcohol use, and 52% less likely to skip school. They also fared substantially better on academic behavior and attitudes and had higher-quality relationships with their parents or guardians as well as their peers (Tierney, Grossman, & Resch, 1995).

With regard to mediators and moderators, Rhodes, Grossman, and Resch (2000) tested a conceptual model in which the effects of mentoring were mediated through improvements in parental relationships. The study included almost 1,000 youth, randomly assigned to BBBSA or a control group, and questions were administered at baseline and 18 months later. Results indicated that improved family relations did in fact mediate mentoring effects. In another study, Grossman and Rhodes (2002) found that duration of the relationship was a significant moderator variable. Adolescents in relationships lasting a year or longer reported

the largest number of improvements, with progressively fewer gains (and sometimes even decrements) seen with reductions in relationship length.

Salutary socialization experiences can derive from religious affiliation as well (Elder & Conger, 2000; Pearce, Jones, Schwab-Stone, & Ruchkin, 2003). Studies by Miller and her colleagues have demonstrated that religious adolescents have relatively lower risk for problems such as depression and substance use (e.g., Miller, Davies, & Greenwald, 2000; Miller & Gur, 2002). Mechanisms posited include indirect effects of primary socialization (in that religion shapes the primary socialization sources, comprising parents, peers, and school) as well as direct ones (aiding in the adolescent's search for meaning, purpose, and identity in life).

The benefits of community supports to at-risk children are paralleled by those to their parents: Parents with informal social support networks show better psychological well-being and positive parenting and fewer negative parenting practices (Belsky, 1980; Burchinal et al., 1996; R. D. Taylor et al., 1993). Among inner-city mothers, those with high levels of perceived support displayed relatively few depressive symptoms, experienced less negativity about the parental role, and used less punishment (McLoyd, Jayaratne, Ceballo, & Borquez, 1994). By the same token, feelings of social isolation and loneliness tend to characterize low-SES parents who are neglectful of their children more than those who are not (Luthar, 1999).

Perceptions of social support may be more critical for disadvantaged individuals than support actually used (Berman, Kurtines, Silverman, & Serafini, 1996). Actual receipt of help from others—for example, with child care—benefited parents from different economic backgrounds, but expectations of adequate support in crises were more advantageous for low-income families than for others (Hashima & Amato, 1994). Given the paucity of resources and the multiplicity of life stressors among parents who contend with conditions of serious economic disadvantage, convictions that help will be forthcoming when needed may be particularly comforting to them.

Indirect benefits to children via support received by parents are also evident in research on interventions (e.g., Luthar & Suchman, 2000). In the Chicago Parent-Child Project, for example, many of the benefits deriving from this program were mediated by parents' involvement in children's education and school (Reynolds, 2000; Reynolds & Ou, 2003), probably reflecting improvements in parenting practices and attitudes, as well as enhanced family support. As noted earlier, in Yoshikawa's (1994) review of early intervention programs successful in reducing long-

term delinquency, comprehensive support to parents constituted a key ingredient.

Support to parents via religious communities can also be beneficial. Brody, Stoneman, and Flor (1996) showed that among rural African American families, relatively high formal religiosity was linked to more cohesive and less conflictual family relationships. Associations such as these might reflect, in part, the connectedness and social supports experienced by those who attend church regularly, as church attendance provides a place for families to gather and socialize (Brody et al., 1996). In addition, intrapersonal processes might be implicated, such as reliance on relatively effective coping strategies. Kendler, Gardner, and Prescott (1997) reported, based on twin study data, that adults with high personal religiosity reflected comparatively low susceptibility to the depressogenic levels of stressful life events; they also reported lower levels of alcohol and nicotine use compared to others. Among parents who had lost an infant to Sudden Infant Death Syndrome, those high on religious participation and importance showed less distress than others, and these effects were mediated by two dimensions of coping: cognitive processing of the loss and finding meaning in the death (McIntosh, Silver, & Wortman, 1993). Similarly, among elderly women who had suffered hip fractures, those who were more religious had better physical and psychological coping than did others (Pressman, Lyons, Larson, & Strain, 1990).

The connotations of religiousness are not invariably positive, however; in fact, it can sometimes exacerbate vulnerability. Among women (but not men) who had been depressed as children, personal religiousness was found to pose as much as a twofold increase in risk for depression in adulthood (Miller, Weissman, Gur, & Greenwald, 2002). The authors suggest that childhood depressive symptoms such as guilt, low self-worth, and excessive self-blame (all common features of female depression) can sometimes distort religious messages emphasizing altruism, empathy, and other-centeredness, leading some women to become excessively submissive, self-depriving, and lacking in self-expression. Furthermore, Garcia Coll and Vasquez García (1995) have argued that strong beliefs in the supernatural may sometimes take the form of fatalism, and if at-risk youth and families come to believe that nothing can be done to improve one's lot in life, this can create formidable barriers in improving the overall quality of their lives.

## Neighborhoods

Moving on from the relatively proximal extrafamilial contexts of school, peers, and interpersonal supports to those

more distal, aspects of the community may also play an important role in buffering risk for children (Garbarino, Hammond, Mercy, & Yung, 2004; Gorman-Smith & Tolan, 2003; Sampson, 2001). Particularly important are social organization processes in the neighborhood (Sampson et al., 1997; Wilson, 2003), which involve features such as high levels of cohesion, a sense of belonging to the community, supervision of youth by community adults, and high participation in local organizations. Such neighborhood social processes can help buffer the impact of structural characteristics of the community (e.g., poverty, violence) either by affecting parents' behaviors or directly benefiting children themselves (Furstenberg et al., 1999; Leventhal & Brooks-Gunn, 2000; Sampson, 2001). To illustrate the former, Mahoney and Magnusson (2001) found that among at-risk youth, fathers' involvement in community activities in late childhood was associated with significantly lower risk for persistent criminal involvement over time. These findings were seen as possibly reflecting the effects of more conventional values of fathers who were involved in community activities, their relatively greater personal resources, or their generally higher levels of involvement in their sons' lives. Direct benefits to children are seen in Gorman-Smith and Tolan's (2003) findings that when inner-city families are lacking in warmth and closeness, children's vulnerability can be reduced somewhat if they feel a sense of belonging and support in the neighborhood.

Whereas extracurricular activity involvement is widely believed to confer protective functions, the type of benefit depends, to some extent, on the degree of structure of the activities. Research by Mahoney (2000) showed that among pre- and early adolescent children manifesting multiple adjustment problems, involvement in school extracurricular activities was linked with reduced rates of early dropout and criminal arrest over time. Results of another study, however, indicated that it was only participation in structured leisure activities that reduced risk for antisocial behavior; when structure was low (as in youth recreation centers), risks for deviant peer relations and antisocial behaviors were actually heightened (Mahoney & Stattin, 2000).

Youth-serving community organizations can directly provide protective functions to low-income youth, but the number that actually deliver this in contemporary society is woefully inadequate. Just as quality day care is rarely obtainable by those who need it the most, so are quality youth organizations rare in those neighborhoods that most need them, where economic and political resources are low and social disorganization is high (Cauce et al., 2003). This dearth of institutional services, along with low resources in schools, results in a lack of attractive, organized, and

positive afterschool activities for youth, leaving them open to the allure of illegal activities with peers and adults in the community (Luthar & Burack, 2000; Seidman & Pederesen, 2003).

There have been few neighborhood-level interventions thus far that have been focused on children's well-being (Leventhal & Brooks-Gunn, 2000), yet promising efforts are seen in Tolan and colleagues' (2004) *Schools and Families Educating Children* (SAFE Children) intervention. This preventive program is focused on promoting strong family relationships and developing support networks in the neighborhood, with attention also to children's academic functioning. Intervention families have shown improvements in parents' functioning and in children's academic performance, with gains most pronounced among those who, at the outset, manifested the highest levels of disturbance (Tolan et al., 2004).

Based on their own experiences, Gorman-Smith and Tolan (2003) note that in designing future interventions based at the neighborhood level, two interrelated considerations are critical. The first is that they should involve constituent groups as far as possible, and the second is that (as with families), they should strive to promote benefits that can be sustained by recipients over time. Gorman-Smith and Tolan also point to the promise of community efforts involving coalitions of local groups and agencies (such as police and faith-based organizations) in addressing risks specifically associated with urban poverty (e.g., initiatives to inhibit illegal gun trade).

Finally, among adults, relocation out of at-risk communities can be beneficial by providing major changes in life opportunities or in people's cognitive set and self-views (Werner & Smith, 1992). Movement toward relatively positive trajectories has been shown, for example, with respect to army experiences for low-income youth prone to delinquency (Laub & Sampson, 2003; Sampson & Laub, 1996). Among low-income children who had poor grades and self-inadequacy, those who entered military service relatively early showed more positive outcomes in terms of completing their education, getting married, and having their first child later than did nonveterans (Elder, 1986).

### **Individual Attributes: Malleability in Contexts**

In overviewing the triad of vulnerability and protective processes in resilience, it has been argued that children's own attributes should be considered after aspects of their family and community for three critical reasons (see Luthar & Zelazo, 2003). From a basic research perspective, numerous studies, described in some detail in discussions

that follow, have shown that many positive child attributes are themselves often dependent on processes in the proximal and distal environments. From an applied perspective, it is logical that interventions to foster resilience should focus less on what young children are able to do for themselves and more on what adults must do to bolster the children's own efforts. From a policy perspective, to place primary emphasis on child attributes could carry the risk that public debate will shift away from the major environmental risks that affect children, leading to decreased allocation of resources to ameliorate these risks (see Luthar et al., 2000a; Luthar & Zelazo, 2003). It is these due to considerations, rather than any devaluing of children's own strengths, that the emphasis is placed on families and communities in transaction with the children rather than the other way around.<sup>1</sup>

To underscore the perils of overemphasizing children's own attributes, we begin this section by presenting evidence on the malleability of some of the most commonly cited *protective child attributes*, starting with intelligence (probably the single most often mentioned asset). Studies on diverse risk groups show that individuals with high IQ tend to fare better than others (Luthar, 2003; Masten, 2001). At the same time, evidence of environmental influence is seen in Sameroff and colleagues' (Sameroff, Seifer, Zax, & Barocas, 1987) findings almost 2 decades ago that children facing no environmental risks scored more than 30 points higher than children with eight or nine risk factors. No preschoolers in the zero-risk group had an IQ below 85, whereas 26% of those in the high-risk group did.

Since then, others have shown that disturbances in parents' functioning can affect child intelligence. A twin study by Koenen, Moffitt, Caspi, Taylor, and Purcell (2003) showed that among 5-year-old children, those exposed to high amounts of domestic violence had an IQ that was 8 points lower, on average, than the IQ of children not exposed to domestic violence. Furthermore, domestic violence accounted for significant variation in IQs even after considering possible genetic effects and externalizing and internalizing problems that could impair performance on

standardized tests. Similarly, maternal depression has been associated with relatively low child cognitive functioning both in the postpartum period (Murray, 1992; Sharp et al., 1995) and in the preschool years (NICHD, 1999; see also Cicchetti et al., 2000).

Powerful testimony on this issue lies in work by Rutter, O'Connor, and their colleagues, on adoptees from Romanian orphanages. Caregiving conditions in these orphanages ranged from poor to appalling: Infants were typically confined to cots, there was no personalized caregiving and few toys, feeding often occurred via propped-up bottles, and washing was done by hosing the babies down (Rutter & the English and Romanian Adoptees Study Team, 1998). When these children entered into adoptive families in the United Kingdom, they had mean cognitive functioning scores in the mentally retarded range. However, longitudinal evaluations showed catch-up effects, in that babies who were adopted by 2 years of age by families in the United Kingdom lost their profound early deficits, and by the age of 4 came to show near-average developmental status.

In terms of underlying mechanisms, environmental deprivation may lead to cognitive deficits because of lack of appropriate stimulation and even adverse effects on brain development. Depressed and psychologically withdrawn caregivers, for example, can provide limited stimulation for the development of cognitive skills and expressive language, and deficits in the mother-child relationship can constrain the child's developing sense of self-efficacy and agency, in turn inhibiting her active exploration of the environment (Cicchetti et al., 2000). Biologically, studies have shown that stress generates high levels of catecholamines and cortisol, and chronic activation of the stress response can result in the death of neurons in specific brain regions, with these effects most profound during early childhood, when neuroplasticity is high (Cicchetti & Walker, 2003; DeBellis, 2001; DeBellis et al., 1999; Sanchez, Ladd, & Plotsky, 2001). Results of animal studies clearly establish that early enriched versus deprived environments connote substantial differences in animals' neurochemical, physiological, and neuroanatomical functioning, with the last including variations in the weight of the brain and structural modifications of the cerebellar cortex (Curtis & Nelson, 2003).

Discussions on intelligence thus far have been focused on periods early in development, and one might argue that high IQ would be more powerful in resilience later in development; though probably true, the evidence is not unequivocal even at older ages. Up through middle childhood, it does seem that bright children tend to show stability in everyday competence despite increasing levels

<sup>1</sup> A parallel approach is evident in the Search Institute's listing of 40 developmental assets. The list begins with the *external assets*, and noted first are dimensions of support, including the categories of family support, positive family communication, other adult relationships, caring neighborhoods, and caring school climates. *Internal assets* are the second 20 items on the list, subsumed in categories such as commitment to learning, positive values, and positive identity.



of life stress (e.g., Garmezy et al., 1984; Masten, 2001). On the other hand, among three different samples of low-income adolescents, intelligence was not found to be protective; to the contrary, there were suggestions that bright youth may be more sensitive than others to negative environmental forces (Gutman et al., 2003; Luthar, 1991; Luthar & Ripple, 1994). In other words, intelligent adolescents fared far better at school than did less intelligent ones when life stress levels were low, but when stress was high, they lost much of this advantage and showed competence levels similar to those of their less intelligent counterparts. More striking, Fiedler (1995) found that high IQ adults showed leadership success under conditions of low stress, but that when stress was high, IQ was *inversely* correlated with leadership success.

Findings such as these have been viewed as suggesting that the manifest benefits of innate intelligence vary depending on aspects of the proximal environment. In areas of concentrated poverty, where conventional means of achieving self-worth (e.g., good grades, productive employment) are generally scarce, for example, intelligent and creative teenagers may use their talents in ways that bring more immediate gains, such as illegal entrepreneurship, rather than through striving for excellence at school (Gutman et al., 2003; Luthar, 1991; Richters & Cicchetti, 1993). Freitas and Downey (1998) cite research showing such patterns among adult women who were incarcerated; among recidivists, many personal attributes commonly seen as protective in nature were identified as actually aiding them in their criminal activities.

The previously described evidence on intelligence is paralleled by similar evidence on temperament, also shown to confer protection against stress (e.g., Mendez, Fantuzzo, & Cicchetti, 2002; Murry, Bynum, Brody, Willert, & Stephens, 2001). Benefits have been found in relation to not only psychological and behavioral but also biological outcomes. To illustrate, children low on behavioral inhibition may react less to stress than others, as suggested by evidence of resting right frontal EEG activation among inhibited children (Calkins & Fox, 2002); as noted earlier, this pattern is linked with tendencies to respond to stressful events with negative affect or depressive symptoms (Curtis & Cicchetti, 2003).

Whereas temperamental differences can be seen as early as 4 months of age and show continuity over early childhood (e.g., Kagan, Snidman, & Arcus, 1998), both the manifestation and ramifications of temperament can be modified by environmental features. During the preschool years, for example, children show differences in terms of

shyness versus extraversion, as well as the tendency to feel negative emotions more or less deeply (Rothbart & Jones, 1998), and the external manifestations of both these dimensions can be modulated by effortful control. As Rutter (2000) has noted, scientists long ago moved past the point of misleading assumptions that “constitutional” factors are unalterable; whereas some children do have a tendency to be more impulsive or oppositional than others, their interactions with the world contribute to determining the behavioral conformity they display. In a similar vein, some children are temperamentally more exuberant than others, and some feel negative emotions more intensely than do others, but the external manifestation of these emotions and whether they lead to rejection by peers depends on the degree to which they can modulate their emotions (Fabes et al., 1999; Rubin, Coplan, Fox, & Calkins, 1995). And children’s abilities to modulate or inhibit the expression of emotions depend, as described in the paragraphs that follow, on the nature of their interpersonal relationships, particularly those early in life.

Several studies have established the protective effects of self-regulation from early childhood onward (see Shonkoff & Philips, 2000). Among low-income children, emotion regulation at the age of 3½ was related to self-control on entry into first grade (Gilliom, Shaw, Beck, Schonberg, & Lukon, 2002), and those with low emotional knowledge at first grade showed significant increases in internalizing symptoms over the next 4 years (Fine, Izard, Mostow, Trentacosta, & Ackerman, 2003). These findings suggest that among children just entering school, those who find it difficult to interpret others’ emotions may get into a cycle where dysfunctional social exchanges lead to isolation and thus sadness, and these emotions in turn jeopardize future interactions with others. Among adolescents in low-income families, Buckner et al. (2003) found that good self-regulation contributed to resilience—good mental health and emotional well-being—even after considering self-esteem and nonverbal intelligence. Even perceived self-efficacy to regulate positive and negative affect is related to adolescents’ beliefs that they can manage academic, transgressive, and empathic aspects of their lives, with these forms of perceived self-efficacy, in turn, related to later levels of depression, delinquency, and prosocial behaviors (Bandura, Caprara, Barbaranelli, Gerbino, & Pastorelli, 2003).

As suggested earlier, self-regulation itself depends squarely on relationships; in point of fact, children’s compliance within the mother-child dyad is the first sign of internalizing adults’ rules (R. Feldman, Greenbaum, &

Yirmiya, 1999; Kochanska, 1997; Kochanska, Coy, & Murray, 2001; Stifter, Spinrad, & Braungart-Rieker, 1999). As Shonkoff and Phillips (2000, p. 121) emphasize:

It is clear at this point that the various components of active, internally guided regulation of attention, behavior, and emotion emerge . . . in the context of caregiving relationships that explicitly guide the child from her dependence on adults to regulate virtually every aspect of functioning to gradually taking over and self-regulating her own behaviors and feelings in one aspect of her life after another.

In their study of 90 toddlers, R. Feldman and Klein (2003) showed that compliance to parents in child care centers was associated with parents' sensitivity and philosophy. Among young boys in low-income families, secure attachment to mother and positive maternal control at the age of 1½ years predicted effectiveness of emotion regulation at the age of 3½, and this in turn was related to capacities for self-control on entry into first grade (Gilliom et al., 2002). Finding that self-regulation distinguished manifestly resilient low-income adolescents from others, Buckner and colleagues (2003) noted that this capacity is itself shaped by teenagers' relationships in the family.

Aside from self-regulation, individuals' propensities to cope effectively with challenges also rests on "meaning making"—phenomenological interpretations of events in their lives (e.g., Beardslee, 2002; Hauser, 1999; Noam & Hermann, 2002)—and this, too, is shaped by the environment as demonstrated in Spencer's (1999; Spencer et al., 2003) phenomenological variant of ecological systems theory (PVEST). At the core of PVEST lie identity processes, which define how adolescents view themselves within and between their various contexts of development. Emerging identities, however, are themselves conceptualized as emerging within the framework of contextual forces that potentially confer vulnerability (e.g., poverty or racial subordination) and net stress engagement, which is the individual's actual experiences of both risks experienced and support systems drawn on. Depending on the nature and balance of these risks and supports, the individual develops reactive coping methods, which in turn shape emergent identities and, eventually, long-term life stage-specific coping outcomes. A particularly attractive feature of Spencer's PVEST theory is the careful articulation of policy implications. She specifically underscores the need for policymakers to recognize that "problem behaviors" cannot be conceptualized as stemming simply from a child's own faulty coping processes or aberrant meaning making, for these often are products of uncontrollable contextual forces. Accordingly, interventions should address multiple

levels of the environment rather than focusing primarily on the child labeled as being at risk.

There is similar evidence showing that many other child attributes commonly labeled as protective factors can themselves be shaped substantially by the environment. Self-efficacy, as Maddux (2002) notes, is strongly influenced by the degree to which adults encourage or hinder the child's attempts at manipulation and control (Bandura, 1997). Self-esteem can be protective for at-risk children but is itself affected by parental warmth (Sandler et al., 2003). Internal locus of control is commonly cited as being protective (e.g., Capella & Weinstein, 2001), and Bolger and Patterson (2003) showed that early onset of maltreatment reduces the chances that children are able to maintain internality of control. Other research has shown that when teachers are perceived as cold and inconsistent, this progressively erodes students' convictions that they can produce their own successes and avoid failures (E. A. Skinner et al., 1998).

The preceding examples resonate with recommendations from resilience researchers for caution against inordinately emphasizing the importance of protective child attributes that are themselves malleable by the environment (see Luthar et al., 2000a; Yates et al., 2003); at the same time, there are several other caveats that warrant attention. First, as we noted at the outset, prior discussions are not intended to detract in any way from children's own strengths. Rather, the effort is (1) to circumvent any misguided blaming of the victim that might stem from an emphasis on child traits, and (2) concomitantly, to underscore the need for policies alleviating the contextual risks facing many youth. Second, there is no suggestion that personal attributes do little for resilience in any absolute sense. In fact, bright children likely fare better than others in many ways; the point here is simply that even these youth may not realize their full potential if they continually contend with environmental assaults. Third, the relative salience of personal versus others' attributes obviously shifts over time, with young children's well-being being more dependant on the emotional sustenance they receive than is the well-being of adults. Fourth, our arguments are not intended to minimize the possibility that children's attributes can themselves exert effects on the environment, for example, by eliciting different reactions from adults (e.g., Laird, Pettit, Bates, & Dodge, 2003; MacKinnon-Lewis, Lamb, Hattie, & Baradaran, 2001). From an intervention standpoint, however, applied scientists are less likely to "change" a young child to evoke positive feelings in parents and teachers than to help adults behave in ways that evoke positive reactions in the child. In the words of Shonkoff and Miesels (2000, p. 123):

For children whose problems do not fall within the clinical range, early interventions to address regulatory behavior focused on “fixing” the environment . . . warrant serious attention to balance the current focus on “fixing” the child. It is also clear that focusing on young children’s relationships with adults and peers is a promising and complementary, yet poorly exploited approach.

In a related vein, we do not imply in any way that programs addressing children’s own competencies do not work, merely that the successful ones focus not only on the child, but also on the environment, by working, for example, with teachers and parents (Shonkoff & Phillips, 2000; Zigler & Styfco, 2001). This is true even among children well past the infancy and preschool years, as is exemplified in research by Sandler and colleagues. Working with school-age children of divorce, these investigators designed an intervention with separate programs for mothers and for children. Experimentally induced change in maternal warmth did in fact lead to a reduction in children’s mental health problems, whereas working with children’s coping alone did not (Sandler et al., 2003; see also Maton, Schellenbach, Leadbeater, & Solarz, 2004).

#### ***Other Individual Assets: Future Research Needs***

The personal characteristics already discussed—intelligence, easygoing temperament, self-regulation, self-esteem, self-efficacy, and internal locus of control—are commonly cited in the resilience literature (see Masten, 2001), but there are many others that warrant further empirical attention. Among these are practical and emotional intelligence. Sternberg and Grigorenko (2000, p. 215) have defined practical intelligence as “intelligence as it applies in everyday life in adaptation to, shaping of, and selection of environments”; it is complementary to but distinct from crystallized intelligence as measured by IQ tests. The importance of this construct is evident in studies of children and adults. In a village in Kenya, Sternberg and his colleagues (2001) found that children who had learned how to use natural herbal medicines to cure their various ailments were viewed by the community as both intelligent and adaptive. However, this aspect of practical intelligence was negatively correlated with conventional tests of crystallized abilities. Similarly, among adults, assemblers in milk-processing plants use complex strategies for combining partially filled cases of milk to minimize the number of moves needed to fill an order (e.g., Scribner, 1984). The order-filling performance of the assemblers was unrelated to intelligence test scores or arithmetic test scores and grades (Sternberg et al., 2001). In future research, greater

attention is clearly needed to practical intelligence as a protective factor across different risk conditions and in relation to different outcomes.

Emotional intelligence, as conceptualized by Mayer, Salovey, and their colleagues (Mayer, Salovey, Caruso, & Sitarenios, 2003; Salovey, Mayer, Caruso, & Lopes, 2003), is the ability to perceive and express emotions, to understand and use them, and to manage them to foster personal growth. The construct has four dimensions: (1) perceiving emotion, (2) using emotion to facilitate thought, (3) understanding emotion, and (4) managing emotion. In terms of its potential association with resilience, emotional intelligence is in fact a central construct in school-based initiatives aimed at promoting social-emotional learning in children (see Elias, Arnold, & Hussey, 2003; Greenberg et al., 2003). Among adolescents, furthermore, researchers have shown that this construct is linked with relatively low likelihood of smoking cigarettes and drinking alcohol (Trinidad & Johnson, 2002) and, following the major life transition to beginning college, with greater likelihood of attaining high academic grades (Parker, Summerfeldt, Hogan, & Majeski, 2004). In adulthood, emotional intelligence has been associated with relatively positive health outcomes, possibly reflecting psychophysiological responses to stress (e.g., relatively low cortisol and blood pressure responses to acute laboratory stressors; Salovey, Stroud, Woolery, & Epel, 2002).

In future research on intelligence and resilience, it is important not only to disentangle the contributions of practical, emotional, and crystallized intelligence, but also to move from focusing on discrete skills or particular milestones to the *underlying processes and functional capacities* that underlie skills that span multiple domains (Cicchetti & Wagner, 1990). Rather than relying on standardized IQ or achievement tests, for example, it will be most useful to assess the underlying capacities that make it possible for children to learn, such as the development of different problem-solving strategies, the ability to generalize learning across situations, and the unfolding of high motivation to explore and master new challenges (Shonkoff & Phillips, 2000).

Aside from dimensions of intelligence, studies with adults have shown the importance to resilient adaptation of developmental maturity, as reflected in the types of defense mechanisms typically used. Vaillant (2000) has noted that the more mature defenses—such as altruism, suppression, humor, anticipation, and sublimation—tend to be linked with relatively positive outcomes among individuals at risk and, at the same time, are relatively independent of social class, education, and IQ. In a long-term follow-up

study of 73 14-year-old inner-city boys with low IQ and a socioeconomically matched group with an average IQ of 115, Vaillant and Davis (2000) found that at the age of 65, half of the low-IQ men were comparable to the high-IQ group in terms of their own income and their children's level of education. These resilient low-IQ men were far more likely than their low-IQ, poor-outcome counterparts to use predominantly adaptive defenses, with the latter group more often using maladaptive defenses such as turning against the self, projection, and fantasy.

Potentially counterintuitive findings on the role of defenses in resilience stem from research on bereavement. Whereas repressive coping is generally viewed as maladaptive, research by Bonanno and colleagues suggests that it can foster resilience in the face of bereavement, as defined by the maintenance of relatively stable, healthy levels of psychological and physical functioning following the loss (see Bonanno, 2004). Studies by this group have shown that among bereaved individuals, repressors manifested relatively little grief or distress at any point across 5 years of bereavement. Among victims of childhood sexual abuse, similarly, repressors were less likely to voluntarily disclose their abuse when provided the opportunity to do so, but they also showed better adjustment than others (Bonanno, Noll, Putnam, O'Neill, & Trickett, 2003). Counter to psychodynamic emphases on the importance of working through negative emotions, therefore, Bonanno's literature review indicates that interventions emphasizing grief work can be not just ineffective but sometimes even deleterious.

Of particular importance, the effects of talking about grief might vary with developmental status; unlike bereaved adults, children may benefit significantly from being encouraged to talk about their loss. In research by Sandler and his colleagues (2003), bereaved children who talked about their feelings with family members had lower rates of mental health problems, whereas inhibition of emotional expression was associated with higher rates of internalizing and externalizing problems both cross-sectionally and prospectively. Differences in findings between children and adults may partly reflect children's more limited cognitive understanding of death (i.e., in terms of comprehending its finality), so that speaking about this could be generally helpful for them. On the other hand, for adults, continuing to talk about the loss could approach Nolen-Hoeksema's (2001) notion of rumination, which can compromise mental health. Another factor underlying the differences between studies might be variations in definitions of repression or inhibition of emotions. Sandler and colleagues note that they assessed children's

efforts to actively hide or inhibit their grief, whereas in many adult bereavement studies, repression was defined not in terms of deliberate efforts to inhibit affect, but in terms of discrepancies between autonomic arousal and verbal expression of distress.

Complex associations involving developmental maturity are also evident in findings on ego development, in that it is generally associated with positive adjustment but can also signal relatively keen sensitivity to distress. As conceptualized by Loevinger (1976), ego development refers to a "master" trait reflecting character development, which is related to various aspects of cognitive and interpersonal development, but that represents more than any of them considered individually. High levels of ego development attenuate risk for psychopathology in general and also among at-risk individuals (see Westenberg, Blasi, & Cohn, 1998). To illustrate, high ego development was linked with better coping strategies and fewer symptoms among psychiatrically hospitalized 12- to 16-year-olds (Recklitis & Noam, 1999) and with apparently lower reactivity to negative life events among inner-city youth (Luthar, 1991). Among substance-abusing mothers, those at high developmental levels were observed to have relatively positive interactions with their 1-month-old infant (Fineman, Beckwith, Howard, & Espinosa, 1997); among elderly women (75 to 103 years) living in long-term care facilities, higher versus lower levels of ego development showed links with affirming, negating, and despairing styles of reminiscence, in that order (Beaton, 1991).

As with intelligence, however, high levels of ego development are not necessarily an unmitigated blessing; as Noam (1998) has argued, higher developmental levels imply not just greater maturity but also greater complexity, so that individuals at high levels may manifest more complex problems. In a similar vein, Luthar and colleagues (2001) argued that among mothers who admitted to having "socially unacceptable" adjustment problems, such as uncontrolled displays of anger, those at high levels of ego development (being more introspective and self-critical) would suffer greater setbacks than others. Results were consistent with this reasoning, suggesting that the complexity and introspection characteristic of high developmental levels may be advantageous in general, but once disturbing problems have set in, introspection may come to take the form of counterproductive rumination or guilt.

Wolin and Wolin's (1993) definition of resilience encompasses a collection of several protective personal attributes. Their definition refers to the capacity to bounce back, to withstand hardship and to repair oneself, and is



based on the following elements: (1) insight, or asking difficult questions and giving honest answers; (2) independence, or distancing emotionally and physically from the sources of trouble in one's life; (3) relationships, or making fulfilling connections to others; (4) initiative, or taking charge of problems; (5) creativity, or using imagination and expressing oneself; (6) humor, or finding the humor even in difficult circumstances; and (7) morality, or acting on the basis of a conscience.

The protective potential of such constellations of attributes also has been demonstrated by Hauser, Allen, and their colleagues in narrative analyses in their long-term study of individuals psychiatrically hospitalized as adolescents (e.g., Allen et al., 1994, 1996). Hauser (1999) reported on a subgroup of these youth who seemed resilient as individuals; they had relatively high scores on multiple competence dimensions (e.g., relationship closeness and ego development) and low scores on several domains of psychopathology (crime and hard drug use). In-depth interviews revealed five major protective attributes: (1) self-reflection or high awareness of their feelings and thoughts; (2) self-efficacy, or agency in making conscious choices about their lives; (3) self-complexity in recognizing multiple facets to different situations; (4) persistence and ambition in education and careers; and (5) self-esteem that, on balance, was tipped more toward positive than negative self-views.

Beardslee (2002) has reported similar protective effects in his work with adolescent children of depressed parents. Resilient youth were aware of what they were facing—they recognized the parents' illness, knew that they were not responsible for it, and saw themselves as separate from their parents. In addition, they were able to put this experience in words and could articulate some strategies to offset the effects of the illness on them, for example, by forging nurturing relationships with adults outside the family. Among inner-city youth, Noam and Hermann (2002) noted the protective potential of both insight and the capacity to use symptoms and problems to motivate themselves toward positive change.

Of the various social-cognitive constructs linked with resilience, an intriguing one identified in the adult literature is benefit finding: the ability to see benefits in traumatic events. Among bereaved individuals, for example, Davis and colleagues (1998) found that 6 months after they had lost a loved one, as many as 73% of participants reported that they had experienced something positive, such as strengthened relationships with others, personal growth, and a new perspective on life. Furthermore, this capacity

for benefit finding uniquely predicted distress several months later. Similar trends were cited in a study of mothers whose infants were in neonatal intensive care units; again, three quarters of the participants indicated at least one benefit from the child's hospitalization experience (Affleck et al., 1991). Obviously, such benefit finding has greater potential to help with single or discrete traumatic events than with stressors that are ongoing, over time, from the external environment; they are also likely to be more useful for individuals capable of formal operational thought than children who think more concretely.

Empathy and altruism are two other attributes that can confer benefits to individuals facing adversities; both have been highlighted in the emerging positive psychology movement (e.g., Masten & Reed, 2002; Zhou, Valiente, & Eisenberg, 2003). In families with a depressed parent, Beardslee (2002) found that resilient youth had a well-developed capacity to see things from others' point of view and to think about their needs. Feeling useful and important to someone can also be critically important for one's own sense of well-being (Elder & Conger, 2000; Werner & Smith, 1992); the Search Institute (2004) lists several related positive values, such as caring for others, standing up for social justice, and involvement in service to others, among their 40 assets for healthy development.

High self-esteem can be protective, as feeling positive about ones' capabilities provides strength in coping with adversities, but frequently, there are complexities in associations involving self-views. As Bandura et al. (2003) showed, high perceived empathic self-efficacy among adolescents was related to high prosocial behavior and less delinquency among both males and females, but among the latter, was also related to depressive problems, possibly reflecting girls' greater tendencies to vicariously experience the distress of others and their relatively low sense of efficacy to manage their own negative affect. Similarly, unrealistic, overly positive views of oneself—self-enhancement—are often maladaptive, for example, in terms of evoking dislike from others (Paulhus, 1998). At the same time, self-enhancers can fare better than others in the face of serious trauma, when threats to the self are most salient. Among bereaved adults, self-enhancers showed better adjustment than others in terms of ratings by themselves, their close friends, and mental health professionals (Bonanno, 2004).

Harter's (2002) recent work suggests the value of another interesting construct that warrants attention: personal authenticity. This construct involves owning one's personal thoughts and emotions and acting in accord with

these (captured, respectively, by the injunctions “Know thyself” and “To thine own self be true”). Encompassing as it does integration across multiple selves, this construct may be particularly prominent, for example, in the adjustment of immigrant youth, who often face differing expectations at home and in the mainstream culture of public schools. Along with forces such as discrimination, language barriers, and conflicts between subcultural and mainstream value systems, this may affect their psychological adjustment.

Tendencies to use positive emotions can also help offset the effects of loss by quieting or undoing negative emotion and by increasing support from important people in the environment. Among bereaved individuals, for example, those who exhibited genuine laughs and smiles when speaking about a loved one recently lost manifested better adjustment, as rated by different respondents (Bonanno, 2004). The field of positive psychology has pointed to several other personal attributes that warrant further examination as potential correlates of resilience in the face of not only bereavement but other risks. Among people in general, positive outcomes have been found among people with high levels of hope, optimism, and “flow” (Snyder & Lopez, 2002; S. E. Taylor, Kemeny, Reed, Bower, & Gruenewald, 2000); all of these attributes also may be beneficial for individuals who contend with adverse life conditions across the developmental span.

## **SUMMARY OF EVIDENCE AND FUTURE DIRECTIONS: RECONCEPTUALIZING RESILIENCE**

In concluding this chapter, the evidence reviewed from almost half a century of work on resilience is briefly summarized. Along with major findings from the literature, directions for future research and interventions are delineated.

The first major take-home message is this: Resilience rests, fundamentally, on relationships. The desire to belong is a basic human need, and positive connections with others lie at the very core of psychological development; strong, supportive relationships are critical for achieving and sustaining resilient adaptation. During the childhood years, early relationships with primary caregivers affect several emerging psychological attributes and influence the negotiation of major developmental tasks; resolution of these tasks, in turn, affects the likelihood of success at future tasks. Accordingly, serious disruptions in the early re-

lationships with caregivers—in the form of physical, sexual, or emotional abuse—strongly impair the chances of resilient adaptation later in life. Whereas some maltreated children will obviously do better in life than others, the likelihood of sustained competence, without corrective, ameliorative relationship experiences, remains compromised at best. On the positive side, strong relationships with those in one’s proximal circle serve vital protective processes, for children as well as adults.

Two broad ingredients are well known to be important in good relationships: warmth and support, and appropriate control or discipline. These dimensions have been at the core of childhood socialization research for decades. Moreover, recent research shows that later in life, strong intimate relationships, such as those in marriage, provide both the support and the informal social control needed to negotiate ongoing challenges in life.

There are several aspects of protective family processes that warrant further attention in future research, such as dimensions of containment and investment (children’s beliefs that parents will prevail in disciplining them and protecting them from harm, respectively) and the role of consistency in simple family routines such as regularly eating dinner together. Also needed is much more work on parenting as a dependent variable. Good parenting is beneficial to all children and, to this extent, is ordinary (Masten, 2001). On the other hand, it is clearly extraordinary among at-risk families because it is so difficult to sustain in the face of major life risks such as chronic poverty and major mental illnesses. A central task for the future, therefore, is to identify the specific protective processes that make for positive parenting patterns among parents in high-risk circumstances, as well as the processes via which intervention programs eventuate in improved parenting behaviors.

Additionally, more needs to be learned about the specific relationship ingredients that are particularly influential or important in the context of particular types of risk; in neighborhoods rife with community violence, for instance, strategies to ensure physical safety are clearly of unique importance. Similarly, there must be more research on developmental processes in ethnic minority families. These individuals experience several stressors, including overrepresentation in poverty and experiences of discrimination, and there should be greater inquiry into factors that (in addition to the universals, such as warmth and discipline) are especially salient in particular ethnic minority groups. Examples of such factors include notions of family responsibility, support, and obligations both in the immediate and the extended family, as well as racial socialization and ethnic pride.

Aside from these dimensions of psychological processes, a critical priority must be to explore the role of genes in relation to familial influences on resilience. We know that both genes and the environment affect outcomes, and resilience researchers must increase their attention to the former. Studies are needed that illuminate gene  $\times$  environment interactions in resilient adaptation and genetic markers conferring vulnerability or resilience, with attention to the mechanisms that might underlie their effects.

In the community domain, a major message from extant research is that ongoing exposure to community violence is highly inimical not only for children but also for their parents and other adults. Among those who fear for their very lives, it is unrealistic to expect psychological robustness: When physical survival threatens, all developmental tasks and processes are jeopardized. In the case of such risks, therefore, our first order of business should be to focus on eradicating these experiences in whatever way possible. This is not to say that we should cease attempts to attend to factors allowing some exposed individuals to fare better than others. Rather, the suggestion is that even as we attempt to identify such protective processes, any reports of research findings must be accompanied by unequivocal statements that these experiences are highly noxious and fundamentally undermine children's abilities to do well over time. In the interest of averting research-based impressions that some do indeed rise above such potent risks, we must caution, as we present our findings, that all regularly traumatized children are damaged in some integral way.

The community can be an important source of alternative support and care when the child's own parents are unable to provide these. High-quality child care is particularly helpful for children in the most at-risk families, as strong, supportive relationships with teachers can be highly beneficial for school-age children and adolescents. There is also great potential to use K-12 schools as a venue to foster resilient adaptation. Thus far, several school-based interventions based in social control and social learning theories, involving teachers as well as parents, have shown some success in randomized trials. What remains insufficiently explored is the effectiveness of attachment-based interventions in schools, where the emphasis is on developing close, supportive bonds with teachers that are sustained for as long as is feasible. Paralleling future work with parents, scientists need to learn more about resilience-inducing teachers by illuminating the factors that enable some teachers to bring out the best in their at-risk students. In addition, interventions using positive peer relationships to foster resilience warrant further exploration. In considering the enhanced use of schools to foster re-

silience, it will be critical to (1) disseminate evidence that psychological problems impair achievement, (2) carefully consider contextual factors (characteristics of the school and the wider community), and (3) maximize use of existing resources rather than necessarily seeking new ones.

Support provided by informal mentors (as in Big Brothers Big Sisters) can also serve important protective functions, especially when the relationships are of relatively long duration. Similarly, involvement in religion, can confer benefits via the availability of a stable support network in addition to promoting relatively positive coping strategies. At the neighborhood level, cohesion and shared supervision of children are important positive influences, as is high participation in local and voluntary organizations. Children benefit from participation in structured extracurricular activities, but unstructured settings (as in youth recreation centers) can exacerbate risks. In the years ahead, it will be useful to explore more interventions that involve families in the context of their communities, with emphasis, on developing strong networks among parents, school personnel, and neighborhood groups and agencies.

People's personal characteristics obviously affect resilience, but many personal attributes are themselves shaped by aspects of the external environment, especially among children. This is powerfully demonstrated in evidence on changes in cognitive ability as a function of the quality of the early environment in orphanages versus adoptive families. Other protective traits, such as good self-regulation, high self-efficacy, and internal locus of control, are also highly affected by the quality of proximal interpersonal relationships.

Studies with adults have suggested the importance of several personal attributes relatively rarely examined thus far in the context of childhood resilience, including practical and emotional intelligence and the capacities for insight, empathy, and altruism. The ramifications of developmental maturity are complex: Whereas developmentally mature defense mechanisms are often beneficial, there can be times when repressive coping can be helpful (e.g., among bereaved adults). Similarly, high ego developmental level is generally an asset but can be linked with heightened tendencies to self-recrimination and rumination. In future research, there is value in studies not only on the changing developmental significance of these various psychological attributes, but also on the functional capacities that might lie at their roots.

As with family factors, of critical importance in the realm of personal characteristics are more studies on biological attributes, with attention to dimensions outlined in the first section of this paper: hemispheric EEG activity,

the startle reflex, stress hormones, and neurotransmitters such as serotonin. Just as the environment sets confidence limits within which biology determines functioning, biology sets limits within which the environment determines adaptation levels. If there is a chemical imbalance in the brain that predisposes a person to depression, then the threshold of tolerance to environmental stressors becomes considerably lower, so that even stressors of moderate severity could precipitate a debilitating depression. In many instances, discovery of the biology involved in psychiatric disorders can pave the way for appropriate pharmacological interventions.

### Research Designs: Optimizing Selection of Risk Modifiers for Study

Aside from these suggestions about specific research questions and topics, there are some broader guidelines that are critical from an applied research perspective, and these have to do with prioritizing domains targeted for inquiry. The evidence presented in this chapter reflects enormous progress in the field but at the same time has the potential to be somewhat overwhelming. Knowing that resilience is affected by multiple processes at the social, psychological, and biological levels, often interlinked bidirectionally, how does the resilience researcher best design future research? How should one prioritize in terms of the types of constructs and questions most usefully examined in the years ahead?

A major consideration in designing research that will truly move this field forward will be to ensure *concerted attention to context* in selecting risk modifiers for empirical study. We know that there are certainly some processes that are beneficial across contexts and others that are harmful. Beyond such universals (such as closeness and discipline in families), there are risk modifiers that can be highly influential in some risk settings but not others, and we need more within-group studies that consider these processes simultaneously, disentangling their relative significance in particular contexts. Exemplifying this are the following two illustrative questions. Beyond warmth and discipline, among children of depressed parents, what is the relative significance of the following as protective family attributes: support from the nondepressed parent, open discussions on the causes of depression, maintenance of regular family schedules, and low genetic loading for affective disorders in the other parent? Among children in highly affluent, achievement-oriented communities (and again, beyond warmth and discipline), what is the relative influence of the amount of down time spent as a family, a

large number of weekly extracurricular activities for children, and parents' high standards for performance and their tendency to be overtly critical of children's failures?

A useful rule of thumb, particularly for scientists with a largely applied focus, will be to focus most intensively on risk modifiers with high *promotive potential*, as defined by five major characteristics: forces that are:

1. Conceptually highly *salient* in the context of that particular high-risk setting;
2. Relatively *malleable*, or responsive to environmental interventions;
3. *proximal* to the individual rather than distal;
4. *enduring* for long periods in the individual's life; and
5. *generative* of other assets, catalyzing or setting into motion other strengths and mitigating vulnerabilities.

Early family relationships meet all of these five criteria, being salient across risk settings, modifiable via interventions, directly affecting the child, exerting this effect for several years, and catalyzing other assets such as high self-esteem and positive views of relationships. Another example is the receipt of high-quality early childhood education. This is particularly important in low-income communities, can be provided by external interventions, directly affects the child and over several years, and, again, produces functional capacities that, in turn, promote the acquisition of diverse cognitive as well as psychological and social skills.

Of parallel importance would be reduction of influences with high *vulnerability potential*, those that are contextually salient, modifiable via interventions, proximal, relatively enduring in the absence of interventions, and generative of other vulnerabilities. An example is youth's involvement in deviant peer networks. Biological vulnerabilities also could fall in this category, as deficits in serotonin can be salient among individuals in families with high genetic loading for depression; these deficits can be modified pharmacologically; they directly affect the individual's everyday functioning; they tend to be stable in the absence of interventions; and in inducing depressive affect, they lead to other problems that further compromise adjustment, such as loss of relationships or jobs.

In conclusion, the field of resilience has grown enormously, and in exciting ways, in the half-century or so since its inception. At this stage, scientists must broaden the lens through which the phenomenon is viewed, drawing on not only quantitative developmental psychology research but also biological, genetic, anthropological, sociological,



and clinical evidence. It would also be beneficial to move beyond conceptualizing the search for processes simply in terms of the triad of family, community, and individual factors. To best inform future interventions, researchers must consider the resilience-enhancing quotients of the specific risk modifiers chosen for study—in terms of their contextual salience, malleability, proximity, stability, and generativity of other processes—as well as the degree to which the constructs and questions might illuminate our understanding of psychological, biological, and social processes implicated in resilience. Concerted efforts in these new directions are critical if we are, in fact, to borrow from Curtis and Cicchetti (2003, p. 773), to “move research on resilience into the twenty-first century.”

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