

Annual Research Review: What is resilience within the social ecology of human development?

Michael Ungar,¹ Mehdi Ghazinour,² and Jörg Richter³

¹Dalhousie University, Halifax, Nova Scotia, Canada; ²Umeå-Sweden, Umea, Sweden; ³University of Rostock, Rostock, Germany

Background: The development of Bronfenbrenner's bio-social-ecological systems model of human development parallels advances made to the theory of resilience that progressively moved from a more individual (micro) focus on traits to a multisystemic understanding of person–environment reciprocal processes. **Methods:** This review uses Bronfenbrenner's model and Ungar's social-ecological interpretation of four decades of research on resilience to discuss the results of a purposeful selection of studies of resilience that have been done in different contexts and cultures. **Results:** An ecological model of resilience can, and indeed has been shown to help researchers of resilience to conceptualize the child's social and physical ecologies, from caregivers to neighbourhoods, that account for both proximal and distal factors that predict successful development under adversity. Three principles emerged from this review that inform a bio-social-ecological interpretation of resilience: equifinality (there are many proximal processes that can lead to many different, but equally viable, expressions of human development associated with well-being); differential impact (the nature of the risks children face, their perceptions of the resources available to mitigate those risks and the quality of the resources that are accessible make proximal processes more or less influential to children's development); and contextual and cultural moderation (different contexts and cultures provide access to different processes associated with resilience as it is defined locally). **Conclusion:** As this review shows, using this multisystemic social-ecological theory of resilience can inform a deeper understanding of the processes that contribute to positive development under stress. It can also offer practitioners and policy makers a broader perspective on principles for the design and implementation of effective interventions. **Key-words:** Resilience, social ecology, human ecology, multisystemic, positive development, stress, adversity, risk, equifinality, differential impact, culture, context.

Several years before the study of resilience became popular, Urie Bronfenbrenner (1979) conceived of the child's environment as nested structures like Russian dolls. Building on the work of his mentor, Kurt Lewin, Bronfenbrenner took child development securely into the new territory of systems and their interconnections. As he explained in his groundbreaking work, *The Ecology of Human Development* (1979), it was the interactions between systems that are as 'decisive for development as events taking place within a given setting' (p. 3). Bronfenbrenner (1979) defined human development 'as the person's evolving conception of the ecological environment, and his [sic] relation to it, as well as the person's growing capacity to discover, sustain, or alter its properties' (p. 9). The study of resilience was influenced by this model of person x environment interaction and its description of the 'proximal processes' that are the engine of development (Bronfenbrenner & Evans, 2000). Later adaptations of these ideas by Bronfenbrenner and his colleagues resulted in a bio-psycho-social-ecological systems theory that offered the most comprehensive published account of contextual influences on children's development (Berk, 2006).

The study of resilience focuses on one particular subset of processes associated with human development: those that enhance the experience of well-being among individuals who face significant adversity (Ungar, 2011a,b; Zautra, Hall, & Murray, 2010). Just as Bronfenbrenner's work helped shift the focus from the individual child to the child x environment interactions that make development possible, so too has the study of resilience being moving away from the study of the invulnerable child (Anthony, 1987) to a focus on the social-ecological factors that facilitate the development of well-being under stress (Ungar, 2011b).

Ungar (2008, 2011b), for example, challenging definitions of resilience as the capacity of individuals to do well and the ethnocentrism that has informed the choice of outcomes associated with resilience (e.g. staying in school, delaying sexual initiation, maintaining an attachment to a primary caregiver) has shown through research with his colleagues in more than a dozen countries that: '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

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collectively to negotiate for these resources to be provided and experienced in culturally meaningful ways' (Ungar, 2008, p. 225). The definition emphasizes the processes by which individuals and groups of individuals (e.g. families, peer groups, communities) secure for themselves the psychological, social and physical resources that make human development more likely to succeed in contexts of adversity. In this regard, our understanding of resilience is shifting in much the same way that Bronfenbrenner shifted the focus on human development from the individual to the multiple systems with which the individual interacts.

In this study we will review research that shows that it is children's interactions with multiple reciprocating systems, and the quality of those systems, that account for most of children's developmental success under negative stress (their resilience). To organize this argument, we will employ Bronfenbrenner's bio-psycho-social model of human development as an organizing schema for the research. Finally, to account for the complexity of the interactions that occur we will propose three guiding principles: equifinality; differential impact and contextual and cultural moderation.

Early thinking about resilience

At about the same time that Bronfenbrenner was demonstrating the link between micro-, meso-, exo- and macrosystems, a growing number of child developmentalists were beginning to notice a trend in longitudinal studies of children growing up in challenging environments. Murphy and Moriarty (1976), for example, found that among children growing up in impoverished and stressful environments, a combination of individual characteristics (e.g. an easy temperament, an evoking personality and sociability) and caregiver characteristics (e.g. the capacity to create a secure attachment) predicted better than expected outcomes. At the same time, Rutter, Maughan, Mortimore, and Ouston (1979), Werner and Smith (1982), Garmezy (1976; 1983), among others, began to identify first a subset of children characterized as resilient, then later a set of processes that predicted positive growth among populations of children who faced significant disadvantage (Rutter, 1987). Subsequently, the concept of resilience began to be discussed much more often in the literature on child development, with researchers like Benard (1991), Linqanti (1992), Masten and her colleagues (Masten, Morison, Pellegrini, & Telleen, 1990), Rutter (1990), Luthar and Zigler (1991) and Ungar (2005) reflecting a shift in their thinking that paralleled Bronfenbrenner's work on child development. Over time, more and more emphasis has been placed on distal factors like class, race and culture that influence proximal processes related to biopsychological triggers, expressions of personality and cognitive styles (Clauss-Ehlers, 2008; McCubbin

et al., 1998; Panter-Brick & Eggerman, 2012; Ungar, 2012).

In the mid-1980s, those studying human development in general began to notice cohorts of research participants who demonstrated better than expected outcomes. Although studies of what came to be understood as resilience, along with individual coping strategies, temperament, intelligence and later genetic predispositions that were correlated with resilience would continue, the notion of the invulnerable child's resiliency (suggestive of a set of inner capacities that made a child resistant to the effects of adversity) gave way to a more ecological process-oriented conceptualization of resilience. The child's social and physical ecologies, from caregivers to neighbourhoods, became the focus of numerous studies that accounted for both proximal and distal factors that, through interaction, predicted successful development despite exposure to serious adversity (Lounsbury & Mitchell, 2009).

Emerging thoughts about nurture versus nature

Although Rutter (2006), Luthar and Borwn (2007), Masten (2006, 2009) and many others have emphasized the interactions between individuals and their environment, adaptation is usually equated with an individual's successful coping under stress rather than the amount the individual's environment facilitates human development. In other words, it is the individual who has remained the focus of our attention rather than both the environment and the individual. To illustrate, a great deal of groundbreaking work has been done by Rutter (2006) to show that resilience cannot be predicted by a single variable and that patterns of coping under stress will vary over the life span. However, the individual is still tasked with the locus of control. As Rutter writes: 'The notion of resilience focuses attention on coping mechanisms, mental sets, and the operation of personal agency. In other words, it requires a move from a focus on external risks to a focus on *how* these external risks are dealt with by the individual' (p.8). Resilience, according to Rutter, is concerned most with the dynamic processes that engage multiple risk and protective factors leading to positive developmental outcomes over the longer term. Maladaptive behaviour, however, like withdrawal from emotional attachments in contexts of physical abuse may temporarily protect a child, though these behaviours can disadvantage the child later in life (Wyman, 2003).

A social-ecological interpretation of the resilience literature introduces a focus that emphasizes systemic factors in much the same way that Bronfenbrenner introduced systems thinking to the study of human development. For example, a child with ADHD may cope well with the disorder through a combination of behavioural and pharmacological interventions (Foster et al., 2007). However, changes

to the child's classroom (e.g. teachers with microphones, pacing instruction to match the child's capacity to tolerate sitting still) and better coordination of homework management strategies between parents and educators can also affect children's outcomes (Langberg et al., 2011). For a child with ADHD, we can investigate their resilience by asking not only 'How has the child adapted to his school environment given his disorder?' but also 'How has the child's school and home adapted their structures to meet the needs of this child?'

A careful read of the emerging research suggests two important additions to our understanding of resilience. First, the more a child is exposed to adversity (e.g. exposure to violence, poverty, disability) the more the child's resilience depends on the quality of the environment (rather than individual qualities) and the resources that are available and accessible to nurture and sustain well-being. In the last example, a child with ADHD being raised in a safe well-resourced home is likely to have access to many sources of support, and to experience the coordination of systems that makes it possible for him to succeed regardless of his school making structural changes to accommodate his needs. Much of the research correctly describes the interaction between individuals and their environments as reciprocal processes in which both halves of the person x environment equation are equally important (Lerner, 2006). Lerner (2006), for example, argues that resilience is not a characteristic of any single level of a complex system (neither the individual nor the institutions around them), but instead a dynamic attribute of the relationship between each element. According to Lerner, resilience describes the plasticity of these interactions, referring to their mutual regulation (reciprocity) and adaptation over time. He also notes the influence of Bronfenbrenner's work on his understanding of human development and resilience (Lerner, 2005).

However, studies of populations that are uniformly exposed to higher levels of stress (e.g. maltreated children, child soldiers, racially marginalized children) with very few supports show a distinct pattern of results: individual characteristics account for less of the positive developmental outcomes, whereas environmental factors, when measured, are more influential (Chandler & Lalonde, 1998; DuMont, Ehrhard-Dietzel, & Kirkland, 2012; Klasen et al., 2010; Ungar, Liebenberg, Armstrong, Dudding, & van de Vijver, in press).

There is, as well, a second reason for why the disproportionately greater influence of the environment is overlooked. In studies of homogeneous populations exposed to high levels of adversity, the ethnocentricism of the researcher may unintentionally result in factors associated with resilience that are contextually and culturally embedded being overlooked (Rogoff, 2003). Although a great deal of effort has been made to investigate resilience among

minorities in economically developed countries like the United States and the United Kingdom, most of that research has used predetermined indicators to examine resilience, with a bias towards individual level variables borrowed from studies of normal populations. Studies of resilience from lower and middle income countries, and those with marginalized populations in higher income countries, are identifying new protective processes. Many of these are contextual (e.g. related to social class, social exclusion, gender), cultural (representative of everyday practices and commonly held beliefs) and temporal (related to the historical period in which development takes place and the individual's position with regard to her developmental life course) (Phelps et al., 2007).

For example, where the pursuit of a hobby has been an indicator of individual competency associated with resilience in higher income countries (Brooks, 2006), contribution to family through participation in child labour that benefits a family financially has been shown to be beneficial to children when that contribution is recognized as important by caregivers and the child's community (Liborio & Ungar, 2010). Whereas asking a child whether she has a hobby would be insensitive in contexts of extreme poverty or war, it would also be inappropriate to expect child labour to produce psychological benefits in a high-income country where value is placed on education rather than the child's financial contribution to her family. In both cases, protective processes reflect the contextual availability of resources and the cultural values of children's communities. Overall, research shows that children exposed to higher levels of stress are more likely to employ maladaptive coping strategies like social withdrawal and confrontation, whereas children exposed to less stress are more inclined to use adaptive coping strategies (de Anda et al., 2000).

An emerging understanding of resilience

Resilience focuses attention narrowly on the qualities of individuals and their environments that contribute to satisfactory development rather than patterns of ontogeny common to all populations. To identify patterns of interaction that are indicative of coping, whether perceived as adaptive or maladaptive by others, we need to view these interactions over time. What is adaptive in one context or during one developmental period may be maladaptive during another. Therefore, a complete understanding of resilience requires that we first look backwards and carefully examine the data that predict children's life courses in particular contexts (Sroufe, Egeland, Carlson, & Collins, 2005). Which data we choose to examine, however, becomes a matter of debate when development is conceived of in social-ecological terms. Even the most disadvantaged children are not born inherently weak, but instead fall into

environments that either support and buffer stress reactivity or accentuate the risk factors that cause delay and disorder. The nested structures of the environment can create a 'positive platform' (Sroufe et al., 2005, p. 277) that supports development, predicting outcomes for as many as 80% of disadvantaged children in cohort studies. With so much accuracy to our predictions, Sroufe et al. argued, there is a need to document the factors that we can change that make it most likely children will succeed. In this regard, we need a definition of resilience that acknowledges ecological processes.

An ecological understanding of resilience

Reflecting this view of resilience as ecological, Ungar et al. (2007) conducted a study of adolescents in 11 countries. They identified seven aspects of the young person's environment that work in tension with one another to create processes that are associated with 'doing well' under stress across cultures: relationships; a powerful identity; power and control; social justice; access to material resources; a sense of cohesion; belonging and spirituality; and cultural adherence. Navigations to resources were shaped by negotiations between individuals or groups (families and communities) and those who act as gatekeepers to the resources that nurture well-being such as schools and local governments. In this regard, these navigations became constrained or facilitated, either promoting or detracting from collective efficacy. Creating and sustaining facilitative environments for optimal child development require that individuals and groups are empowered to negotiate for the adequate resourcing of the multitiered systems that are supposed to be there to meet their individual and collective needs (Gilligan, 2008; Panter-Brick & Eggerman, 2012; Rutter, 2012).

Congruent with Bronfenbrenner's notion of development in context, Ungar (2012) proposes that we assess resilience as both the quality of the interaction between the child and the child's environment, and the competence of each side of the individual \times environment equation to provide what is necessary to sustain well-being. An adequately resourced environment makes it more likely that the child's motivation, temperament and special talents contribute to successful developmental outcomes. Such patterns are evident among the orphans studied by Beckett et al. (2006) or the work being done with AIDS orphans in orphan friendly communities (Skovdal & Campbell, 2010). Even the most traumatized children do better when their environments are stable and of a sufficient quality to optimize physical and psychological growth (Bonanno, Westphal, & Mancini, 2011; Wekerle, Waechter, & Chung, 2012).

Making this very same point with regard to resilience as interaction between risk factors and the way systems respond, a study by DuMont, Widom, and Czaja (2007) reviewed documented cases of

childhood physical and sexual abuse and neglect. The association between individual and contextual factors proved to be complex. Although reviewers blind to the abuse histories of participants found continuity into adulthood for the 48% of the children assessed as resilient during adolescence and the approximately one third who were resilient in young adulthood, 11% of the 'non-resilient' adolescents became resilient in adulthood. Patterns in the social addresses of the participants that predicted the outcomes included:

- Matched for level of abuse, respondents who grew up in less advantaged neighbourhoods with a single parent were more likely to be resilient during adolescence than respondents from the same type of neighbourhood who had experienced a short first out-of-home placement as a result of their abuse.
- Respondents who grew up in more advantaged neighbourhoods and who had higher cognitive ability were three times more likely to be resilient than respondents from the same neighbourhood type with lower cognitive ability. In less advantaged neighbourhoods, cognitive ability was not significantly related to resilience.
- Two thirds of the nonresilient adolescents who became resilient in adulthood showed success in three important adult domains: employment, housing and social activity.
- A stable living situation tripled the odds of doing well. Neighbourhood advantage alone did not predict good outcomes.

As the example shows, elements of the environment such as length of placement, neighbourhood advantage and social and economic opportunities were more important to resilience than individual qualities like cognitive ability. In the interactions between maltreated children and their environments, a powerful combination of ecological factors constrained the amount of influence individual factors had on outcomes. Using Bronfenbrenner's model, we can examine more specific aspects of similar processes at different systemic levels.

Biosystems and resilience

Bronfenbrenner and Ceci (1994) updated Bronfenbrenner's earlier model to address the nature versus nurture debate concerning human behaviour. There are, they argued, a number of proximal processes 'through which genetic potentials for *effective* psychological functioning are actualized' (p. 568). These proximal processes, or interactions between individuals and their environment, are 'mechanisms of person-environment interaction through which genotypes for developmental competence are transformed into phenotypes' (Bronfenbrenner, 2005, p.11). Similar to hereditary physical qualities like height that are influenced by environmental triggers

such as nutrition, so too are psychological characteristics like personality influenced by environments which make them more or less likely to contribute to meaningful coping behaviour that optimizes developmental gains. Bronfenbrenner and Ceci (1994) suggest a series of propositions in support of this position: (a) the effect of an environmental trigger is only seen, or seen more, when there is fairly consistent reciprocity in interaction over time; (b) the power to influence psychological development is mutually determined by characteristics of both the individual and the system and (c) proximal processes actualize genetic potential, though these interactions are constrained by qualities of individuals and systems. Thus, we can conclude that hereditary traits that may disadvantage a child (e.g. intelligence) are more or less influential in environments of varying privilege. These environments are not necessarily malleable, however. Herein lies the genius of Bronfenbrenner's original model and the reason for its contribution to an ecological understanding of resilience. Exo-systemic factors, like other aspects of the environment, can hamper (or promote) processes that contribute to positive gene expression (Rutter, 2008). Poorly funded educational systems, for example, can leave children's potential for growth and learning unrealized just as 'tough on crime' legislation can criminalize normal developmental behaviour like experimental use of alcohol and soft drugs.

There is, however, a need to think about multiple systems at multiple levels at the same time. Even at the level of individual brain functioning, Curtis and Nelson (2003) show that building a better brain that has the elasticity to bounce back from adversity requires an environment that provides it with opportunities to develop: 'It has become nearly axiomatic that exposing experimental animals to enriched environments leads to positive outcomes in terms of brain development and their ability to learn' (p. 463). Likewise, the idea of resilience as an inherent quality of the brain itself is also contentious. According to research by Perry and his colleagues (Perry, Pollard, Blakley, Baker, & Vigilante, 1995), exposure to trauma causes the brain to become reorganized to accommodate the demands placed upon it. Perry et al. argue that the reorganized brain, and the child's functioning that follows, makes children malleable but not resilient. By assuming that children can re-establish neural pathways associated with positive adaptations to stress we ignore the abundant evidence that trauma can cause changes to a child's brain structure and processes that impair functioning. However, based on epigenetic processes that result from bio-social-ecological interactions of a certain intensity and over a sufficiently long period, the effects of trauma on brain development are partially reversible (Dudley, Li, Kobor, Kippin, & Bredy, 2011; Gunnar, 2007; Lemaire, Lamarque, Le Moal, Piazza, & Abrous, 2006; Meaney, 2010).

Caution with regard to whether causality is attributed to the individual, the environment, or the interaction between the two is necessary when discussing neuroplasticity. There are many circumstances where a more stimulating and complex environment can enhance brain development among children who are exposed to chronic disadvantage, at least based on what we have learned from experiments with rats (Kent, 2012). Such findings have been one reason for the growing popularity of Head Start programmes that enrich the early lives of at-risk children. The complexity of the human environment, however, is such that experiments in social modification have not been proven to have long-lasting effects if the child's environment returns to its previous state in which the child was understimulated (Quinn, 2004; Webster-Stratton & Hammond, 1998). This is not surprising given the notion of allostasis in neuroscience which, as Schulkin (2011) explains, means that there is constant feedback between the brain and its environment.

Microsystems and resilience

Microsystems represent activities, roles and interpersonal relations where the developing person is directly involved with particular physical and material features like the family, school class, neighbourhood or church. In the bioecological systems theory, the human body can also be understood as one microsystem with an emotional and a cognitive subsystem. Microsystemic processes were particularly important to earlier work on resilience that dealt with the concept of invulnerability (Anthony, 1987) and resilience as a quality of individuals (Garmezy, 1971; Garmezy & Neuchterlien, 1972; Garmezy, Masten, Nordstrom, & Terrorese, 1979; Werner & Smith, 1988).

Among the noted factors associated with resilience was personality. Although the coping literature has discussed personality at length, studies of resilience have been less explicit as to which aspects of personality in which stressful environments are most adaptive (Pearlin, Menaghan, Lieberman, & Mullan, 1981). Research that has addressed this problem shows that different dimensions of personality can influence resilience among populations under stress. For example, Campbell-Sill, Cohan, and Stein (2006) studied the relationship between resilience, personality and psychiatric symptoms in young adults using a five-factor inventory developed by Costa and McCrae (1992), the Coping Inventory for Stressful Situations, Connor-Davidson Resilience Scale and a childhood trauma questionnaire. They found that resilience was negatively correlated with neuroticism, and positively correlated with extraversion and conscientiousness. Task-oriented coping was positively associated with resilience and mediated the relationship between conscientiousness and resilience. Emotion-oriented coping was associated with

low resilience. At the other end of the developmental continuum, Windle, Woods, and Markland (2010) argue that the role of a resilient personality, or what has been termed a 'resilient self' (p. 773) in an older population (aged between 50 and 90 years old) has been shown to be valuable for maintaining well-being under conditions of poor health in later life.

Just as our understanding of social-ecological processes has had to adapt to emerging research on genetics and biology, models of personality have also shifted from dynamic to multidomain. Cloninger, Svrakic, and Przybeck (1993) and Cloninger (2000) have provided a bio-psycho-social personality theory influenced by genetics (human, animal and evolutionary studies), psychology (learning theory, cognitive psychology, psychophysiology, personality theory) and psychiatry (nosology, psychopharmacology). It consists of both temperament and character domains. The model assumes a steady, nonlinear interaction between personality domains which are bipolar conceptualizations and the changing cues from the environment. The varying dominance of the different personality domains depends on the internal and external situation causing adaptations in emotional and behavioural actions (Cloninger, Przybeck, Svrakic, & Wetzel, 1994).

This ongoing shift in how personality is conceptualized addresses the same challenges posed to the study of resilience and microlevel processes. If personality is genetically heterogeneous and parts of it, like the various temperament traits, independently inherited (determined by different genes), then how much do environmental stimuli and variability in living conditions shape temperament and character under stress? In one investigation by Ghazinour, Richter, and Eisemann (2003) with Iranian refugees resettled in Sweden, they found that resilient refugees are characterized by low harm avoidance, high self-directedness and high cooperativeness scores. This enables them to develop effective coping strategies to obtain sufficient social support in a context of marginalization. Such findings raise the possibility that personality changes depend on context, or at the very least, that different aspects of personality become more prominent when context changes.

Like the individual's personality, microsystemic family processes are particularly well studied and buffer or moderate stressful life events and functional outcomes of family members. Sheridan, Eagle, and Dowd (2006) identified two main structures and a number of subdomains important to resilience among family members that builds on work by Patterson (2002) and Walsh (2006). Among these structures are (a) family cohesion and (b) family adaptability.

Family cohesion is characterized by both emotional bonding between family members and the level of independence they feel with one another. Aspects of emotional attachment, monitoring of family member's actions (Dishion & McMahon, 1998; Tragesser,

Beauvais, Swaim, Edwards, & Oetting, 2007) and showing an active interest in one another are among the many interactions observable among more resilient family units. For example, Mueser et al. (2009) showed that, whereas, individual factors like severity of drug abuse and being male predict whether someone with concurrent disorders (addictions and mental health challenges) continues in treatment, it is the engagement and motivation of *the family* that makes it more likely the individual with the addiction participates in treatment.

This association between family processes and resilience can be further demonstrated through studies of parenting effectiveness among mothers who were under the age of 21 when their first child was born. In one study (Easterbrooks, Chaudhuri, Bartlett, & Copeman, 2011), where resilience was defined as lack of child maltreatment by the mothers towards their children and socioeconomic factors were controlled for, the most resilient mothers were those *less likely* to live with their family of origin or rely on their own mothers as sources of emotional support. This distancing from the source of their own risk (the young mothers often reported conflict at home), however, came at a price. Their resilience was associated with higher rates of depressive symptoms, but no increases in child maltreatment. Such findings suggest that flexibility is required when understanding resilience in diverse social ecologies. Although we do not typically think of depression as co-occurring with resilience, such outcomes are possible when we look at resilience as a broader set of interactional multilevel protective processes.

Family adaptability, a second dimension of family resilience, is the family's capacity to show flexibility during times of stress (Walsh, 2006). Related to this adaptability is parenting style, approaches to problem-solving and how beliefs and values are transmitted. For example, Ryan and her colleagues (Ryan, Russell, Huebner, Diaz, & Sanchez, 2010) showed that experiences of family acceptance when adolescents disclose their sexual orientation as gay, lesbian, bisexual or transgendered are related to young adults self-reporting three times fewer high-risk behaviours such as drug use, HIV-related risky sexual behaviours, depression and suicidal thoughts. In this case, the positive quality of acceptance by family members is particularly protective against the stress and stigma associated with 'coming out.'

Other research on microsystemic processes beyond the family demonstrates similar patterns of positive development through relationships. Resilience is more likely to occur among youth who engage with a religious institution (Donnon & Hammond, 2007), associate with prosocial peers (Mikami & Hinshaw, 2006; Shamai & Kimhi, 2006), and who experience a feeling of belonging at school (Shin, Daly, & Vera, 2007; Theron & Engelbrecht, 2012). Resilient children and youth are often those

who have teachers who accept, respect and trust them, as well as those who are provided opportunities to express themselves inside institutional settings (Bernat, 2009; Ungar, 2009; VanderVen, 2004). Payne, Gottfredson, and Gottfredson (2003) showed that schools that have extracurricular organizations (in which informal social relations, shared norms and goals and personal commitments are high) exhibit less school disorder (delinquency and youth and teacher victimization) than schools without supportive environments for their students.

These microsystemic processes, however, display a great deal of heterogeneity across cultures. For example, a study of Japanese youth-in-care showed that successful childrearing reflected the ability of caregivers to help children find 'Ibasho,' a place where the child 'feels safe, at ease, accepted, and able to freely express oneself' (Bamba & Haight, 2011, p.6). Practices such as allowing children in group homes to sort out their own problems without adult intervention, and a strong belief in the need for children to experience a sense of belonging inside the institution create a culturally distinct set of practices that children themselves argue encourage positive development.

Meso-systems and resilience

Meso-systemic processes associated with resilience include interactions between microsystems, such as families, schools and religious communities. For example, mutually supportive interactions between microsystems are associated with positive youth development (Lee, 2006; Lerner, Dowling, & Anderson, 2003). Youth who are at the greatest risk for externalizing problem behaviours do better when their educators (the school microsystem) and caregivers (the parent microsystem) communicate regularly (Nix, Pinderhughes, Bierman, & Maples, 2005). They are also more likely to disclose abuse when they have access to nonkin adults who are part of community subsystems such as their peers' caregivers or the police (Ungar, Tutty, McConnell, Fairholm, & Barter, 2009). Likewise, youth-in-care and young people with complex needs receive better service (e.g. continuity in their relationships with caregivers, culturally relevant services, empathy from workers) and report better psychosocial outcomes (school engagement, less disordered conduct) when their social workers and mental health care providers communicate across systems (Cheung, Goodman, Leckie, & Jenkins, 2011).

These multiple systems themselves form complex triangles in which microlevel systems such as families, community organizations and peer groups exchange resources in ways that enhance an individual's growth and mitigate risk exposure (Ungar, 2012). For example, it is common that children apprehended from their parents following neglect or abuse fail to attach to their foster care providers. This

results in a cycle of delinquency or violence that involves them with the justice system (Quinn, 2004; Stern & Smith, 1999; Smith, Lizotte, Thornberry, & Krohn, 1995; Ungar, 2005).

Although the potential interactions are numerous, there has been relatively little resilience research that examines meso-systemic interactions. More often, microsystemic proximal processes are examined in isolation from each other. To study meso-systemic processes, the focus must shift from the individual to the interactions between systems. For example, the well-being of demobilized child soldiers (and urban gang members) is related to their reintegration with their family or community (microsystemic processes) and the interaction between the child's family, school, community and the nongovernmental organizations that are facilitating demobilization (Betancourt, 2008; Okamoto, 2001).

Exo-systems and resilience

The exo-system refers to the many different distal social interactions that have the potential to influence child development indirectly. According to Bronfenbrenner (1979), exo-systems shape the quality of meso- and microsystemic interactions. For example, communities that facilitate social networks between parental microsystems (Cowan, Cohen., Cowan., & Pearson, 1996) provide caregivers with a set of potentially supportive relationships that makes it easier for them to sustain the provision of quality childrearing. Research conducted by Emery and Laumann-Billings (1998) showed that families that are socially isolated because they have few links to broader social networks (e.g. being active in associations, access to information in different setting) or community-based activities, and who are affected by structural barriers such as unemployment, show increased rates of conflict and child abuse (MacKenzie, Kotch, & Lee, 2011).

Research by Gracia and Musitu (2003) showed that these patterns are observable across cultures. The authors conducted an investigation in Spain and Colombia with 670 nonabusive and 166 abusive families. In the study, parents were asked about their level of community social support, membership in voluntary organizations, community participation and use of community resources. Results indicate a relationship between community social support and child maltreatment. In both cultures, abusive parents showed lower levels of community integration, participation in community social activities and use of formal and informal organizations than parents who provided adequate care.

Despite these examples of exo-systemic influences on resilience, these processes tend to be examined by researchers in the fields of sociology, community development, disaster relief and political change where the focus is not the individual, but the interconnections between environmental change and

meso-systemic adaptations that increase child well-being. This other literature, for example, has investigated how the structural barriers that immigrant parents face, including long commutes to their places of employment, poor wages and inadequate housing, predict the quality of parent-child interactions (Yoshikawa & Kalil, 2010). Likewise, neighbourhood factors such as social cohesion and the transience of residents, more than the economic status of the families living there, influence the ability of a community to provide the safety and supports children require to develop future aspirations and engage at school (Sroufe et al., 2005; Theokas & Lerner, 2006). Likewise, studies of South African orphans whose parents died of AIDS are challenging the notion that children are abandoned. Cultural practices that express 'Ubuntu' (a quality of community or extended family obligations to care for one another) create structures that support the housing, feeding and educating of children who in other countries might become homeless or institutionalized (Theron, 2007; Van Graan, Van der Walt, & Watson, 2007). North American equivalents among Aboriginal peoples in which neglected and abused children are provided kinship adoptions that allow them to remain in their communities and among their same-culture peers (Blackstock & Trocmé, 2005) is another example of structural, or exo-systemic, responses that help meet the needs of children at risk.

Macrosystems and resilience

Macrosystems refer to those aspects of the social ecology that form the cultural backdrop to a child's bio-psycho-social development. As the level of abstraction becomes greater, however, it becomes increasingly difficult to isolate particular independent variables that are related to resilience like transmission of culture, a family support policy or an antistigma intervention. What remain available for measurement are only the functional indicators of a child's participation in what Habermas (1979) described as the lifeworld of the everyday: school attendance and other socially normative behaviour like avoidance of substance abuse.

Despite this limitation, a number of studies can be used to construct an argument for the connection between values, collective beliefs and successful child development under stress. For example, much has been written about the connection between values transmission between parents and children and prosociality (Lerner & Benson, 2003), and between participation in religious organizations and children's delay of sexual initiation (Belgrave, Oss Marin, & van Chambers, 2000; Saewyc & Edinburgh, 2010). While these proximal processes are evidence of microsystemic interactions, they are also manifestations of a society's coconstruction of values and the social order that they shape. Specifically, there

are a number of authors, often working at the level of policy, human rights or international development, who have used the concept of resilience to demonstrate a link between values, social structures and individual child outcomes (Betancourt, Brennan, Rubin-Smith, Fitzmaurice, & Gilman, 2010).

Child labour, for example, is difficult to prevent without acknowledging the *benefits* children say they derive from their work in contexts where access to formal education is limited (Liebel, 2004). Although forms of child labour that are extremely dangerous to a child's healthy development (e.g. child prostitution, child soldiers, factory work) should be stopped, regardless of a child's perception of benefits, ending less dangerous forms of work could create unintended consequences with regard to children's poverty and future economic security. In contexts where the work is viewed by the child's family and community as socially acceptable, and the child experiences financial gain and vocational training, children's experience of their exploitation has been shown to be a source of resilience (Liborio & Ungar, 2010). Work, rather than formal schooling, becomes the basis for feelings of self-efficacy, optimism and helps to secure access to material resources.

More conventional expressions of macrosystemic processes related to resilience can be observed among first-, second- and third-generation immigrants. Countering the narrative of acculturation as desirable, research on the mental health of immigrants shows a decline in children's and adults' mental health and less prosociality as adherence to the culture of origin decreases (Berry, Phinney, Sam, & Vedder, 2006; Rudmin, 2006). First- and second-generation parents who raise their children with imported values and continue to maintain the traditions and contacts with extended family that reinforce cultural adherence are likely to have children who are less delinquent (Driscoll, Russell, & Crockett, 2008; Juang & Nguyen, 2009). Likewise, rates of depression increase among immigrant adults the greater their level of acculturation into the norms and expectations of the dominant culture (Grant et al., 2004).

Chrono-systems and resilience

As resilience is conceptually linked to risk, it is logical that the nature of that risk will have socio-historical (temporal) dimensions. There are many longitudinal studies of resilience, although few explicitly accounted for changing historical factors (Schoon, 2012). Among the exceptions is work by Laub and Sampson (2003) on the life paths of the delinquent boys originally interviewed by Eleanor and Sheldon Glueck in Boston in the 1930s, and Schoon's (2006) meta-analyses of UK data from the 1958 National Child Development Study and the 1970 British Cohort Study. These studies account

for the changing social, economic and political contexts which their participants experienced. In Laub and Sampson's case, they found that among the men in their late sixties whom they could locate, who had histories of violent and nonviolent offending as boys, but stopped their criminal activity during their adult years, that military service and a long-term relationship with a committed partner were contextually relevant protective factors associated with higher rates of employment and better mental health.

Likewise, Schoon (2006) found that: 'Although individuals may manifest resilience in their behaviour and life patterns, resilience is not a personality characteristic. Adaptive functioning in the face of adversity is not only dependent on the characteristics of the individual, but is greatly influenced by processes and interactions arising from the family and the wider environment. Individual development is continually produced, sustained and changed by the socio-historical context experienced' (p. 16). Schoon's findings, using a very different methodology from that of Laub and Sampson, show much the same results. The impact of a life event (like incarceration or abuse) will depend on the individual's stage of development and the historical context in which the event occurs, mitigating or extending the event's impact. For example, school completion during a time of economic recession may be more advantageous when the labour market is tight than in a boom economy where individuals without a high school leaving certificate can find gainful employment.

Similar processes could be found after the dramatic societal changes in Germany and Eastern Europe after 1989. In a comprehensive follow-up study of German adolescents and young adults, depressive symptoms were mainly predicted by personal resources (optimism, self-efficacy and exploration), social resources, the interaction between work demands (school-related demands included) and optimism and the interaction between family demands and social support (Grüner & Pinquart, 2011; Silbereisen et al., 2006). Problem-focused coping was reported to have a positive, but weak relationship to subjective well-being in economically disadvantaged regions when compared with regions with better economies. Individuals living in economically strong regions, however, reported lower subjective well-being when faced with a high number of work-related demands (unemployment or worries related to becoming unemployed) resulting from the changing social context (Pinquart, Silbereisen, & Körner, 2007; Silbereisen et al., 2006). Although such examples are indicative of the sociohistorical nature of resilience and its contextual specificity over time, as with exo-systemic and macrosystemic processes, the literature connecting these broader effects of the social and political ecology on individual resilience in stressful environments requires further study.

Embracing the complexity of multiple systems

Advances to the theory of ecology have moved us from tiered and nested conceptualizations of natural phenomenon to chaotic models that emphasize the intrinsic value of each part of a system (Devall & Sessions, 1994). The garden slug is now understood to be as important to a system's potential for allostasis as a fox, hawk or human. Each element of complex systems is both a whole and an incomplete expression of the other. Bronfenbrenner proposed an ecological model at a time when each element of a system was judged for its utility, or function. Bronfenbrenner (1988; 2005) himself understood the limits to this conceptualization and very early on suggested that his model, despite its apparently hierarchical structure, was never meant to make any one system subordinate to another; meso-systemic processes were not, for example, meant to be any less important than exo-systemic processes. Instead, system interactions across levels were understood as complex and the boundaries between levels diffuse. This was made even more evident when Bronfenbrenner integrated biological phenomena into his ecological model.

This shift in thinking is important as diagrams with neatly drawn concentric circles misrepresent what research shows. In fact, the nature of any single system is to always be in a reciprocal relationship of dependency and influence with all the other systems. The notion that systems are nested is a heuristic that imposes unnecessary order on phenomena that resist determinism. For example, we commonly think of the family as nested inside community institutions like tax laws that define households. One could imagine though, a more reciprocal, nonhierarchical relationship between these subsystems. For example, Sroufe et al. (2005) have shown that neighbourhood disadvantage does not necessarily make families less functional. In fact, in some instances, family patterns of engagement in poor communities create conditions for well-being that actually mitigate the impact of poverty and promote a set of values that become an identifiable characteristic of the local culture of the neighbourhood. It is the outsider who assumes that the family is the smaller unit of analysis and the economic structure broader and superordinate.

The implication of this less hierarchical interpretation of systems for a social-ecological understanding of resilience is particularly important as processes that potentiate positive development under adversity have been shown to be unpredictable unless one accounts for the complexity of both the risks facing individuals and the multiple reciprocal relationships between elements of the individual's environment (Masten & Obradović, 2006; Rutter, 2012; Ungar, 2011a,b). This understanding of resilience posits that individuals are not always the most important locus for change in complex systems and that resilience may have far more to do with

adaptation of micro-, meso-, exo- and macrosystems than with changes at the level of individuals [recall Ryan et al. (2010) work on family acceptance and how family accommodation to change predicts a young adult's mental health, regardless of the young person's motivation to be healthy].

A recent volume of studies on the social ecology of resilience (Ungar, 2012) highlights many of these same patterns. Contextual and cultural factors were shown to influence girls violence and resilience (Hine & Welford, 2012) and create both vulnerability and resilience among maltreated children (Wekerle et al., 2012). Schools, meanwhile, and the political ecologies that determine the allocation of resources for education and other social interventions account for the successful development of children who experience economic disadvantage and social exclusion (Bottrell & Armstrong, 2012). Interestingly, these patterns are shown through studies of populations drawn from upper income countries and lower and middle income countries (e.g. South Africa, Afghanistan, Cambodia), and indigenous peoples and immigrants in higher income countries.

Three principles for a social ecology of resilience

Based on this global body of resilience research, we can elaborate three principles that contribute to a less heuristic view of resilience: equifinality; differential impact and cultural moderation.

Equifinality. In a game of cards, all suits are equally important to the game, but under specific circumstances one suit can become far more influential to the outcome. A very similar pattern was observed by Bronfenbrenner and Ceci (1994) who explained that one's environment can be just as influential as one's biology under specific circumstances. A bioecological model of human development suggests that gene x environment interactions (proximal processes) are those through which 'genetic potentials for *effective* psychological functioning are actualized' (p. 568). The actual manifestation of heritability is, however, complicated by the nature of the environment and its potential to facilitate gene expression.

In the case of resilience, studies that capture the complexity of systemic interactions show that microsystemic processes tend to be less predictive of positive outcomes than the meso- and macrosystemic interactions that trigger individual responses to stress (e.g. Weine, Levin, Hakizimana, & Kahn-Weih, 2012). In other words, we find support for a 'decentered' understanding of resilience in which changing the odds stacked against the individual contributes far more to changes in outcomes than the capacity of individuals themselves to change (Ungar, 2011b). Once again, Bronfenbrenner's model of progressively more diffuse systems can help organize the evidence.

We have, for example, already shown that epigenetics informs an understanding of resilience in which environmental triggers can shape gene expression and brain plasticity in ways that predict positive adaptations under stress (Perry, 2009). Latent capacities are much more likely to manifest when there are opportunity structures for their expression (Peters, 2005). In this regard, Nagin and Tremblay's (1999) work on childhood aggression and development has shown that the reduction in children's aggression depends on a consistent and compassionate environment to socialize the child into prosocial behaviour. A child is at risk of continuing to be aggressive because of interaction with a failing environment, not because of any flaw in the child's temperament or character alone. In this case, differences in microlevel processes at home and school that could teach emotional modulation are the best predictors of a resilient child who shows less aggression later in life despite aggressive tendencies during early childhood. Longitudinal studies of gene x behaviour interactions like that by Caspi and his colleagues (Caspi et al., 2002) have demonstrated similar trends, with a genotype that confers low levels of neurotransmitter-metabolizing enzyme monoamine oxidase A (MAOA) being associated with less likelihood of conduct disorder among youth with a history of childhood maltreatment.

At a microsystemic level, there is the same opportunity for many different systemic interactions to influence positive developmental outcomes that are sometimes misattributed to a child's temperament alone. A study of 211 high-risk adolescents, for example, showed that the youths' attitudes and behaviours related to school could be predicted by the level of parental monitoring that the young person received (Annunziata, Hogue, Faw, & Liddle, 2006), but that this relationship depended on the family's level of cohesion. Parental monitoring in more cohesive families affected school engagement positively. However, high cohesion in families where there was little monitoring of the children's activities had a neutral or negative effect on school engagement. Furthermore, although family cohesion and parental monitoring predicted school engagement, both aspects of family functioning did not predict higher grade point averages (GPA) even though children attended school more frequently. Such complex patterns suggest that a single outcome such as a child's motivation to learn and performance at school (both aspects of functioning often associated with resilience) are in fact predicted by different environmental conditions, some more distal than others. Even GPA, which is associated with individual capacity, has been shown to be related to microsystemic processes like how well the family readies a child for school and the education level of the mother responsible for a child's early education at home (Obradović, Bush, Stamperdahl, Adler, & Boyce, 2010).

The quality of other systems such as municipal taxation, the organization of school boards and cultural values regarding the educating of boys and girls, also shape school engagement and possible GPA. Not all environments, however, are equal in their capacity to facilitate growth. As Bronfenbrenner and Morris (2006) observed, heritability is specific to a population, although the expression of personal traits may be largely the result of how the environment imposes controls or facilitates social interactions (e.g. poverty, war, cultural values surrounding parent–child attachment, etc.). Advantaged environments, therefore, produce conditions that allow for more individual potential to be realized. What remains unknown is whether those living in resource poor environments have more potential to grow or whether their poverty is actually the outcome of social processes that reflect interactions with genetic predispositions (an admittedly contestable and degrading assumption that has the potential to blame victims of oppressive social and economic structures for their marginalization because of their genetic profile). A long history of intervention efficacy suggests otherwise. In fact most of the variation in changes to an individual's behaviour over time can be attributed to early interventions and sustainable aftercare (Garland, Hough, Landsverk, & Brown, 2001).

Differential impact. Protective and promotive factors that facilitate human development exert a differential impact across contexts and time. This differential impact is the result of both people's perceptions of the resources available to them and the opportunity structures that make it more or less possible for them to exploit fully the resources that become available and accessible. It also reflects their possible differential susceptibility to risk factors that can be related to gene expression (Belsky, Bakermans-Kranenburg, & van IZendoorn, 2007; Belsky and Pluess, 2009a,b).

Herein lies a significant point of divergence between positive psychology and the study of resilience. A promotive factor like self-efficacy, a mentor or smaller class sizes, may have a small positive effect across an entire population, but either have no effect or a much larger effect than expected, when that same factor is present in the life of an individual facing high levels of adversity. This is the kind of complexity a social-ecological model of resilience captures far better than narrower models that explain human development based on assumptions of homogeneity in the way individuals from different contexts will respond to stress. For example, Fergusson and Horwood (2003) make the distinction between protective processes (those that are beneficial to those exposed to risk factors, but of no benefit to those not exposed) and compensatory processes (the resilience factor is equally beneficial to those exposed and not exposed to adversity). They report results from a 21-year study,

the Christchurch Health and Development Study, with an unselected birth cohort of 1,265 children born in 1977 in Christchurch New Zealand. Their results show that what is and is not a source of resilience is highly contextual and interactive with the risks posed: 'When externalizing and internalizing in adolescence are considered, it is apparent that each sex has what appear to be gender-specific strengths and vulnerabilities, with femaleness providing resilience to externalizing but vulnerability to internalizing ... The results show that what may confer resilience to one outcome may increase vulnerability to another' (p. 147).

This differential impact can also, controversially, contribute to very complex negotiations between those who are marginalized and those who exercise control over the description of what is a prosocial developmental outcome in a challenging context (American Psychological Association Task Force on Resilience and Strengths in Black Children and Adolescents, 2008; Stevens, 2002). By way of illustration, the ability to 'code switch' when transitioning between one cultural group and another are skills related to sustaining a positive identity and sense of control as the minority. People change how they speak and the language they use, adopting the dominant form of communication when it is advantageous to do so (Arthur, 1996; Jia & Aaronson, 2003). These are skills that only cultural minorities typically develop (we could say that cultural minorities show strengths in this area). Positive psychology, on the other hand, has tended to focus study on population-wide factors that reflect only the majority culture (see, for example, Peterson, Park, Pole, D'Adrea, & Seligman, 2008), perhaps because the lack of capacity in skills useful to minorities would rightly show deficits in those who perceive themselves as being of the majority and more competent. To illustrate, although there is little research that relates language acquisition skills to resilience, we would expect that in a country like the United States immigrants and minorities would be much better able to adapt if they were bilingual or multilingual (Jia & Aaronson, 2003). And yet we do not measure the *absence* of bilingualism or multilingualism as a deficit among American school children, the majority of whom enjoy the privilege of being of Anglo-European descent. Herein lies the need to understand how a protective factor (e.g. language proficiency in two or more languages) can have a negligible effect on a population as a whole, but exert a differential impact and skew developmental outcomes among those who are likely to be socially excluded.

This argument goes even further when we consider behaviours that may be socially undesirable, but which are perceived as functional by a minority population who are socially oppressed. An interesting example of this contextualized understanding of resilience is the tendency of minority youth (e.g. African Canadian, Aboriginal) who, because of

histories of systemic injustice, have tended to perform poorly at school and exit before graduation. By their own account, these youth say that leaving a situation where they feel their self-esteem is threatened, and where they perceive opportunity structures as weak even if they finish high school and seek employment, is a protective strategy that helps these adolescents maintain a sense of self-esteem and self-worth. Although longer term a strategy of early school leaving does not give young people a social advantage, in the short term this behaviour may be adaptive in a particular sociohistorical context (Dei, Massuca, McIsaac, & Zine, 1997).

Finally, the principle of differential impact also explains why the provision of human services is so important to the disadvantaged, but has little impact on developmental outcomes among those who face little adversity. Browne's (2003) work illustrates this difference. In an effort to provide lower SES children and those involved with child welfare services with access to extra-curricular activities, funds were provided to help children participate in activities after school. The programme received returns on the investment through decreased demand for medical services and mental health counselling. Investments in services do not, as a rule, exert a significant impact on children who face fewer risks.

Cultural moderation. Although implicit in the above two principles, the tension between cultural homogeneity and heterogeneity means that how individuals navigate and negotiate for resources is influenced by culture (Chen & Rubin, 2011). As understood here, culture is a subset of contextual factors, manifest as everyday practices, beliefs and values that shape people's cognitions and behaviours (Rogoff, 2003). Berry's (1979) ecocultural framework is relevant to understanding the specificity of the interactions described in Bronfenbrenner's description of a bioecological model of human development. Berry and Poortinga (2006) challenge the 'culture-bound and culture-blind' way psychology has been practiced, showing that behaviour, culture and biology interact in a manner that is adaptive to the ecological and sociopolitical context in which individuals live. It is particularly noteworthy that Berry acknowledges the need to look inside cultures that are not well studied to identify processes that predict psychological well-being. In this sense, an appreciation for the way context and culture moderate resilience (Davydov, Stewart, Ritchie, & Chaudieu, 2010) makes research in this field a political act that acknowledges that those who are marginalized may have far less power to influence the discourse that defines adaptive coping under stress and the way resources are provided to meet their needs.

Appropriate stages of development and concepts like parentification, for example, are tainted by western bias that defines appropriate roles for children despite the evidence that immigrant youth may

do better developmentally when they remain enmeshed with their families and are required to compensate for weaknesses in their parents (Burton, 2007; Walsh, Shulman, Bar-On, & Tsur, 2006). The ecocultural perspective, like a social-ecological understanding of resilience, supports two propositions. First, all societies exhibit commonalities (or what Berry terms cultural universals) like attachment and a search for efficacy. Second, behaviour is expressed differently in response to the demands of culture and context.

Culturally embedded, or *emic*, aspects of resilience vary to the extent that cultures collide and either celebrate heterogeneity or homogeneity. For example, when Chen and his colleagues (Chen, DeSouza, Chen, & Wang, 2006) examined the construct of shyness among Chinese youth in the mid-1990s, they found it to be a valued trait among young people and teachers alike. A decade later, however, studying the same construct in China's new market economy, Chen et al. found that youth who were shy were thought to be more at risk than their individually motivated, entrepreneurial and outgoing peers. In other words, a universalist principle that applies across capitalist societies, regardless of culture, would support the notion that certain temperaments are more functionally adaptive (protective) in certain economic contexts. This *emic*, or culturally specific, approach to resilience promotes the indigenization of knowledge and argues that any comparisons made between cultures are by their nature expressions of ethnocentrism by those who are doing the observing (Rogoff, 2003; Smith, 1999).

Some balance is required between *emic* and *etic* perspectives. There are, arguably, universally held values such as those concerning severe forms of child abuse and the need to protect children from their parents in such instances (Korbin, 2002). There is also a need to appreciate that different cultural groups express themselves in ways that may cause them to be under the surveillance of those who define what is socially acceptable behaviour (e.g. parenting practices). It is the tension between these two positions that research across cultures is exploring (Ungar, 2008; Ungar et al., 2007).

Ecologically informed intervention and policy

With these three principles of a social-ecological understanding of resilience in mind, it is possible to discern a number of implications for both the design of interventions and social policy. For example, research by Stern, Smith, and Jang (1999) looked at the relationship between poverty, life stressors and isolation on parent mood that disrupts family processes and was hypothesized to result in adolescent internalizing and externalizing problems. Using data from the Rochester Youth Development Study that examined the development of delinquency among 4,013 urban youths, they found that higher parent

distress related to poverty and illness could account for 28% and 29% of the variability in internalizing and externalizing problems respectively. The findings suggest that an effective way to address these problems is by helping the parents of adolescents in contexts of disadvantage rather than helping the adolescents themselves.

The challenge, of course, is conducting evaluations on programmes like this where the focus is on processes that are decentred from the focal population (the youth). An environment-focused rather than child-centred approach to intervention emphasizes changes to the environment in ways that potentiate child development. Currently, there are many examples of such programmes with an emerging evidence base, such as parent support initiatives (Cowan et al., 1996), parent–school liaison programmes (Duque, Klevens, Ungar, & Lee, 2005; Nix et al., 2005), Wraparound initiatives for families involved with child welfare services (Burford & Hudson, 2000) and programmes oriented towards community responses to trauma (Landau, Mittal, & Wieling, 2008). Their efficacy suggests it is changes to a child's social ecology that create the conditions for resilience to occur that most influence developmental trajectories of individuals.

A multisystemic social-ecological theory of resilience provides a way of thinking about interventions that focuses on factors amenable to change but avoids the simplistic solutions of child-focused interventions that have poor long-term outcomes. These poor outcomes are often attributable to a lack of case planning over time or an inability to take what is learned during clinical sessions and sustain those changes in real-world contexts (Quinn, 2004). Change becomes less individual and more political.

For example, school disengagement among minorities is a serious concern in the United States and minority status can make children feel like they are not fitting in. In Marx's (2008) ethnography of one western US secondary school where just 5% of the school population is Latino, observations showed how immigrant students experienced a high degree of social exclusion. Implicit in the social organization of the school was the message that 'without rejecting their cultural, racial, ethnic, and linguistic identities' (p. 83) these students could not fully belong. Their identities as other than the dominant ethnoracial group were ignored. Even the English as a Second Language classroom had decorations that represented the teacher's interest in Chinese culture but no visual representations of the students' own identities. Similar research with Latino youth has found the same pattern (Patterson, Hale, & Stessman, 2007). Children are blamed for dropping out even when objective assessment of their school environments shows it to be actively and passively excluding them. If resilience is understood, in part, as the process of identification with one's culture and the construction of a positive sense of self-worth, one

sees the need for intervention with the institution, not a programme focused on helping children change their cognitions and behaviours in contexts that marginalize them. This is especially so when interventions fail to provide resources to alter the environments to which individuals return posttreatment (Lourie, Stroul, & Friedman, 1998; VanDenBerg & VandDenBerg, 2005).

Returning to earlier arguments, research across disciplines and in very different environmental niches supports the need to acknowledge systemic complexity when designing interventions and social policy. Continuing with the theme of engagement in educational settings and immigrant populations, chrono-systemic factors also influence patterns of school attendance that are linked to resilience among immigrants. Suárez-Orozco, Rhodes, and Milburn (2009) conducted a longitudinal study with a sample of 309 ethnically diverse early adolescent newcomers in seven school districts in Boston and San Francisco. Relational engagement declined for all ethnic groups over 5 years, though there were differences depending on both the ethnicity of the student and whether they were first- or second-generation immigrants. Among first generation, youth engagement was best accounted for by a relationship with an adult at school, respectful treatment by teachers, a friend to help with homework, teachers who cared about the child's success and school being perceived as a place where children felt they belonged and where they experienced no conflict with others. Engagement scores differed by ethnoracial group, with Chinese and Mexican students reporting the lowest levels of relational engagement, although lower levels of engagement predicted lower academic performance only for the students of Mexican descent.

From a policy point of view, what the resilience literature is showing is that there needs to be a link between public policy and the behavioural and social sciences. Recent efforts to link 'neurons to neighbourhoods' (National Research Council & Institute of Medicine, 2000), Head Start school readiness programmes for disadvantaged children, studies of the effects of early childhood adverse events on disease in adulthood (Anda et al., 2006) and dozens of other such initiatives are threads that weave together a paradigmatic shift from a focus on disorder to a focus on flourishing (Keyes, 2002). As Lerner (2005), in his review of Bronfenbrenner's contribution to developmental science, notes: 'The recognition that developmental processes are profoundly affected by events and conditions in the larger environment accords major importance to public policies and practices that influence the nature of the environment and, as a result, have significant effects, often unintended, on the development of children growing up in families, classrooms, and other settings' (p. xxviii). Children are not usually born resilient: they are made resilient through the many different

interactions with their social and physical ecologies. These aspects of their environment depend on social policy and structures to make resources available.

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Correspondence

Michael Ungar, Dalhousie University, 6420 Coburg Rd., P.O. Box 15000, Halifax, Nova Scotia B3H4R2, Canada; Email: michael.ungar@dal.ca

Key points

- Bronfenbrenner's bio-social-ecological model of human development and Ungar's social-ecological model of resilience are both multisystemic. Results from decades of resilience research can be sorted into bio-, micro-, meso-, exo-, macro-, and chrono-systemic processes.
- A social-ecological understanding of resilience defines resilience as a quality of both individuals and their environments. Resilience is more likely to occur when individuals and groups are successful at navigating to resources that support them psychologically and physically and negotiating for these to be provided in ways that are culturally relevant.
- Three principles that help to explain a social-ecological model of resilience include equifinality (many good means to good ends), differential impact (different protective processes influence resilience differently depending on the individual's exposure to risk) and contextual and cultural moderation (protective processes are valued and made available differently in different contexts and cultures).
- Interventions to facilitate optimal human development and well-being in contexts where children face adversity are most effective when they reflect the complexity of a multisystemic view of human development and resilience.

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