

The Social Ecology of Resilience: Addressing Contextual and Cultural Ambiguity of a Nascent Construct

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More than two decades after E. E. Werner and R. S. Smith (1982), N. Garmezy (1983), and M. Rutter (1987) published their research on protective mechanisms and processes that are most likely to foster resilience, ambiguity continues regarding how to define and operationalize positive development under adversity. This article argues that, because resilience occurs even when risk factors are plentiful, greater emphasis needs to be placed on the role social and physical ecologies play in positive developmental outcomes when individuals encounter significant amounts of stress. Four principles are presented as the basis for an ecological interpretation of the resilience construct: decentrality, complexity, atypicality, and cultural relativity. These 4 principles, and the research upon which they are based, inform a definition of resilience that emphasizes the environmental antecedents of positive growth. This framework can guide future theory development, research, and the design of interventions that promote well-being among populations who experience environments that inhibit resilience-promoting processes.

It has been more than two decades since Werner and Smith (1982), Garmezy (1983), and Rutter (1987) identified the dynamic nature of protective processes associated with resilience. Their findings shifted the field's focus from traits of what were thought to be invulnerable children (Anthony, 1987) to interactional processes in challenging environments (e.g., poverty, the mental illness of a parent). A decade later, Luthar, Cicchetti, and Becker (2000) offered a comprehensive conceptualization of the “*dynamic process encompassing positive adaptation within the context of significant adversity*” (p. 543, emphasis in original). Other efforts at defining the nascent construct have been equally comprehensive, including those by Glantz and Johnson (1999), Luthar (2003), and most recently, an edited volume of papers presented at a meeting of the New York Academy of Sciences (Lester, Masten, & McEwen, 2006).

Despite the optimism, debate continues as to whether resilience is a useful concept or a tautology. If an individual is doing well despite expectations to the contrary, do we attribute success post hoc to processes we label resilience when in fact other factors can account for the variance in outcomes? Furthermore, similar to many related psychological principles (e.g., attachment and efficacy), the literature that examines resilience remains complicated. The term can refer to a trait of individuals, characteristics of the individual's environment, as well as a set of processes and mechanisms through which internal and external assets (i.e., strengths) are harnessed when adversity is present (Kim-Cohen, 2007; Lerner, 2006; Rutter, 2005; Ungar,

2005). With the exception of very large longitudinal studies that include both variable-based and case-based research (e.g., Caspi, Taylor, Moffitt, & Plomin, 2000; Sroufe, Egeland, Carlson, & Collins, 2005), studies of resilience have tended to limit necessarily their focus to a narrow set of traits or processes such as intelligence, attachment, educational performance, or civic engagement. Occasionally, as in the work of Masten and Obradović (2006) and Klebanov and Brooks-Gunn (2006), researchers have had the means to measure resilience at individual, family, and community levels. Such multilayered expressions of resilience have helped researchers like Masten (2001) identify resilience among children growing up in poverty as a characteristic that is more common than expected. Masten is well known for finding that many children who are exposed to adversity demonstrate the “ordinary magic” of successful development. The children's success results from a combination of personal capacities and environmental supports, such as helpful parenting practices and improved socioeconomic conditions for the family (Masten, 2001).

All these efforts to define and study resilience focus on the child's environment as either facilitating or inhibiting positive developmental paths. However, the evidence that is most often presented is in support of a child-focused theory of development that has accounted for less than half the variance in studies of positive outcomes (see, e.g., Beckett et al., 2006; Sroufe et al., 2005). I suggest that to account fully for the processes associated with resilience, we need to shift our focus. There is evidence that resilience is less an individual trait and more a quality of the child's social and physical ecology. This ecological understanding of resilience has the potential to resolve both definitional and measurement problems. As Hudziak and Bartels (2008) wrote recently in their examination of psychopathology

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and wellness, we are still searching for the active qualities of the environment that contribute to children's well-being.

I begin with a brief overview of how resilience has been theorized over the past five decades. Based on what is already known, I will show that definitional ambiguity is the result of too narrow a conceptualization of resilience. By focusing on traits related to temperament and interactional processes like attachment (Fuertes, Santos, Beehly, & Tronick, 2006), current models may be inadvertently leaving out more important aspects of resilience. Even when interactional processes are investigated, the tendency is to model change mostly on the basis of individual development. Thus, the sustainability of environmental resources (i.e., their availability and accessibility over time), such as neighborhood safety (Elliott et al., 2006), may be as, or more, important to child well-being.

One can hypothesize that if we grew the environment—for example, by providing well-subsidized quality public day care for all children under the age of 5—we could create the optimal conditions for more resilient children (Peters, 2005; Sampson, 2003). In this example, the focus of measurement should be as much on the quality of the day care as on the outcomes for individual children. Arguably, the more accessible quality day care there is, the more a population of children at risk will develop well over time. The day care, if culturally relevant, *potentiates* the development of resilience. Whether an individual child benefits specifically is not the core issue; rather, the fact that the day-care is there, and the possibilities for change it provides for working and socially isolated parents, creates a social ecology where more positive development can be expected. Therefore, the development of the day care is at least as important as the child's eventual use of it.

To elaborate this social ecological understanding of positive development, I propose four principles to help better define and operationalize resilience: decentrality, complexity, atypicality, and cultural relativity. Combined, these four principles contribute to an understanding of resilience as facilitated growth amid contextual variability where adversity has been experienced. Building on these principles, I detail an ecological definition of resilience that extends Lewin's (1951) expression of behavior as the function of the person in interaction with his or her environment. The article concludes with a summary of the implications of this ecological understanding of resilience for theory development, research, and intervention.

Decades of Positive Development Research

Three very divergent efforts seeded the notion that a majority of children who are exposed to stressful environments will succeed despite the odds against them. Werner and Smith's (1982, 2001) cohort study, begun in 1955 with 698 babies born on the Hawaiian island of Kauai, has gathered more than 60 years of data that has shown psychosocial developmental trajectories are not linear and may even periodically regress. Within their sample, children who were from the most marginalized families succeeded at an impressive rate, though some children who were progressing well at earlier ages showed temporal lags in their development as their social and physical ecologies changed. For example, transitioning between schools, changes in maternal employment, and the forming of intimate relationships may

result in the confounding effect of environment on development and divergent growth trajectories from those predicted by earlier gains. Werner and Smith did not set out to investigate resilience, but instead, like their contemporaries, have helped to elucidate positive developmental pathways by identifying exceptional patterns of healthy growth among a sample at risk (see Henry, Caspi, Moffitt, Harrington, & Silva, 1999). Similar efforts followed and led to the identification of characteristics that seed "invulnerability" following exposure to acute and chronic stress (Anthony, 1987; Cowen & Work, 1988).

A second approach to the study of resilience resulted from research on coping among institutionalized children, children exposed to war, or economically disadvantaged children in schools with varying quality of instruction (Garmezy, 1983; Garmezy, Masten, & Tellegen, 1984; Rutter, Maughan, Mortimore, & Ouston, 1979). Most notably, Rutter's (1989) studies on the Isle of Wight sparked interest in the protective processes that create continuities in behavior over time. With a number of studies having been completed, Rutter, like others (Garmezy, 1985), sought to identify a core set of protective mechanisms that best accounted for divergent patterns of growth under adversity. Rutter's (1987) initial list included: reducing the impact of risk by either decreasing the child's risk exposure or changing the meaning that the risk has for the child, reducing negative chain reactions that follow risk exposure and that create continuities in development that disadvantage children, developing adequate self-esteem and an ability to deal with life challenges while avoiding the attribution of failure to one's self, and opening opportunities for positive growth at critical developmental turning points in children's lives. Later efforts to group protective processes have identified at least three distinct mechanisms that contribute to resilience: protective processes that are advantageous to those experiencing risk, but that have no influence on those in low-risk environments; promotive or compensatory processes that have an equally beneficial effect on children in both low- and high-risk environments; and a challenge model of resilience where the benefit of the process is dependent on the level of risk exposure (Schoon, 2006).

An excellent example of how complex these studies have become is found in a three-decade study by Sroufe et al. (2005) of 180 children born into poverty in Minnesota. It is clear from looking at results from the adolescent phase of the study that much of the difference between youth who succeed and youth who falter is predicted by early developmental history. For example, a teen's willingness to be emotionally vulnerable, and therefore willing to take risks where his or her weaknesses would be exposed, correlated .41 with the child's attachment history; the more securely attached the child was when < 42 months, the more willing he or she was to be emotionally vulnerable; higher correlations of .70 and .74 were found for social competence and self-confidence; and measures of friendship quality at age 16 were also well correlated with early attachment patterns (.55 for boys and .64 for girls; Sroufe et al., 2005). Regression analyses that accounted for middle childhood and elementary school experiences added modestly to the predictability of the models (6–8%), but by far the greatest influence remained early parent–child interactions. Furthermore, early experiences of abuse predicted at least one psychiatric diagnosis among youth at age 17. Mediators of abuse on behav-

ior included ecological factors such as an early history of support, availability of an alternative caregiver, and access to good school and home environments (Sroufe et al., 2005).

These first two approaches to investigations of resilience have spawned studies across disciplines including education, psychology, social work, and psychiatry, each of which have sought to measure the amount of variance that can be accounted for by specific factors at different ecological levels (Caspi et al., 2000; Compas, 1987; Luthar & Zelazo, 2003; Rutter, 2007; Schoon, 2006). Though Rutter (1990; Rutter et al., 1979) warned against reductionism when studying resilience-related phenomena, most studies have focused on just one or two protective mechanisms. Borrowing from Bronfenbrenner's (1979) ecological model, one can cluster these studies by focus, beginning with the individual and variations in temperament, self-esteem, attribution style, problem-solving, neuroplasticity, and other foundations of psychological coping under stress (Edwards, Sakasa, & Van Wyk, 2005; Greenberg, 2006; Haefffel & Grigorenko, 2007; Hjemdal, Aune, Reinjfjell, Stiles, & Friberg, 2007; Tremblay, 2005).

Ecologically speaking, these individual characteristics depend first on *microsystem* interactions, with family, peers, and teachers being the foci of most of these studies. *Mesosystem* interactions, those between microsystems, determine the nature of the developmentally supportive resources available to individuals that influence their capacity to thrive. *Exosystems*, the institutional environments in which children's caregivers interact and services and policies are designed and delivered, have rarely been the focus of resilience research, except among social development organizations (Boyden & Mann, 2005; International Federation of Red Cross and Red Crescent Societies, 2004) and policy-focused researchers (Leadbeater, Dodgen, & Solarz, 2005). Recently, the focus in this literature has been on the community's resilience as contextually relevant to children's survival when natural or human-made disasters occur. There is slightly more study of Bronfenbrenner's fourth level, the *macrosystem*, which is the laws, customs, and cultural practices that provide opportunities for children's positive development under stress (Dawes & Donald, 2000; McCubbin & McCubbin, 2005; Seidman & Pedersen, 2003).

A third approach to resilience research has been phenomenological. In this case, investigators have conducted qualitative studies of positive adaptation among war-affected children, emancipated child laborers (Denov & Maclure, 2007; Liebel, 2004; Panter-Brick, 2002; Taylor, 2005; Woodhead, 2004), and children who have been victims of violence or witnesses to its perpetration (Barber, 2006; Bolger & Patterson, 2003; Holt, Buckley, & Whelan, 2008). This trend in the research literature has continued from its modest beginnings with children and adults who had survived the London Blitz (Carey-Trefzer, 1949; Garnezy, 1983) to present-day studies of child soldiers, child refugees, and children exposed to war, such as in the Balkans and Israel (Cox et al., 2007; Shamai, Kimhi, & Enosh, 2007; Solomon & Laufer, 2005). These studies suggest that exposure to war itself is less traumatic and debilitating for children than the separation they experience when sent away from their caregivers. A burgeoning literature on posttraumatic stress and posttraumatic growth has helped to explore which children are most likely to succeed following exposure to violence, whether from national strife or domestic violence and child abuse (Tedeschi & Calhoun, 1996).

More recently, resilience research has moved in at least three notably different directions. At the level of the individual, clinical and cohort studies of children's neurophysiology (Perry & Szalavitz, 2006; Romeo & McEwen, 2006) and genetic profiles (Bartels & Hudziak, 2007; Caspi et al., 2000) have helped to show that biological factors can predict positive developmental outcomes in stressful environments, but only to the degree that the environment triggers developmental gains or helps the child avoid overburdening his or her physiology (Rutter, 2006).

A second emerging area of research has been in the examination of strengths, or internal and external assets, and the role that inventories of personal and social resources play in positive development. More rigorous examples of this approach have produced clusters of concepts that are ubiquitous across youth populations, such as Lerner's (2006) Five C's (competence, confidence, connection, character, and caring) and the 11 resiliency factors identified by Donnon and Hammond (2007): parental support, parental expectations, peer relationships, community cohesiveness, commitment to learning at school, school culture, cultural sensitivity, self-control, empowerment, self-concept, and social sensitivity. Longitudinal research is demonstrating that numerical increases in assets are predictive of better developmental outcomes, when outcomes are defined as prosocial behaviors that are culturally relevant (e.g., staying in school, abstinence from early sexual activity and drug use, contribution to community, and avoidance of delinquency and delinquent peer groups; Benson, 2003; Donnon & Hammond, 2007). Nuanced qualitative and quantitative investigations of these patterns have shown variable developmental gains over time that are dependent on fluctuations in a child's exposure to horizontal (normative) life stressors (e.g., transition to junior high school; Phelps et al., 2007) and vertical stressors (e.g., the unanticipated death of a parent; Carter & McGoldrick, 1989; Walsh, 2006).

The third direction for resilience research focuses on cultural variation in the processes that contribute to resilience as an outcome and the broader ecological factors (including the health of the child's physical ecosystem) that affect developmental trajectories (Cortes & Buchanan, 2007; Lee, Shek, & Kwong, 2007; McCubbin et al., 1998; Ungar et al., 2007, 2008). These studies have sought to account for local discourses that define positive development as a culturally embedded construct and encourage the inclusion of marginalized voices through studies originating in communities not yet well represented in the literature (Ungar, 2004a, 2004b, 2008).

Interestingly, all three areas of research innovation share a similar research base. Neurophysiologists are arguing for the better design of neighborhoods to ensure children's brain plasticity, even after exposure to trauma associated with neglect or violence (Gunnar, 2007; National Research Council & Institute of Medicine, 2000). Asset researchers are identifying the interactional effect and differential amounts of variance accounted for in children's development dependent on the risks measured (Taylor et al., 2002). Meanwhile, culture-based studies are arguing for sensitivity to the unique social ecologies of their participants and are employing mixed methods designs to balance emic and etic perspectives of resilience (Ungar, 2008). In each instance, the challenge is to account simultaneously for the individual and the environment in the same explanatory model. Combined, our understanding of resilience is shifting from a

perspective of positive development as the everyday miracle (see Masten, 2001) of the invulnerable child (Anthony, 1987) to a broader focus on processes in complex environments that interact to foster good developmental outcomes (i.e., biological, psychological, and social) of relevance to culturally diverse communities.

The recent popularity of Vygotsky's (1978) work on child development and its relationship to culture is a reflection of the trend toward greater understanding of context in children's development. For example, Vygotsky presented the hypothetical case of two 10-year-olds functioning academically at an 8-year-old level. With intervention, one achieves the abilities of a 9-year-old, the other a 12-year-old. Vygotsky writes: "Developmental processes do not coincide with learning processes. Rather, the developmental process lags behind the learning process" (p. 90). The interaction between children's capacity to develop and the availability of ecological resources to support that development indicates broader social and cultural factors in predictions of resilience. In support of Vygotsky's hypothesis, a growing body of literature from psychology, as well as sociology, urban planning, social work, and anthropology, is showing that the environment is even more critical to child development than a child's individual traits. That literature, as will be shown, is telling us that *development is less biologically determined than it is socially facilitated*.

A Social Ecological Conceptualization of Resilience: Four Principles

Though the study of resilience has broadened, most of the popular discourse concerning the phenomenon speaks of the resilience of the child. More accurately, the evidence suggests that the child is a less active player in the achievement of positive outcomes than first thought. Though those studying temperament acknowledge the interactions between the child's characteristics and the environment (e.g., maternal sensitivity; Fuertes et al., 2006), our focus remains on the child's temperament first (e.g., talk of the infant's ability to cope) and the quality of the caregiver second (e.g., maternal sensitivity is of interest only insofar as it interacts with the child's temperament). The evidence would suggest, however, that children's positive outcomes are mostly the result of facilitative environments that provide children with the potential to do well. Thus, it should be said that the degree of parent sensitivity predicts a child's coping rather than that the child's coping is dependent upon parent sensitivity. Both statements may be factually the same, but what is attributed as the subject of our study is implicitly different. Arguably, the study of resilience should involve context first and the child second.

This argument can be extended to the level of culture as well. As Liborio and Ungar (in press) have shown, there is ample justification in the literature to understand children's participation in economic activity (e.g., child labor, work, and contribution to his or her family's economic well-being) as a pathway to resilience when no other health-sustaining resources (e.g., schooling, rites of passage to adulthood, money) are made readily available and accessible. In such cases, it is children themselves and their caregivers who define a child's labor as a socially respectable resource. This argument, similar to that made with regard to

gang involvement as a substitute for safety (Solis, 2003) or early sexual activity as a substitute for intimacy (Taylor, Gilligan, & Sullivan, 1995), suggests that the discursive context in which a child exists will also play a role in deciding which resources are accepted as facilitative of resilience. Thus, the benchmarks of resilience are negotiated and culturally determined (Ungar, 2008). To speak of the resilience of the child misrepresents the antecedents of positive development within the child when they are much more a function of the mesosystem, exosystem, and macrosystem.

To help guide both research and theory development in resilience as a social ecologically dependent concept, I propose four principles: decentrality, complexity, atypicality, and cultural relativity. Combined, all four provide a framework to account for resilience that can help resolve the trait-process debate that continues to undermine the utility of the concept. Attention to these four principles may also help explain much of the variability in why some children succeed and others do not. Within this framework, individual qualities associated with coping under adversity are activated to the extent there is capacity in the child's social and physical ecologies to facilitate processes that protect against risk and promote positive development.

Principle 1: Decentrality

A major problem with studying resilience is that the term is used to describe both outcomes and the processes leading to those outcomes. Researchers must focus simultaneously on the individual (and the change that occurs) as well as the nature of the protective mechanisms that interact with risk factors to mitigate their impact. Though Lerner (2006), among others, has proposed that we look at the interaction between individuals and environments for the source of resilience (he symbolizes this as a person↔context exchange, which is mutually beneficial for the individual and his or her setting), the bulk of the resilience literature still centers its inquiry on outcomes at the individual level caused by the environment. Herein lies the problem: By reporting on changes principally to the individual (most often the dependent variables), the environment becomes secondary to the analysis. It is theorized as important only to the extent that it provides a forum in which resilience-promoting processes that contribute to individual growth take place. Resilience as a discursive tool is left measuring change at the level of individuals as its *sine qua non*.

This point was developed in 2003 by Hammen in her review of the risk and protective factors for a child with depressed parents. Hammen details the direct and indirect negative influences of a parent's depressive symptoms, as well as at least one protective factor, the child's higher social competence (though measured as an individual trait, it is a characteristic dependent on the quality of the child's caregivers). Furthermore, Conrad and Hammen (1993) found several resource factors with main effects as predictors of good outcomes. Most were ecologically based, including academic performance (implying there was a good school to attend and opportunities to excel), maternal social competence, the mother's marriage to a non-ill partner, and the child's contact with other adults and peers. Hammen concludes that even beyond the child and the family, future research should "extend assessments to include key community-level

variables, such as social supports, quality of the neighborhood, schools, religious beliefs and activities, and the like” (p. 66).

In a sense, this subject-centered approach means that responsibility for resilience is wrongly placed on the victim of toxic environments, with change hypothesized as a measure of how well the child is individually able to take advantage of environmental resources. This ideologically suspect position has been roundly criticized on many fronts (Rutter, 2005; Seccombe, 2002; Seidman & Pedersen, 2003; Ungar, 2005). This approach, which centers on the child, is so ubiquitous that it is difficult to see it within the dominant research paradigm of developmental science. In fact, recent comprehensive community studies suggest that children change not because of what *they* do, but as a consequence of what *their environment* provides (Wyman, 2003).

To illustrate this point at the level of the neighborhood, Elliott et al. (2006) conducted a study of 33 neighborhoods and their families in Denver and another 40 in Chicago. Using census data and both quantitative and qualitative interviews with parents and adolescents, they concluded that neighborhood level variables (e.g., socioeconomic status [SES], availability of resources such as libraries and schools) do not account for very much of the differences in children’s success:

For any given *individual*, the practical advantage of living in an Advantaged, as compared to a Disadvantaged neighborhood, appears to be quite modest. There is simply much more variation in the quality of families, schools, peer groups, and community agencies than suggested by high-poverty neighborhood ethnographies and conventional wisdom about the inner-city poor. (p. 276)

Elliott et al. (2006) found that social organization and culture largely determine the quality of a neighborhood. Indeed, they account for nearly all the neighborhood effects on individual development. For example, when looking at indices of prosocial behavior among youth, Chicago neighborhoods that were advantaged (i.e., higher SES) had consistently high levels of prosocial competence. Poor neighborhoods, however, were likely to have a wide range of scores overlapping with both rich and midrange neighborhoods. It was only the moderately wealthy neighborhoods that scored consistently poorly when it came to prosociality. In regard to neighborhood effects on youth development and prosocial behavior, between 24% (Chicago) and 59% (Denver) of the variance is explained by specific attributes of the neighborhood (e.g., poverty, disadvantage, and deterioration) when measured as continuous variables.

However, when Hierarchical Linear Modeling was used to estimate neighborhood and individual effects on success, the influence of neighborhood factors accounted for a more modest 9%–27% of the variance, and unique effects of deterioration became very small, ranging from 0% to 2% (Elliott et al., 2006). Individual factors that accounted for most of the variance included age, gender, race, ethnicity, SES, family structure, and length of time residing in the neighborhood. When these factors were explored more closely, a picture emerged showing that a trait such as the child’s age can explain between 17% and 28% of the variance (with older youth more influenced by their neighborhood than younger children). The child’s gender (girls are more at risk in deteriorated communities) and racial identity (Black youth are less likely to show prosocial behaviors in both disadvantaged and advantaged neighborhoods, perhaps suggest-

ing the ubiquity of racial prejudice) are also both significant predictors of prosocial outcomes. Although a cursory read of the results might suggest individual traits are stronger predictors of outcomes than contextual variables, it is worth noting that most of the individual factors studied by Elliott et al. (2006) are contextually sensitive. Their interactions with neighborhood variables are likely to be complex and culturally determined.

Another example of this need to deemphasize the child and focus more attention on the degree of facilitation provided by the environment is found in work by Klebanov and Brooks-Gunn (2006). In a study of low-birth-weight infants of low-income families, IQ tests at ages 3, 5, and 8 showed that the greater the human capital risks the child faces, the lower his or her IQ was likely to be. Psychological risks like mental health, low social support, and the mother’s mental health status were not predictive of differences in IQ, though the combined effect of human capital risks (i.e., maternal unemployment, welfare receipt, and a parent with less than a high school education) and psychological risks account for 80% of the variance in the sample. Individual factors like being in receipt of welfare and less education were correlated with lower cognitive test scores of between one third and one half a standard deviation. Interventions to help low-birth-weight children improve their IQs have shown that the more at risk a child is, the more interventions are required to increase the human capital necessary to prevent future developmental delays. However, the better equipped a child is at birth, the less these interventions caused change in growth trajectories.

A study such as that by Klebanov and Brooks-Gunn (2006) suggests that IQ gains have much to do with matching the right amount of human capital (the facilitative environment) with the risks posed to the child. The child is actually quite passive in this equation. Creating a positive environment in which parents spend time with their children speaking and reading to them, and are themselves employed and relatively unstressed, makes it much more likely that a child will overcome initial deficits in cognitive functioning or avoid other threats posed by preterm birth. The child’s gains are predicted mostly by the resilience (quality) of the environment. This argument runs counter to popular culture, which still promotes the notion that individuals alone can “pull themselves up by their own bootstraps” and that structural disadvantage is no excuse for poor development (see Boyden & Mann, 2005; Seccombe, 2002). The motivation of the child to access available resources and navigate around existing barriers such as a learning disability does not seem to be nearly as important as how well matched the environment is to the child’s degree of risk.

Individual characteristics change their utility over time and in different environments (Schoon, 2006; Werner & Smith, 2001). Wachs (2006) notes that children and their social ecologies demonstrate reactive covariance with differential treatment from caregivers to children who show diverse personal characteristics (e.g., differences in the child’s temperament or physical appearance). Children may also display active covariance, thus influencing these patterns of interaction by being better able to evoke affection or exercise personal efficacy. Even here, however, the focus is as much on how the environment responds as what the child does to provoke. By decentering the child, it becomes much clearer that, when growing up under adversity,

the locus of change does not reside in either the child or the environment alone, but in the processes by which environments provide resources for use by the child. By extension, the child's own individual resources (e.g., a sense of humor, optimism, above average IQ, or musical talents) are only as good as the capacity of his or her social and physical ecologies that facilitate their expression and application to developmental tasks.

This last point is made by Tiet et al. (1998) in their study on adverse life events and resilience. Results were based on findings from a National Institute of Mental Health study of 7,500 U.S. households in which a subsample of 1,285 child-adult dyads were interviewed (the children were between 9 and 17 years of age). Predicting the incidence of psychiatric disorders among the children was not possible without adequately accounting for the risk impact of the environment. For example, for more disadvantaged youth, those in one-parent families and with a mother with a psychiatric disorder, IQ was a significant predictor of positive outcomes, but so, too, were parental monitoring and family functioning. In fact, experiencing more adverse life events and having a mother who has a psychiatric disorder did not necessarily diminish children's functioning. Buffering effects were found for ecological variables such as the number of adults residing in the family home, with a higher number predicting better youth adjustment in homes where there were two parents, though the opposite pattern was found for one-parent households. In those households, this protective factor put children at risk. A larger number of adults residing in a one-parent home (even though they brought with them possibilities for enhanced social capital) was related to lower SES, lower youth IQ, less parental monitoring, lower educational aspirations, and worse physical health. Tiet et al. speculate that the resource effect of the extra adults may be canceled by other factors: "Only when these other factors are held constant do additional adults in the family predict better adjustment in children and adolescents" (p. 1198). Arguably, these are complex interactions that depend on a broader analysis of context for their interpretation.

To further illustrate, Beckett et al. (2006) reported on cognitive outcomes for 131 Romanian adoptees and a comparison group of 50 adoptees from the United Kingdom, tested at ages 6 and 11. Although the children who were adopted from Romania before 6 months of age were more likely to resemble the U.K. adoptees (the Romanian children would therefore have not suffered prolonged deprivation), differences between children who had been in the Romanian orphanages between 6 and 24 months and those who had endured stays of longer than 24 months were only significant at age 6. On the surface, it would seem that early environmental deficits were compensated for by later experiences of adequate parenting and schooling. However, when further analyses were performed to determine if level of impairment could account for changes in IQ scores, it was shown that the children who were most impaired cognitively, and who were most likely to have been in a Romanian orphanage more than 2 years, showed the greatest degree of catch-up between the ages of 6 and 11. Though they still remained impaired, the most disadvantaged and disordered of the children were the ones most likely to show the largest gains as the result of a facilitative environment. For those less impaired, exposure to a good environment (notably school) was helpful but less influential.

Such complex associations suggest the need to account for aspects of the environment over time. And yet, in Beckett et al.'s (2006) work, as with most similar studies, there were few measures taken of the schools or homes in order to see what caused the Romanian orphans who were most disadvantaged to continue to grow. Certainly there is plasticity in the children's ability to develop cognitively, but it is not possible to explain which aspects of the environment function in ways that made the more vulnerable the greatest beneficiaries of noninstitutional care. Clearly, if a substandard environment like an orphanage can account for impairment, then it seems reasonable to assume that individual differences related to positive growth afterwards would be just as reliant on the stimulation of a well-resourced environment.

Such evidence suggests that in higher risk environments, resilience is more dependent on the availability and accessibility of culturally relevant resources than individual factors. Orphans who are exposed to reparative environments are likely to show good development regardless of whether they individually possess the traits necessary to function well. This ecological perspective situates resilience as a theory that emphasizes the nature of the child's social and physical ecology first, interactional processes between the environment and the individual child second, and child-specific propensities toward positive development third. Although this shift in focus to a greater emphasis on the environment is already occurring in the field of psychopathology (e.g., Miller et al., 2009), it has been less evident in the study of resilience (Hudziak & Bartels, 2008).

If resilience is to add to the psychological sciences and inform interventions, our focus needs to shift from changing individuals to making social and physical ecologies facilitative. In this regard, the principle of decentrality is congruent with Masten's distinction between *resiliency* (1994) which focuses attention on the individual's internal traits, and *resilience* which is process-oriented.

Principle 2: Complexity

Within complex social and physical ecologies, it can be counterproductive to create too narrow a nosology of protective processes. The use of the term nosology is necessarily ironic as it typically refers to a list of illnesses. There has yet to be developed a comparable term for resilience-related aspects of positive functioning.

Our desire to identify relatively simple relationships between protective processes and predictable outcomes has undermined the potential contribution the study of resilience can make to child development science (Barton, 2005). Positive growth under adversity and the protective processes that cause it to occur are too complex to contribute to prediction of singular developmental trajectories. Longitudinal studies of child development have shown that classification of individuals as uniquely resilient or vulnerable are not reliable over time (Phelps et al., 2007; Schoon, 2006; Werner & Smith, 2001). As individuals grow up and migrate between contexts, such as new schools and relationships, research shows both a general trend toward recovery after setback among better resourced (i.e., more resilient) individuals, as well as unanticipated growth by those duly challenged (Schoon, 2006; Werner & Smith, 2001). Studies of posttraumatic

growth, for example, consistently demonstrate this pattern of unexpected consequences from risk exposure (Solomon & Laufer, 2005; Shamai & Kimhi, 2006).

It seems reasonable, therefore, that one should “not expect a resilient person, however defined at one point in time, to be doing well every minute of the day, under all imaginable circumstances, or in perpetuity” (Masten & Powell, 2003, p. 4). Longitudinal research illustrates well this principle of complexity. A study by Phelps et al. (2007) of Positive Youth Development (PYD) and the incidence of externalizing and internalizing risk behaviors among 1,184 fifth graders, sampled three times over 3 years, identified five different developmental trajectories for PYD (consistently low, increasing, decreasing, consistently medium, and consistently high), three patterns for externalizing risk (none, low stable, and increasing), and four patterns for internalizing risk (low stable, decreasing, increasing, and up-down). Comparisons of the conditional probabilities that each PYD group would include youth from each of the externalizing and internalizing groups showed that, in general, children with the highest PYD had the fewest internalizing and externalizing risks. However, over time PYD tended to decrease, while externalizing risk increased and internalizing risk showed a pattern of decline and then increase. Gender differences further complicate results, with girls more likely to show a pattern of low stable externalizing risk and increasing and up-down changes in internalizing risk, as they navigate through later elementary school and their first years of junior high school. Rates of change are not linear, with greater decline shown between Grades 5 and 6 than Grades 6 and 7.

It is significant that Phelps et al. (2007) were studying children during their transition to adolescence and new schools. The fact that resources (e.g., peers and attachment to parents) change or are threatened during this period is not only empirically sound but also intuitively valid. Arguably, we can learn from longitudinal studies of resilience that cross-sectional research seeking correlations between protective factors and good coping may be particularly vulnerable to attributions of causality relating to individual qualities (e.g., capacity for caring, good character, or self-esteem) when these factors may actually change as individuals move between contexts and through time. When understood as complex processes, personal traits such as confidence (one of the factors studied by Phelps et al.) are unstable and responsive to environments that show more or less capacity to sustain them.

This same variability was observed by Werner and Smith (2001), who noted that adults who show early signs of resilience do not universally demonstrate good coping during every period in their development, though early success does predict better outcomes overall across the life span. Such results likely come from individuals accessing progressively more supportive social and physical ecologies as they mature, with early exposure to facilitative environments creating later resource availability (e.g., a good school may contribute to better employment opportunities).

Resilience-promoting processes only *seem* to produce predictable outcomes. In fact, the likelihood of good outcomes depends on the degree of threat posed by a changing environment (Theokas et al., 2005). This argument is similar to Luthar et al.'s (2000) distinction between the function of protective processes

in high- and low-risk environments, with particular factors more or less active depending on the child's risk exposure. For example, a protective-stabilizing attribute of a child or system may counter the potential debilitating effect of increased risk, thus permitting the child to function adequately under greater stress. In this sense, there are observable patterns. However, the need to assess the child's capacity to take advantage of opportunities, the environment's capacity to provide for growth, the interactional patterns that fluctuate as child and environment adapt to one another, and the changes that occur across contexts and time to children's social and physical worlds, makes attestations of causality highly complex. Within this complex understanding of resilience, aspects of the environment are likely to exert more influence on outcomes than individual traits.

Dishion, Capaldi, and Yoerger (1999) showed this serendipity of opportunity when they evaluated an intervention to prevent drug abuse and serious delinquency among youth. Participants in the 12-week program for troubled teens were actually more likely to increase their involvement in crime and delinquency than similar youth who were given the workshop materials to look over themselves as well as those who received no intervention at all. We now know from this study and others like it that who is in the room when prevention efforts take place (a common method to promote resilience among vulnerable children and youth) is likely to shape individual outcomes much more than individual-level variables like motivation.

Although we know that, in general, social capital contributes to children's well-being (Gilbert & van Kemenade, 2006; Stephenson, 2001), the nature of children's social ecologies, the meaning of the resources they are offered, and the availability of viable alternatives (in this case, other behaviors that are experienced as empowering) complicate predictions of outcomes. A better supported child will not necessarily perform better in all contexts when contextual factors are accounted for. The onus here, as elsewhere, is on the need to pay far more attention to the complexity introduced by a thorough assessment of the quality of the child's environment and less to the characteristics of the child him- or herself if resilience is to be nurtured (Ungar, 2004b).

The principle of complexity suggests the need to develop contextually and temporally specific models to explain resilience-related outcomes. Though patterns may emerge, the evidence encourages caution when asserting the generalizability of findings unless social and physical ecologies are held constant. Far from undermining the contribution resilience makes to research and intervention, the principle of complexity is congruent with equifinality: Many different starting points can lead to many different but equally desirable ends by many different processes relevant to different ecologies.

Principle 3: Atypicality

This notion of equifinality shifts our focus to processes rather than individual characteristics. The protective processes associated with resilience need not result in a set of dichotomous outcomes (i.e., one behavior is good, another is bad) as context will help decide the usefulness of a particular set of resilience-related qualities. In fact, an excessive reliance on bipolar variables may be contributing to the problem of accurately describing

resilience. For example, in Dei, Massuca, McIsaac, and Zine's (1997) study of urban Black youth who drop out of school, a good case is made for understanding this problem behavior as adaptive in an environment that marginalizes children based on their ethno-racial identity. Withdrawal from school, though an atypical coping strategy (and with potentially negative long-term developmental consequences), is nevertheless understood by young people themselves as a protective process despite its apparent negative outcome. Seen at the individual level, and judged by standards that are contextually blind, our selection of outcome variables may produce inconsistent results. Furthermore, when measuring resilience, the assumption of polarity in scales simply does not hold (Luthar, Sawyer, & Brown, 2006). Although an environment that offers children experiences of social justice is protective, it need not necessarily follow that a more oppressive environment contributes directly to vulnerability.

For example, Wang and Ho (2007) show through a qualitative study of Chinese adolescent girls that young women in urban contexts are increasingly using violence to cope with a culturally embedded gender bias that threatens to disempower young women when they enter intimate relationships. The girls' use of violence in relationships with their boyfriends is functional, thus helping them to maintain personal coherence and resist negative stereotypes imposed on them by the young men.

As both these examples demonstrate, a population that experiences increased exposure to risk may either acquiesce or develop alternative coping strategies. Elsewhere, I have termed these functional but culturally nonnormative substitute adaptations *hidden resilience* (Ungar, 2004b). This atypicality can be better understood when we fully appreciate a child's social and physical ecology. It is also easier to document when we shift from the perspective of the observer to the perspective of the participant; however, not all perspectives may be found acceptable. Cross-cultural homogeneity means certain values (e.g., learning) are universal by popular consent (Leonard, 1997).

This variety of pathways to resilience is evident in many more conventional studies of resilience. Wyman's (2003) analysis of data from the Rochester Child Resilience Project showed that children who most accurately perceived their ability to change their circumstances did better than children who misperceived their efficacy. This accurate reading of the environment is a necessary trait when environments fail to facilitate development (it is arguably not required in environments that function better). Interestingly, by appreciating the toxicity of the child's social ecology, Wyman is able to make sense of the atypical pattern of positive development employed by the study's participants. As Wyman explains:

The group of children who demonstrated enhanced adjustment in high-adversity families reported low levels of affective responsiveness to others' feelings and low acceptance of others' affect expressiveness compared to competent youths in more favorable settings. They also reported minimal engagement and emotional involvement with their primary caregivers. (p. 310)

These atypical affective management strategies are, according to Wyman (2003), productive means by which children reduce the distress they experience that results from problematic family interactions (see also Seidman & Pedersen, 2003).

Atypicality also characterizes the way that children's environments protect them when resources are sparse. Unanticipated characteristics of children's social ecologies were found by Sameroff, Gutman, and Peck (2003) to be protective when contexts were dangerous. In their examination of 500 families in Philadelphia in the 1990s, Sameroff et al. showed that fewer opportunities for democratic decision making were associated with better school grades for African American youth facing substantial risk:

Although this finding was unexpected, it was less surprising when we considered the values and demands of the larger social context in which each family lives. Parenting practices that emphasize democratic decision making and foster a sense of autonomy may be more suitable for children from low-risk environments, whereas they may be inappropriate for, or even detrimental to, youth living in more risky [sic] environments. (p. 381)

Sameroff et al. (2003) focused specifically on ecological variables like family process (i.e., a parent's support for autonomy and the effectiveness of discipline), parent characteristics (e.g., education and mental health), family structure (i.e., household crowding or receipt of welfare), management of the community (i.e., economic adjustment and institutional involvement), peers (i.e., prosocial or antisocial), and community (i.e., neighborhood SES and school climate). Not surprisingly, the greater the cumulative risk, the more likely the child was to have personal problems with odds ratios as high as 5.7:1 that the most at risk children would have the poorest psychological adjustment. The reverse was also true for the promotive factors studied. The more positive aspects there were to a child's life, the better the child did in inverse relationship to the risks faced. However, as Sameroff et al. explain, the nature of the environment is neither extraneous to this equation nor its influence always the same: "promotive processes in one context may prove to be risky in another" (p. 387).

Such studies have helped to show that in resource poor environments, atypical use of developmental resources (e.g., non-democratic decision making in a family) may be adaptive and positive. Seen in a larger or longer term context, unusual behavioral patterns may be culturally and contextually relevant to successful development when the benchmarks for that development are defined locally. Therefore, researching resilience as a process requires less focus on predetermined outcomes to judge the success of growth trajectories and more emphasis on understanding the functionality of behavior when alternative pathways to development are blocked. Returning to my earlier point that there is a need to focus on environments as much or more than individuals, we can use this principle of atypicality to argue that resilience will manifest in ways that we may not want to promote but that are necessary because of the social ecologies in which children survive. Long term, one would hope that changes to the environment would help children use other, more socially acceptable, ways of coping. However, such choices will likely depend more on the condition of the environment than individual traits.

Principle 4: Cultural Relativity

Processes of positive growth under stress are both culturally and temporally (and therefore, historically) embedded.

Although the study of resilience is not unique in its need to better account for cultural relativity (e.g., Canagarajah's 2007 study of multilingual communities and the process of language acquisition), culture as a productive force for psychosocial health is noteworthy for the contribution it makes to resilience-related processes.

By *culture*, I mean the everyday practices through which individuals and groups manifest a set of shared values, beliefs, language, and customs (Wong, Wong, & Scott, 2006). To appreciate resilience as a complex construct with varied outcomes, the competing truth claims of the intersecting cultures in which children's lives are lived need to be accounted for. Depending on the social location in which resilience is measured, results may reflect the idiosyncratic nature of local culture (and behaviors valued therein) or a more homogenized global culture with the assumption of shared human experience. Ontologically, development does not proceed with well-defined milestones (e.g., transitions to adulthood can occur at different ages in different contexts) that are culturally neutral except for the most basic aspects of biopsychosocial growth, such as secondary sex characteristics during puberty. Language acquisition, for example, is assumed to be culturally ubiquitous but in fact may be open to some degree of interpretation when comparisons are made globally. As Robinson (2007) suggested, Anglo European children in western countries who acquire a single language (e.g., English) before attending school might be judged as developmentally delayed by cultures that view the acquisition of three, four, and even five language proficiencies as normative. The study of resilience is more likely to contribute to an understanding of good growth if it accepts that benchmarks of child development are negotiable across cultures.

In this regard, I follow Kağitçibaşı's (2007) perspective on culture and human development. Kağitçibaşı has shown through her longitudinal work with children and families that attachment patterns between children and parents, and later school success, vary by culture. Although aspects of her work seek universal processes that enhance child development, she remains committed to answering two questions related to cultural relativity: "*Why* does a certain type of human development occur in a particular family context, and *why* does that type of family occur in a particular type of socioeconomic-sociocultural context?" (p. 3). Multicountry studies by Kağitçibaşı and her colleagues (Georgas, Berry, van de Vijver, Kağitçibaşı, & Poortinga, 2006) have shown that there are both homogenizing effects of globalization (where economic development blurs the interpretation of culture) occurring alongside culturally located parenting practices. For example, Kağitçibaşı identifies four dimensions of child growth formed by positioning two orthogonal continuums: autonomy versus heteronomy, and separation versus relatedness. None of the four resulting quadrants necessarily functions better than another at securing for children psychosocial resources that mitigate risk exposure. However, all are more or less relevant in different cultural contexts.

Characteristics of a child's temperament, for example, may evoke positive or negative regard depending on the meaning ascribed. This point is demonstrated in two studies by Chen, DeSouza, Chen, and Wang (2006) of rural and urban Chinese school children. These studies showed that over a decade of

economic change, the personal characteristic of shyness shifted from a valued individual attribute predictive of successful development to a symbol of a child's delayed capacity for academic and social achievement in an evolving market economy. Research such as this suggests that the better the fit between the child and the child's culturally circumscribed expectations, the greater the likelihood that the child will be seen as resilient.

Resilience as a process of negotiation in which cultural elites (i.e., those whose influence in the social discourse is greatest, such as mental health professionals, politicians, and the media) decide the outcomes associated with good growth requires a cultural lens for interpretation. This cultural perspective underlies the atypicality discussed earlier. It also helps to explain the complex interactions between factors.

By way of illustration, gender as a form of cultural expression is highly sensitive to variations caused by social ecologies. Newman et al. (2007) found that among fourth graders in Bulgaria, Taiwan, and the United States, school activities associated with positive development varied more by gender than between genders in different countries. Girls reported that more of their time was spent in activities chosen for them by adults. They had less free time, experienced more routine, read more, and had more organized activities that helped them to remain closer to adults, but with less autonomy (a potential threat to resilience in some cultural contexts that value individualism).

Similar findings are reported in an 11-country study by Ungar and his colleagues (Ungar, 2008; Ungar et al., 2008) of 1,451 youth. Using a 58-item questionnaire developed collaboratively with a panel of international partners from each country, results of an exploratory factor analysis showed low factorial invariance when analyzing the results by gender. Girls in countries such as Russia, Tanzania, South Africa, and Colombia, as well as among Canada's Aboriginal people, demonstrated congruence in their responses to a valid set of questions. Boys in the sample (other than non-Aboriginal youth in Canada and the United States) showed heterogeneity distinct from the girls, with male youth varying in their response patterns depending on whether they lived in communities distinguished by high (e.g., Russia, Palestine, China) or low (e.g., South Africa, Colombia, Gambia) levels of social cohesion.

Within-country differences can be just as large. In a report by the American Psychological Association's Task Force on Resilience and Strength in Black Children and Adolescents (2008), factors associated with Black children's development in the areas of identity, emotion, social behavior, cognition, and physical health all showed unique aspects that are explained as the result of the systemic marginalization that they experienced.

A similar argument about context is made by Ying, Han, and Wong (2008), who found within groups differences among Asian American adolescents depending on whether the youth were American or Asian born. Specifically, Asian Americans born in the United States reported more ethnic pride than immigrant adolescents. Though somewhat surprising, the authors suggested that for immigrant youth, acculturation brings with it the promise of integration, and the American born youth used their cultural heritage as a protection against their marginalized status by creating an alternative source of identification. Herein lies the difficulty for a comprehensive understanding of resilience. Both the individual and the individual's ecology mutually

adapt to one another, with the patterns that are protective highly variable and sensitive to both culture and context.

This problem becomes even more complicated when assessing resilience from only one standpoint, usually that of the dominant cultural reference group. Arguably, few measures of resilience start their development with the coping patterns of minority populations in mind and evaluate dominant ethno-racial group behavior by the standards of these others (Smith, 1999; Ungar, 2005). The more that resilience is conceptualized as a process that reflects the influence of culture on the naming of protective processes, the more likely it is that the study of resilience will contribute to understanding positive development amid adversity as a process that is culturally embedded.

Individually, specific cultural groups may choose to resist dominant cultural norms in favor of their own indigenous coping strategies. For example, Aboriginal people have successfully argued against foster placements for children from abusive homes, especially when those placements occur outside their communities (Blackstock & Trocmé, 2005). Instead, a less formal system of kinship adoption is promoted that advocates argue is more likely to ensure a child's healthy development even if the extended family with which a child is placed is perceived as doing less well than a family operating a state-approved foster home. Similar to many such strategies, no empirical body of research supports claims of success. Research on traditional foster placements, however, has shown that children who are placed do less well than children left at home when matched for level of risk (Lawrence, Carlson, & Egeland, 2006). Culturally distinct strategies to promote resilience will only be seen as successful when a cultural minority is able to negotiate with cultural elites for recognition of their solutions to problems. Empirical research is one critical element to these negotiations but is seldom available to bolster the arguments made by those who are marginalized.

An Ecological Definition of Resilience

The challenge for resilience investigators is to identify processes that are systemic and variable while avoiding excessive focus on individual characteristics that are not under an individual's control. The question that needs answering, to paraphrase Lerner and Overton (2008), is: What kinds of relational processes, and what attributes of which individuals, depend on what aspects of their social and physical ecologies, at what point in an individual's development, and in what context and culture, to result in what immediate and long-term features associated, by whom, with positive development under adversity? In practice, this means that research should be able to account for individual maturational processes that are both physical and cognitive at the same time as social and physical ecologies are changing. A definition of resilience that accounts for this ontological and ecological variability and that reflects the four principles, is as follows:

In the context of exposure to significant adversity, resilience is both the capacity of individuals to *navigate* their way to the psychological, social, cultural, and physical resources that sustain their well being, and their capacity individually and collectively to *negotiate* for these resources to be provided and experienced in culturally meaningful ways (Ungar, 2008, p. 225).

The dual processes of navigation and negotiation require that the locus of control for positive development be a shared experience of both individuals and their social and physical ecologies.

As the first rule of resilience, navigation implies personal agency and motivation synonymous with earlier individually focused definitions. However, the concept of navigation also implies movement toward resources that are made both available and accessible by those in power to those who are disadvantaged. Advocates for children with intellectual or physical disabilities understand this connection well. Work by Skinner, Matthews, and Burton (2005) showed that it is not just the child's latent capacity that contributes to developmental success, but also the capacity of the child's environment to create conditions for fuller self-expression that contributes to resilience. In studying 42 families with a child 8 years old or younger with a severe disability, Skinner et al. combined ethnographic family data (i.e., details of how community resources were found and accessed) with Geographic Information Systems sources of geospatial data to understand the connection between the physical structure of the family's community and the parents' ability to provide resources to their child. As the case studies demonstrated, positive development is much more likely to result when social and physical conditions surrounding an individual at risk make the resources they need useable.

The second component of an ecological definition of resilience is negotiation by individuals alone and in groups to ascribe meaning to the resources that are available and accessible. The functionality of a Head Start program (Bulotsky-Shearer, Fantuzzo, & McDermott, 2008), an antibullying intervention (Rahey & Craig, 2002), or a Circle of Security attachment project (Marvin, Cooper, Hoffman, & Powell, 2002) will all depend on how congruent each is with the culturally embedded meaning systems of individuals and their social reference groups.

The process of negotiation as it relates to resilience is similar to other processes known for decades, such as those identified in Merton's (1938) treatise on social structure and anomie. Merton showed that people generally hold and express similar values even when behaving in nonnormative (antisocial) ways. For example, qualitative research (Ungar, 2004b) has shown that youth labeled delinquent do not necessarily resist the prosocial cultural norms that equate success with financial gain and status among peers. They do, however, challenge the patterns of behavior associated with achievement of these goals, instead choosing to exploit as best they can their marginal opportunity structures by performing antisocial acts (e.g., drug dealing as an expression of entrepreneurship or a way to provide money to a parent living in poverty). Individual children who seek to overcome barriers to development may navigate through atypical but culturally relevant processes that are facilitated by social and physical ecologies when access to resources is lacking. In practice, this means that the environment makes good or fails in its promise to a child to provide prosocial developmental pathways. The outcome of this determination reflects whether social policies are in place to provide needed and relevant resources to children (Leadbeater et al., 2005).

This process of resource provision and its meaningfulness is a useful lens by which to examine many studies of child development. For example, Tremblay's (2005; Tremblay et al., 1996)

work on children and aggression has shown that the young child is socialized out of aggressive patterns and into prosocial alternatives that meet his or her psychosocial needs. Aggression cannot be explained by the child's intrinsic nature alone, as all children are to varying degrees and at some time aggressive. It is the capacity of the environment, notably the parental system and the child's educators, to challenge negative development and promote socially adaptive patterns of coping that ensure the child greater social inclusion. Evidence from cultures where violence is epidemic, such as impoverished communities surrounding Medellín, Colombia (Duque, Kleven, & Ramirez, 2003), suggests that children's aggression may not be challenged when it is perceived as functional within communities where vigilantism and self-defense are valued. Viewed from outside the social reference group, behavior that is perceived as locally adaptive is, understandably, labeled maladaptive. Duque, Kleven, Ungar, and Lee (2005) have shown, however, that when educators and parents are provided with the skills needed to raise children without aggression, and communities are better policed and administered by government (i.e., people's safety is assured), children's caregivers change the way they raise children.

Shifting the focus from the child to the child's social and physical ecology positions the discourse of resilience as one of process and resource provision. The compounding effects of risk are more easily explained as they compromise the capacity of environments to provide what individuals need. When navigation is thwarted, or the resources that are provided lack meaning, then it is more likely that the environment will fail in its facilitative role. Sameroff and Rosenblum (2006) hint at this necessary change in focus in their investigation of IQ and mental health symptoms among children between the ages of 4 and 18. They note: "Whatever the capabilities provided to the child by individual factors, the environment seemed to limit further opportunities for development" (p. 119). Echoing Vygotsky (1978), Sameroff and Rosenblum showed that competent and incompetent children at birth show no difference in IQ or mental health problems at 4 years of age except when the predictor variable of a cumulative environmental risk score is taken into account. Furthermore, by the age of 13, this same pattern holds. Individual characteristics alone are not highly predictive of later developmental outcomes.

The same findings are echoed in a very different type of study that sought to distinguish Aboriginal communities on Canada's west coast that had rates of youth suicide many times that of communities that shared cultural roots but that had no known incidents of youth suicide over a 14-year period. Chandler, Lalonde, and Sokol (2003) found that communities could be sorted by mezzo-level variables associated with identity continuity among Aboriginal youth. These included the local band council's control over their own schools, a designated place in the community for cultural events, women in local government, and a volunteer fire department. These and other community-level resources predicted an incidence of youth suicide of zero. Being a young Aboriginal person was not a risk factor when measured independently of the social and physical ecologies in which the children lived. Such studies tell us that well-resourced families and communities produce better child outcomes than poorly resourced ones, even if the children face similar barriers to development.

An Explanatory Model of Ecological Resilience

To better conceptualize this tendency toward ecological variability, we could, as a starting point, look to Kurt Lewin's (1951) expression, $B = f(P, E)$. Lewin showed that the person and his or her environment are mutually dependent: "To understand or to predict behavior, the person and his [sic] environment have to be considered as *one* constellation of interdependent factors" (p. 240–241). Lewin called this totality the *life space*. Behavior is the function of the person (P), including the person's neurophysiological strengths and other personal capacities, interacting in dynamic but unspecified ways with an environment (E) that provides for his or her needs. An individual's beliefs, Lewin noted, will change how he or she draws resources from the environment, while a slight shift in the environment (as the surliness or congeniality of an examiner) can affect individual performance.

Lewin's expression is useful if we assume that the person or the environment both have the potential to exert an influence on their interactions. Interestingly, however, Lewin's focus was on the individual's behavior (B) as the outcome measured and not the quality of the environment regardless of how the individual behaves. In instances of heightened risk exposure, we need to better account for this disequilibrium by measuring both individual behavior and ecological processes that potentiate growth.

For example, the stereotypically resilient but neglected child may possess a latent capacity to attach in environments of severe deprivation, but remain developmentally delayed unless caregivers are there to provide a forum for the child's neurophysiological growth sufficient to buffer stress (Fisher, Gunnar, Dozier, Bruce, & Pears, 2006). The child existing in a more threatening and less facilitative environment must either suppress his or her wish for attachment (resulting in the child becoming withdrawn and psychologically disordered in behavior) or behave in atypical ways, thereby exploiting whatever resources are available and accessible that bring with them a proxy for human bonding (e.g., temper tantrums evoke negative attention when positive attention is unavailable). The nature of the processes that contribute to positive development depend on which adaptive and maladaptive strategies are intelligible choices in social and physical ecologies when resources are few. *Individual choice* is a misnomer in such cases, as socially desirable means to express resilience may be unavailable, or if available, inaccessible. Individual motivations are circumscribed by internal and external limits. Behavior that appears to indicate vulnerability may in fact be *adaptive but atypical coping*.

A process-oriented and contextualized understanding of resilience and the behaviors associated with positive development under adversity (R_B) requires sensitivity to the opportunity structure (O) of the environment that shapes which developmental pathways are viable over time. To account for development under stress, an explanatory model can be adapted from Lewin's (1951) original expression. The developmental pathways adopted depend on the availability (A_v) and accessibility (A_c) of health-sustaining resources and the meaning (M) that is constructed for each within the child's culture and context. To illustrate this point, an earlier example is worth recalling. It has been shown that dropping out of school may be a viable choice to maintain an individual's sense of coherence in a context

where education is neither perceived as a guarantee of future employment nor brings with it social status among peers (Dei et al., 1997; Noguera, 2008). These opportunities and their co-constructed meanings interact with the individual's strengths (*S*) and challenges (*C*), though the influence of these is strongly mitigated by the opportunity structure that supports or suppresses their expression. Therefore, counterintuitively, dropping out might be a protective process contributing to resilience in unique social ecologies where no other reasonably good means exist to preserve a sense of personal coherence, future orientation, or self-esteem.

With this ecological understanding of resilience as our guide, we might rewrite Lewin's expression as follows:

In the context of exposure to significant adversity . . .

$$R_{B(1,2,3\dots)} = \frac{f(P_{SC}, E)}{(O_{Av}, O_{Ac})(M)}$$

This new expression draws us away from an understanding of resilience as embedded inside individuals. Resilience is instead successful development that exploits environmental contexts as they change over time ($R_{B1}, R_{B2}, R_{B3} \dots$).

Future Directions

An ecological definition of resilience suggests new directions for theory development, research, and intervention.

Theory

The developmental course of the child depends on the degree of environmental facilitation, with changes in outcomes varying to the extent the environment provides resources the child needs. A robust theory of resilience should account for changing environments and the facilitative function that each provides. For example, studies of resilience among Romanian orphans who were adopted, and other exceptional pathways to positive development, may be better explained by attention to the ecological factors associated with the child's growth rather than individual-level constructs such as motivation, temperament, or a capacity to evoke (O'Connor, Rutter, Beckett, Keaveney, & Kreppner, 2000). Remarkably, although early deprivation does cause delays, a facilitative environment in the form of an adoptive home can result in developmental acceleration.

However, the predictive model is complicated by both the duration of the deprivation before placement and the potential for stress during different developmental periods (O'Connor et al., 2000). Whereas, 4-year-olds may show almost universal gains after adoption, children with more prolonged early deprivation experiences are likely to experience developmental delays relative to their less deprived peers between the ages of 4 and 6. In other words, the effect of the environment on children can be both less debilitating than expected (i.e., early deprivation can be recovered from) as well as confounding, as stressors accumulate in a child's life. In less stressful environments, individual-level factors are more relevant to predictive models. Ecological risk factors are likely less important than individual characteristics when there are fewer structural barriers for a child to

navigate. As risk factors multiply and grow exponentially in their influence, it should be expected that the need to address ecological factors will also increase.

Individual factors may influence the environment, but the individual cannot be the focus of a theory of resilience if the field is to gain conceptual ground. To better theorize resilience we will need greater sensitivity to ecological factors associated with protective processes, with these factors likely to account for more variance in outcomes than individual factors as the child's disadvantage increases.

Research

Under stress, a child's social and physical ecology is likely to account for more of the variance in developmental pathways than that accounted for by personal factors, meaning researchers will need to shift much more of their focus and resources to measurements of complex environments rather than complex individuals. To account for processes that are interactive and variable, mixed method designs may be required (Luthar et al., 2000). Related research in the field of cultural psychology has a long history of employing qualitative methods, though cross-cultural psychology, which seeks to identify universal principles and practices, has tended to employ more consistent quantitative measures for the sake of replication and comparability (Ratner, 2008). In either case, studying resilience as process requires tools to capture both individual and ecological variables in interaction over time. The greater our capacity to capture both the nuances of individual and temporal niche adaptations and the conditions of the ecologies that facilitate them, the better we will be able to understand the elements of interaction that contribute to good development (Silbereisen & von Eye, 1999). With the concurrent study of each changing variable—ecological, temporal and individual—we augment our capacity to discover patterns that are more predictive of outcomes associated with resilience (Rutter, 2007).

Significant advances have occurred in the integration of qualitative and quantitative methods that can help with the study of these culturally and contextually variant patterns (see Tashakkori & Teddlie, 2003). Where resources for research are sufficient, environmental scans or qualitative studies that identify local phenomena that are associated with coping well with adversity can help broaden our understanding of indigenous patterns of adaptation. They can also contribute to the adaptation of quantitative measures to specific localities. Employed well, localized inquiry can inform the design of tools that capture processes invisible to cultural outsiders. These measures may be matched with imported standardized instruments such as the Child Behavioral Checklist to critically appraise their validity (see Achenbach, 2008). In other cases, the use of visual methods and ethnographies can provide techniques to identify patterns of coping that explain the relationship between context and individual adaptation under stress (Cameron, Ungar, & Liebenberg, 2007).

Each technique permits a two-pronged approach to researching resilience and understanding individual-level variables as dependent upon factors in the child's social and physical ecology. In general, studies that examine all parts of Lewin's (1951) adapted equation (i.e., aspects of the environment, meaning

system, and individual-level variables) will most likely lead to the identification of ecologically informed processes that contribute in varying degrees to positive developmental gains (see Ungar, 2009, for discussion).

Intervention

Better understanding of the nature of resilience-promoting processes can inform the design of service ecologies (Masten, 2006). Documenting patterns of adaptation among vulnerable child populations and replicating what is already efficacious is helpful when balanced with sensitivity to the multiple contextual and cultural factors that determine well-being. An ecological focus, rather than one that is child-centered, can ensure that resources are provided that are sufficiently intense, culturally appropriate, and meaningful enough to result in the greatest number of children growing up well. Adhering to the principle of equifinality, interventions may be varied in their design to cope with the exigencies of local challenges. Arguably, interventions like foster care for Aboriginal children and school engagement programs for racially marginalized youth are most likely to avoid becoming iatrogenic or ineffective when children's ecologies and meaning systems are accounted for in the design (Blackstock & Trocmé, 2005; Harvey, 2007).

Conclusions

Despite the many challenges associated with studying resilience, a growing body of evidence is helping to explain the processes that lead to children's positive development when facing significant amounts of adversity. These emerging studies across cultures and contexts point to the need for a more process-oriented, less child-focused understanding of the resilience construct. In his review of the field, Rutter (2005) emphasized the need for better understanding and study of the environment in which child development takes place. This article built on these studies and paid specific attention to the social and physical ecologies of resilience, including making an argument for greater attention to children's cultures and contexts. The proposal of a set of four principles—decentrality, complexity, atypicality, and cultural relativity—that broaden our conceptualization of positive development under stress was offered as a starting point for future investigations.

Regardless of which principles are used to define resilience-related processes, resilience researchers since the late 1980s have contributed to a shift in how child development is studied. To capture fully what we now understand as resilience, however, the field will need to go further and measure the disequilibrium of the environment and its influence on individuals. Resilience can be better understood when this imbalance is accounted for as developmental processes unfold. The shift in discourse is evident in studies already conducted. If, however, the science of resilience is to advance credibly, the focus of our attention needs to be more often on ecological conditions that contribute to good growth under adversity.

Keywords: children; adolescents; resilience; coping; positive development; protective mechanisms; ecological framework

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