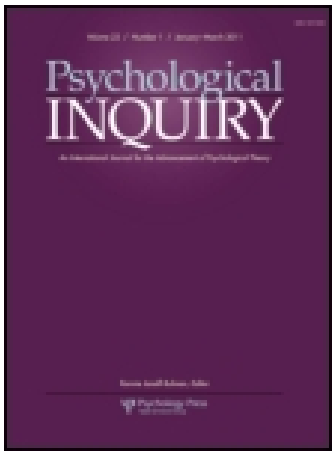

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The Temporal Elements of Psychological Resilience: An Integrative Framework for the Study of Individuals, Families, and Communities

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The Temporal Elements of Psychological Resilience: An Integrative Framework for the Study of Individuals, Families, and Communities

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Psychological resilience has become a popular concept. Owing to that popularity, the word resilience *has taken on myriad and often overlapping meanings. To be a useful framework for psychological research and theory, the authors argue, the study of resilience must explicitly reference each of four constituent temporal elements: (a) baseline or preadversity functioning, (b) the actual aversive circumstances, (c) postadversity resilient outcomes, and (d) predictors of resilient outcomes. Using this framework to review the existing literature, the most complete body of evidence is available on individual psychological resilience in children and adults. By contrast, the research on psychological resilience in families and communities is far more limited and lags well behind the rich theoretical perspective available from those literatures. The vast majority of research on resilience in families and communities has focused primarily on only one temporal element, possible predictors of resilient outcomes. Surprisingly, however, almost no scientific evidence is actually available for community or family resilient outcomes. We close by suggesting that there is room for optimism and that existing methods and measures could be relatively easily adapted to help fill these gaps. To that end, we propose a series of steps to guide future research.*

Key words: adversity, community, family, resilience, trauma

Interest in the human capacity for resilience in the face of aversive life events has grown exponentially. Although the term *resilience* has been in broad use for centuries, it was only in the past several decades that it gained currency as a psychological construct. The last decade, in particular, has witnessed a surge of research and theory about psychologically resilient functioning (Bonanno, 2004; Bonanno, Westphal, & Mancini, 2011; Cicchetti & Rogosch, 2012; Fergus & Zimmerman, 2005; Luthar, 2003; Masten & Narayan, 2012). A graph of the frequency with which the word resilience or its variants (e.g., resiliency, resilient) have appeared in titles of social science journals poignantly illustrates the recent and considerable spike in interest (see Figure 1). Along with the dramatic increase in focus, however, has come a corresponding growth in the way the term is used (Luthar, Cicchetti, & Becker, 2000). Resilience in the psychological sense has taken on multiple meanings in multiple contexts. For example, psychological resilience has been described as a global process related to the development and maintenance of healthy adaptation (Egeland, Carlson, & Sroufe, 1993; Norris, Stevens, Pfefferbaum, Wyche, &, Pfefferbaum, 2008); as a favorable outcome following adversity (e.g., Bonanno, 2004; Masten, 2007; Norris, Tracy, & Galea, 2009; Rutter, 2002); as a trait or aspect of personality, a "resilient" type (Smith et al., 2008); and as a more extensive cluster of capacities, characteristics, and resources (Aldrich, 2012; Norris et al., 2008). To compound this conceptual diversity even further, psychological resilience has been evoked in explanation of both acute and chronically stressful life circumstances (Bonanno & Diminich, 2013) and in divergent populations ranging from individual children (Masten, 2001) and adults (Bonanno, 2004), to families (Walsh, 2006, 2013), to larger neighborhoods and communities (Norris et al., 2008).

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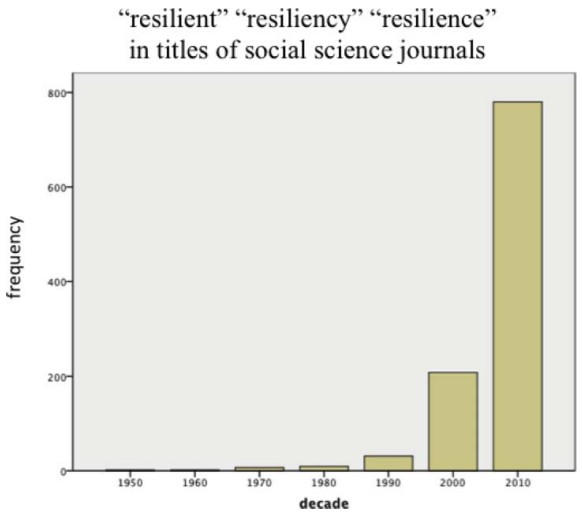

Figure 1. Frequency of the words "resilience," "resilient," or "resiliency" in titles of social science journals by decade.

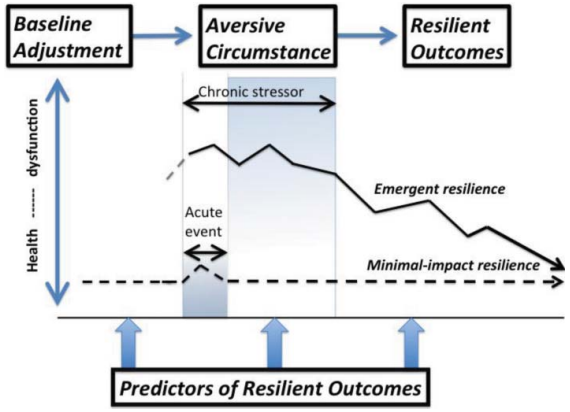

Figure 2. The temporal elements of psychological resilience.

It is tempting to conclude that with so many different and often overlapping meanings, the idea of psychological resilience may have lost its usefulness. Indeed, we would agree that the word *resilience*, when used in isolation to label a single, ostensible construct, lacks sufficient conceptual and scientific precision to drive further inquiry. But we are not proposing to throw the baby out with the bathwater. To the contrary, we believe that the study of psychological resilience still holds considerable scientific utility. We argue, however, that the concept's utility is best realized as a broad, umbrella phenomenon that encompasses a number of elements. Moreover, these elements are temporally related and cannot be accurately understood in isolation (Bonanno, 2004; Cutter et al., 2008; Fergus & Zimmerman, 2005; Luthar et al., 2000; Masten & Narayan, 2012).

A number of researchers have proposed sequential models to help understand resilience to trauma, disaster, and other forms of adversity (Bonanno, 2004, 2005; Bonanno & Diminich, 2013; Carver, 1998; Cutter et al., 2008; Masten & Narayan, 2012; Norris et al., 2008). Our goal in the current article is to articulate a relatively simple model, consisting of only four basic temporal elements, that is broadly applicable across individuals, families, and communities (see Figure 2). These elements are (a) baseline or preadversity adjustment from which responses to adversity and ultimately resilient outcomes are referenced; (b) the actual aversive circumstances themselves; (c) postadversity resilient outcomes, referenced to both the aversive circumstances and baseline adjustment; and (d) predictors of resilient outcomes measured prior to, during, and after the aversive circumstances. By restricting our review to only these few skeletal elements, of course we risk oversimplification and therefore may fail to accommodate the complexity of these phenomena across contexts. On the other hand, an elemental approach offers two crucial advantages that we believe are essential for moving theory and research forward. First, the elemental approach provides a ready framework for integrating the various meanings of psychological resilience into a single unfolding process. We focus in particular on the "temporal" aspect of these elements because the process of being psychologically resilient is fully understood only when examined over the course of time (Bonanno et al, 2012; Luthar et al., 2000). Second, extending previous sequential approaches, the elemental approach provides a vehicle from which to review and critique the existing scientific evidence specific to psychological resilience. It is important to note that our intention is not to dismiss or replace previous conceptions of psychological resilience. Indeed, we propose the temporal framework as a guiding heuristic that can integrate somewhat disparate literatures, highlight knowledge gaps, and identify important avenues for further development and research. There is no reason to ignore theories about the capacity for resilience, for example, because undoubtedly there are myriad factors that might enhance or detract from that capacity. When viewed from a temporal framework, however, ideas about specific capacities may be examined under a more focused lens. We might ask, for example, what scientific evidence actually exists to support a hypothesized association between a particular resilience-promoting factor and good postadversity adjustment, or to show that a particular factor had actually facilitated adaptation to the adverse event.

Surprisingly, as we elaborate next, considering only this relatively simple scheme revealed substantial gaps in the literature. The most complete body of scientific evidence can be found in the literature on psychological resilience in individuals. By contrast, the research on psychological resilience in families and communities is far more limited and lags well

behind the rich theoretical and empirical perspectives available from those literatures. The vast majority of research on resilience in families and communities has focused primarily on only one temporal element, possible resilience-promoting factors. Surprisingly little research in this area has defined or measured resilient outcomes, in any systematic sense, or objectively tested the empirical relationship between the assumed predictors and those outcomes. At the close of the article, we propose a series of steps for future research that aims first to ameliorate existing knowledge gaps and then to consider more nuanced and complex relations among temporal elements.

Individuals, Families, and Communities

The idea of psychological resilience first began to appear in the 1970s as an explanatory principle for understanding sustainable ecological systems (Holling, 1973). Almost simultaneously, the concept also emerged in the psychology and psychiatry literature on early human development (Garmezy, 1972; Rutter, 1979; Werner, Bierman, & French, 1971; Werner & Smith, 1977). As a psychological construct, resilience was initially evoked to describe the large numbers of children who, despite growing up in highly aversive circumstance, nonetheless emerged as functional and capable individuals. Research in developmental psychology at the time was dominated by a focus on psychopathology and dysfunction. As research on resilience advanced, it helped to broaden developmental theory to encompass positive adaptation and adjustment. A growing literature on resilience using a life course perspective focused attention on individuals who had suffered multiple and prolonged adversities during childhood and adolescence yet nonetheless reached normative developmental milestones and eventually exhibited adult levels of competent functioning in social relationships, job performance, and other domains (DiRago & Vaillant, 2007; Gralinski-Bakker, Hauser, Stott, Billings, & Allen, 2004; Sampson & Laub, 1992; Vaillant & Davis, 2000).

A somewhat different perspective on psychological resilience began to emerge as the construct captured the attention of researchers and theorists who were primarily interested in the mental health and psychological well-being of trauma-exposed adults (Bonanno, Papa, & O'Neill, 2001; Bonanno et al., 1995; Bonanno, Wortman, et al., 2002: Ryff & Singer, 2002). In contrast to the focus on chronic adversity and long-term developmental milestones, the bulk of research on extreme adversity in adults has been applied in the context of single events, such as loss, potential trauma, or disaster. Typically, but not always, these events occur as isolated stressors in an otherwise normative or noncaustic environment. Not surprisingly, then, when researchers and theorists interested in individual adult mental health began making observations about resilience, the conceptual focus shifted from distal outcomes to relatively proximal patterns of healthy adjustment (Bonanno, 2004, 2005; Bonanno et al., 2001; Bonanno et al., 2011).

The concept of psychological resilience also began to spread beyond single individuals to encompass the broader contexts of family (Hawley & DeHaan, 1996; H. I. McCubbin & McCubbin, 1988; J. M. Patterson, 1988, 2002; Walsh, 1996) and community (Norris et al., 2008; Sonn & Fisher, 1998). In considering resilience among larger groups, the construct necessarily expanded to encompass wider social structures and behaviors. In the family literature, for example, these structures included family communication patterns (H. I. McCubbin & McCubbin, 1998), family problem solving and flexibility (Walsh, 1996), and family identity (J. M. Patterson, 2002). Similarly, the study of resilience in communities had led to the development of group-based concepts such as sense of community (Sonn & Fisher, 1998), social capital (Kawachi, 1999), and collective efficacy (Sampson, Raudenbush, & Earls, 1997).

The Temporal Elements of Psychological Resilience

We next consider each of the four basic temporal elements of psychological resilience (baseline or preadversity, the aversive circumstances themselves, postadversity resilient outcomes, and predictors of resilient outcomes) in greater detail, and at each of three levels of functioning: individual, family, and community. We present Figure 2 as a graphic illustration to guide this review.

Aversive Circumstances (Resilience to What?)

Articulation of the temporal elements of resilience begins with the aversive circumstances. Although the overall process of adapting to adversity may involve a number of factors along a temporal array, any single instance of psychological resilience must be referenced to an actual real-word event or series of events (Bonanno, 2004, Bonanno et al., 2012; Luthar et al., 2000). In other words, the crucial first question is always, "Resilience to what?" (Almedom & Glandon, 2007; Carpenter, Walker, Anderies, & Abel, 2001).

Acute and Chronic Events

A key distinction when parsing different types of aversive circumstances pertains to the intensity and

duration of their impact (Bonanno, 2004; Fergus & Zimmerman, 2005). Although the actual course of events may be highly variable, a straightforward heuristic is found in the distinction between acute and chronic circumstances. In the general sense, the category of acute adversity describes a relatively isolated but potentially traumatic life event that demands resources and/or results in the loss of resources and exerts its primary impact over a relatively transient period, usually no longer than 1 month. Examples of acute adversities include a serious automobile accident, physical assault, terrorist attack, industrial explosion, or domestic fire. By contrast, chronic adversity involves an event or related series of events that exerts repeated and cumulative impact on resources and adaptation and persists for many months and typically considerably longer. Examples of chronic adversities include poverty, prolonged civil war or political violence, or prolonged physical or sexual abuse.

Levels of Exposure

Even when people are exposed to the same event, there are likely to be variations in levels of exposure across individuals. For example, any two people may experience the same event for approximately the same period, but each may endure dramatically different exposure to its aversive features. Common categories of exposure include physical proximity to the source of the adversity (Galea et al., 2002; Hoven et al., 2005); direct experience of life-threatening events (Bonanno, Moskowitz, Papa, & Folkman, 2005; Galatzer-Levy et al., 2013); death of friends or family (Norris et al., 2002); physical injuries (Galea et al., 2007); exposure to physical dangers, such as chemical exposure (Norris et al., 2002; Okumura et al., 1998); exposure to both negative and positive aspects of media coverage of the event (Vasterman, Yzermans, & Dirkzwager, 2005); and exposure to secondary resources losses, such as loss of property or loss of employment (Hobfoll, 1989, 2002; Norris et al., 2002). The impact of these types of exposure has been examined individually, by category, and cumulatively (for review, see Bonanno, Brewin, Kaniasty, & La Greca, 2010). Finally, it is important to note that exposure is not identical to stress. Exposure implies a potentially stressful and exhaustive circumstance that may or may not be psychologically or physically taxing, whereas the term *stress* indicates an actual negative and physiologically taxing process (Dhabnar & McEwan, 1997).

Proximal and Distal Exposure

The same event may also produce immediate and longer-term adversities. To help distinguish these types of aversive circumstances, Bonanno et al. (2010) proposed the terms *proximal* and *distal* exposure to distinguish the immediate and longer term impact, respectively (not to be confused with proximal and distal *processes* suggested by ecological systems theorists: Bronfenbrenner & Evans, 2000; Ungar, Ghazinour, & Richter, 2013).

Even these relatively simple constructs nonetheless suggest potentially more complex combinations of exposure. Some people or groups may be exposed to a sudden, acute stressor, for example, but then continue to experience lingering consequences, such as prolonged injuries, a related death of a loved one, repeated repercussive events, or community infrastructure damage that impedes daily functioning. Of importance, these different impacts may also vary in how they are perceived across age, context, and culture (Fazel, Reed, Panter-Brick, & Stein, 2012; Tol, Song, & Jordans, 2013; Ungar et al., 2013). For example, among civil war–exposed populations in Afghanistan, the primary concern reported by adults was the war's impact on a "broken economy," whereas younger students were more concerned with impediments to education (Eggerman & Panter-Brick, 2010).

Baseline Adjustment and Resilient Outcomes in Individuals

Once the specific aversive circumstances are established, the next crucial question centers on how to define resilient outcomes in response to those circumstances. It is impossible to answer this question systematically without determining two additional temporal elements: how individuals, families, or communities had been functioning prior to the aversive circumstances (i.e., their baseline psychological adjustment), and how they were functioning following the aversive circumstances—more specifically, whether they evidenced resilient outcomes afterward. Measuring baseline levels of psychological adjustment is notoriously difficult, especially in situations where pre-event assessments are typically not available. As a result, measuring postevent resilient outcomes requires even more elaborate scrutiny as such outcomes are always referenced, implicitly or explicitly, to preevent adjustment.

We next consider the two most common approaches to the study of adaptation following aversive life events in individuals: the binary focus on extreme responses, or psychopathology, and on broad, average-level measures of adjustment. We show that, although these approaches have provided a foundational understanding of how people adjust to aversive events, they are also limited in important ways; most significantly, neither approach provides

useful information about resilient adjustment. We have elsewhere referred to this crucial shortcoming as the limits of diagnoses and the problem of averages (Bonanno et al., 2011). In an effort to move research and theory beyond these limitations, we next review research on resilience both in children and adults and in the context of chronic and acute life events. We summarize this research in terms of two unique trajectories of adjustment: emergent resilience and minimal-impact resilience (Bonanno & Diminich, 2013). We continue this line of inquiry in the sections that follow and apply these same considerations to the broader arena of families and communities.

The Limits of Diagnoses and the Problem of Averages

The absence of psychopathology is not a resilient outcome. The most common approach to the study of aversive life events has been to focus almost exclusively on extreme outcomes. This approach assumes that dysfunctional or abnormal responses to adversity are fully captured by binary categories of psychopathology, such as posttraumatic stress disorder (PTSD), major depressive disorder, or complicated grief (CG). By extension, the absence of psychopathology is assumed to represent normal or resilient responses to adversity (e.g., Krystal & Neumeister, 2009; Rutter, 1985; Sarapas et al., 2011; Yehuda & Flory, 2007). Unfortunately, an exclusive reliance on diagnostic categories leads to ambiguity about the prevalence or course of extreme responses and, more important, provides little or no accurate information about the shape or nature of the distribution and thus cannot differentiate resilient outcomes from other nonpathological responses (Bonanno et al., 2011).

Before we elaborate on these limitations, it is important to acknowledge that research on psychopathology has played an important role in documenting the crucial public health cost of exposure to potentially traumatic life events. Nowhere has this been more imperative than in the historical debate about the form, prevalence, and perhaps even existence of PTSD (Lamprecht & Sack, 2002). Although the possible debilitating effects of exposure to traumatic stress had been acknowledged for decades, treatment for such problems was severely limited by enduring suspicions of malingering or personal weakness (Shepard, 2001). It was not until 1980 that PTSD was finally recognized as a legitimate diagnostic category, and this event led to a surge in research and treatment (Foa & Kozak, 1986; Foa, Rothbaum, Riggs, & Murdock, 1991; McNally, 2003). The same advance has been witnessed more recently in relation to proposals for diagnostic criteria for CG (Boelen, de Keijser, van den Hout, & van den Bout, 2007; Bonanno, Neria, et al., 2007; Horowitz et al., 1997; Prigerson et al., 2009; Shear, Frank, Houck, & Reynolds, 2005).

These advances notwithstanding, a crucial problem for the study of aversive life events is that prevalence rates for psychopathology tend to vary widely across studies, most likely due to diagnostic imprecision and selection or response biases (Bonanno et al., 2010; Johnson & Thompson, 2008). For example, although PTSD is widely understood to be a "timeless natural kind, a universal psychobiological entity emerging in response to extreme stressors," determination of the precise boundary for the disorder continues to prove elusive (McNally, 2012, p. 220). Diagnostic criteria for PTSD have expanded over successive revisions to allow greater weight to the subjective experience of trauma, a form of "bracket creep" that ultimately may reduce the validity of the diagnosis (McNally, 2003, 2012). Historical analyses also suggest considerable variability in how the symptoms of the disorder might manifest (Jones, 2006; Jones et al., 2003; Jones & Wessely, 2005; Sundin, Fear, Iversen, Rona, & Wessely, 2010).

Recent studies that have examined both PTSD (McNally, Robinaugh, et al., 2014) and CG (Robinaugh, LeBlanc, Vuletich, & McNally, 2014) symptoms using a network approach have suggested an alternative model, whereby aversive events may lead to clusters of interrelated problems that if not addressed may eventually "settle into a pathological equilibrium" (McNally, 2012, p. 225). Although the end point may appear to be similar, the network approach does not view the nature of pathology as preordained. Rather, it is an emergent state that depends only on the constituent elements (i.e., symptoms). Indeed, when Galatzer-Levy and Bryant (2013) examined the *DSM-V* criteria for PTSD using binomial equations, they found 636,120 different symptom combinations that could produce the same PTSD diagnosis. In a related vein, taxometric analyses of the underlying structure of PTSD and CG symptoms have suggested that these disorders are best understood as dimensional (i.e., continuous) rather than categorical, and by extension that their diagnostic cut-points are essentially arbitrary (Broman-Fulks et al., 2006; Holland, Neimeyer, Boelen, & Prigerson, 2009; Ruscio, Ruscio, & Keane, 2002).

Of even greater relevance to our concerns here, the diagnostic approach is essentially silent about the *distribution* of responses to aversive events (Bonanno et al., 2011). Because this approach lumps exposed individuals who do not develop psychopathology into a single category of nonpsychopathology, it is not possible to examine potential variations within that category. Historically, diagnostic models have not considered this problematic because such models assume long-term outcomes are adequately captured by a single *homogenous* pattern of change (Duncan,

Duncan, & Strycker, 2006; Muthén, 2004). To the contrary, much of the recent research exploring resilience and other possible outcomes to aversive life events consistently demonstrate clear outcome *heterogeneity* (Bonanno, 2004; Bonanno et al., 2011; Galatzer-Levy & Bonanno, 2013).

Average-level adjustment is not a resilient outcome. The question of outcome heterogeneity suggests another common approach to the study of adversity—the use of average-level data on adjustment. This approach is focused primarily on the event rather than on individual reactions to the event and seeks to characterize how exposed groups differ, on average, compared to nonexposed groups or to some other comparative baseline. Inherent in this approach is the assumption that the statistical average represents the normal or modal responses to adversity. When average levels of PTSD symptoms are examined, a typical outcome is elevated symptoms in the weeks following exposure, followed by gradual decline that may persist for several years and often longer before returning to presumed baseline levels (Breslau, 2001). This approach is common, for example, in studies seeking to delineate the most robust predictors of symptoms of PTSD or CG. Average-level scores have also been useful in meta-analytic studies that summarize data across multiple data sets (Currier, Neimeyer, & Berman, 2008; Norris et al., 2002).

Like the diagnostic approach, however, the exclusive reliance on average-level data suffers serious shortcomings. Criticisms of the limits of averages are not new (e.g., Johannsen, 1903; Skinner, 1936). Although this approach provides basic descriptive information about the distribution of outcome scores and can reveal important longitudinal trends in the data (e.g., Lucas, 2007), it can also mask other interesting effects (Bloembergen & Zewail, 1984; Siegler, 1987). This limitation is especially relevant to data on adjustment to adversity, which are often non-normal. In such instances, average-level data can also be misleading. Because the accurate determination of resilient outcomes following adversity requires repeated assessments over time (Bonanno et al., 2012), average-level scores typically fail to capture heterogeneity in longitudinal distributions and, more important, fail to identify resilient trajectories or other longitudinal patterns that bear little resemblance to the average pattern of change (Galatzer-Levy & Bonanno, 2012, 2014; Mancini, Bonanno, & Clark, 2011).

Trajectories of Positive Adjustment

In contrast to the limitations inherent in using either diagnostic or average-level data to determine resilient outcomes, a growing body of research has more successfully captured outcome heterogeneity by identifying latent growth trajectories. Studies that have applied this approach in the specific context of highly aversive life events have consistently identified a relatively small set of prototypical trajectories, including chronic dysfunction, recovery, delayed reactions, and resilience (e.g., Bonanno, 2004, 2005; Bonanno et al., 2011). Recently, it has become apparent that comparisons across age groups and types of aversive circumstances suggest two potentially different forms of the resilient trajectory, *emergent resilience* and *minimal-impact resilience* (Bonanno & Diminich, 2013). These different resilient patterns have been observed in response to specific types of aversive circumstances; emergent resilience following chronic aversive events and minimal-impact resilience following acute aversive events (see Figure 2). Intriguingly, emergent resilience and minimal-impact resilience have also been associated with child and adult samples, respectively. However, as we have argued elsewhere (Bonanno & Diminich, 2013) and elaborate next, the association of different resilience trajectories with different age groups is most likely due to the tendency of developmental scientists to focus on chronic adversity and adult trauma researchers to focus on acute life events.

Emergent resilience following chronic adversity. That developmental scientists would be more likely to study the emergent resilience trajectory is not surprising. Human development unfolds gradually, in a nonlinear manner. Accordingly, researchers and theorists concerned with resilience in children and youth have conceptualized both adjustment and resilience as nonlinear, dynamic processes (Egeland et al., 1993; Fergus & Zimmerman, 2005; Luthar et al., 2000; Masten & Coatsworth, 1998; Masten & Narayan, 2012). Egeland et al. (1993), for example, argued that competence in resolving the demands of one particular developmental period does not necessarily lead in a direct linear path to competence in a later developmental period. Individuals may be broadly prepared for subsequent challenges and demands, but ultimately the ability to meet those demands and challenges will hinge on the interplay of a host of environmental, biological, genetic, and psychological factors. Moreover, these capacities are not static but rather emerge and change over the course of development in concert with the maturing brain and the evolving tasks of each period of development (Degnan & Fox, 2007; Masten & Coatsworth, 1998; Tottenham et al., 2010).

The impact of highly aversive events is likely to depend on the developmental phase in which they occur (Masten & Narayan, 2012). The recent advances in epigenetic research have highlighted how intricately the effects of psychological stress vary in relation to developmental timing (Lupien, McEwen, Gunnar, & Heim, 2009; McGowan et al., 2009; Meaney, 2010). Excessive stress or deprivation at key

early developmental phases can dramatically impact brain development, producing for example atypically large amygdala volume (Tottenham et al., 2010), precocious amygdala-prefrontal connectivity (Gee et al., 2013), and rigid and inappropriate patterns of response, (e.g., either hypo- or hyperglucocorticoid response) at later developmental phases (Lupien et al., 2009). By the same token, in more benign or safe contexts younger children may also benefit from the stress-buffering effects of unique protective factors, such as the neural plasticity of the developing brain, the cognitive inability to fully grasp the psychological implications of aversive events, and the protection and guidance of adult caregivers (Masten & Narayan, 2012).

Owing to the heterogeneous unfolding of developmental processes, developmental scientists interested in resilient outcomes have primarily focused on chronically aversive circumstances with long-ranging, cascading consequences, such as poverty or chronic abuse (Garmezy, 1993; Luthar, 1999; Werner, 1993) or civil war (Betancourt & Kahn, 2008). Because chronic adversity is likely to produce enduring changes in a wide range of psychological and physiological functions (de Kloet, Derijk, & Meijer, 2011; Lupien et al., 2009; Offidani & Ruini, 2012), resilience in this context is often not fully apparent until after the aversive circumstances have run their course (Masten & Narayan, 2012). In other words, resilient outcomes after chronic adversity are "emergent." A child might struggle for years, for example, against the caustic influence of an ongoing abusive family context. Nonetheless, that child would evidence emergent resilience if he or she eventually went on to meet normal developmental milestones and culturally relevant expectations for competence and psychological adjustment (Elder, 1998; Luthar et al., 2000; Masten & Coatsworth, 1998; Waters & Sroufe, 1983).

In a classic study of this type of resilient outcome, Werner (1993, 1995; Werner & Smith, 1977, 1992) reported data on a multiracial cohort of children exposed to perinatal stress, chronic poverty, chronic familial discord, and parental psychopathology. The children were assessed perinatally and then at various points over the next 32 years. As they reached late adolescence, children showing emergent resilient outcomes were described as "competent, confident, caring young adults" who had "succeeded in school, managed home and social life well, and expressed a strong desire to take advantage of whatever opportunity came their way" (Werner, 1993, p. 504). By adulthood, most of the resilient participants "had grown into adults whose educational and vocational accomplishments exceeded those of their high-risk peers and were equal to those of the low-risk children in the cohort who had grown up in more affluent, secure, and stable environments" (Werner, 1993, p. 506).

It is important to reiterate, however, that although much of the research on emergent resilience has appeared in the developmental literature, emergent resilient outcomes per se are not limited to childhood adversity. Research on adult mental health has typically not focused on the impact of prolonged stressors. However, in the few instances when such circumstances were examined in adult populations, the emergent resilient pattern was observed. For example, Hobfoll et al. (2011) collected longitudinal data on a large, representative sample of Palestinians living in Gaza and the West Bank during the latter portion of the *Second Intifada*, a period of "chronic mass casualty" characterized by pervasive and lasting exposure to extreme war violence, death, and injury. Not surprisingly, given this kind of encompassing and enduring adversity, the most common outcome trajectory Hobfoll et al. observed—moderately elevated symptoms of PTSD and depression followed by gradual improvement—mirrored the emergent resilient pattern.

Minimal-impact resilience following acute adversity. Research on adult populations has more generally focused on acute types of aversive circumstances that tend to impact adjustment in a transient and focal manner. Acutely aversive events typically produce temporary perturbations in normal functioning and a relatively rapid return to baseline levels of adjustment (e.g., Bisconti, Bergeman, & Boker, 2004; Bonanno, 2004). Examples of such events might include an isolated medical emergency or a single assault incident. Not surprisingly, a resilient outcome following acutely aversive circumstances is apparent much sooner and has been characterized by minimal, or transient, symptoms and distress and an otherwise stable trajectory of positive adjustment extending from before to after the aversive event (Bonanno, 2004, 2005; Bonanno et al., 2011). This pattern is well documented (Bonanno & Diminich, 2013). Minimal-impact resilience has been the most commonly observed outcome trajectory following a range of acute aversive events, including large-scale terrorist attack (Bonanno, Rennicke, & Dekel, 2005); bio-epidemic (Bonanno et al., 2008); natural disaster (La Greca et al., 2013; Norris et al., 2009; Pietrzak et al., 2013; Tang, 2007); mass shooting (Orcutt, Bonanno, Hannan, & Miron, 2014); military deployment (Berntsen et al., 2012; Bonanno et al., 2012); life-threating police events (Galatzer-Levy, Madan, Neylan, Henn-Haase, & Marmar, 2011); death of a spouse (Bonanno, Wortman, et al., 2002); traumatic injury (Bonanno, Kennedy et al., 2012; deRoon-Cassini, Mancini, Rusch, & Bonanno, 2010); and life-threatening medical events, such as receipt of a cancer diagnosis (Burton, Galatzer-Levy, & Bonanno, in press; Deshields, Tibbs, Fan, & Taylor, 2006; Helgeson, Snyder, & Seltman, 2004; Lam et al., 2010), heart

attack (Galatzer-Levy & Bonanno, 2014), and chronic pain onset (Zhu, Galatzer-Levy, & Bonanno, 2014).

Although minimal-impact resilience is often defined by the relative absence of symptoms and distress, a number of studies have also associated this pattern with more explicitly positive aspects of adjustment. For example, studies have linked minimal-impact resilience with ratings of various dimensions of positive adjustment provided anonymously by close friends and relatives (e.g., Bonanno, Moskowitz, et al., 2005; Bonanno, Rennicke, et al., 2005); with self-reports of general well-being (Bonanno et al., 2008; Galatzer-Levy, Bonanno, & Mancini, 2010; Mancini et al., 2011); with optimism, better family relations, and better self-image; among breast cancer patients, with more positive body image and sexuality (Lam et al., 2010; Lam et al., 2012); and among the bereaved, with greater comfort from positive memories of the deceased (Bonanno, Wortman, & Nesse, 2004).

It is important to point out that, just as emergent resilience is not limited to child samples, minimal-impact resilience is not limited to adult samples. Although most of the evidence for minimal-impact resilience has come from research on adults, several recent studies (Hong, Youssef et al., 2014; La Greca et al., 2013; Le Brocque, Hendrikz, & Kenardy, 2010) have documented minimal-impact trajectories among child and youth samples exposed to isolated, acute adversities. Le Brocque et al. (2010), for example, followed a large sample of children hospitalized for a serious traumatic injury. They found that the majority of the children exhibited a stable trajectory of consistently low posttraumatic stress, or minimal-impact resilience, at approximately the same frequency as adult traumatic injury samples (e.g., deRoon-Cassini, Mancini, Rusch, & Bonanno, 2010). It is also worth noting that it is possible to incorporate developmental events into analyses of minimal-impact resilience using latent growth modeling approaches (Feldman, Masyn, & Conger, 2009). For example, Galatzer-Levy and Bonanno (2013) modeled trajectories of individual adjustment, including minimal-impact resilience, in New York college students during the 4 years after 9/11. They identified an overarching developmental pattern that varied by semester and year and then incorporated this pattern into the model solution as an additional growth parameter. Each individual trajectory could then be adjusted according to the larger developmental trend.

Baseline Adjustment and Resilient Outcomes in Families and Communities

Moving beyond the study of individuals, we next address crucial questions of how adjustment and by extension resilient outcomes might be defined in families and communities. Determining baseline psychological adjustment or patterns of psychological outcome following adversity is a more complex endeavor in families and communities. There are several reasons for this difference, the most obvious being that families and communities represent clusters of individuals organized into larger, more complex, and nested units (Bronfenbrenner & Evans, 2000). The nature of these group units is variable. Some units are relatively straightforward, designated by institutional consensus (e.g., nuclear family, neighborhood, zip code), whereas some are self-generated with relatively poorly articulated boundaries (e.g., personal sense of community, circle of friends, and various layers of extended family). Moreover, the human propensity to experience in-group and out-group loyalties across various domains (e.g., ethnicity, vocation, and avocation) often superimposes additional layers on top of these more conventional group distinctions (Brewer, 1979; Lewin, 1947). In this section, we first consider the question of how family and community might be operationally defined. Then we review theory and research on family and community adjustment and family and community resilient outcomes.

Family Adjustment and Resilient Outcomes

Family adjustment. Traditionally, families have been defined in terms of institutionally sanctioned marriage of opposite-sex couples and their legally recognized offspring and biological relations (Franklin, 1990). However, even these straightforward distinctions can be elusive (Dudley, 2008; Knauer, 2002). Nontraditional family groupings based on stable unmarried partners or same-sex partners have become increasingly prevalent and in a growing number of states are now legally recognized. The concept of a biological relation has also broadened with the increased prevalence of families of mixed biological parentage resulting from divorce and remarriage. Moreover, as modern DNA testing has poignantly demonstrated, even the identity of biological ancestry is less straightforward than it was once assumed to be.

Family theorists champion a systems perspective that emphasizes the "family as a functional unit" (Walsh, 2006, p. 15). From this perspective, family adjustment or adaptation is more than a collective aggregate of the individually designated members (Epstein, Baldwin, & Bishop, 1983; I. W. Miller, Ryan, Keitner, Bishop, & Epstein, 2000). Rather, the psychological health of a family is mutually constructed and emerges from interactions between members (S. A. Anderson & Sabatelli, 1992; Hawley & DeHaan, 1996; Simon, Murphy, & Smith, 2005). Black and Lobo (2008) described healthy family dynamics in broad, global terms such as flourishing,

warmth, support, and cohesion and proposed that family health and adaptation is "best described in interaction traits for optimal growth, functioning, and well-being of the family as a whole" (p. 34). Hanson and Boyd (1996) defined family health as "a dynamic changing relative state of well-being which includes biological, psychological, spiritual, sociological, and cultural factors of the family systems" (p. 6). J. M. Patterson (1988) proposed five broad dimensions of family health pertaining to (a) shared commitments, values, and goals; (b) a focus on challenges rather than demands; (c) view of its life experiences in the context of present circumstances; (d) the ability to interact with others outside the family; and (e) the degree that members view themselves as part of a larger family unit.

Although of obvious clinical relevance, from the practical viewpoint global dimensions of family functioning have proved difficult to operationally define (Ganong, 2001; Hawley & DeHaan, 1996). Despite the rich theory, many of the research studies that have sought to assess adjustment or adaptation among families have relied exclusively on self-report questionnaires, typically obtained from only one family member, and assessed only a single dimension of family adjustment. For instance, the single-respondent questionnaire approach has been applied to measure perceptions of marital adjustment and satisfaction (Heyman, Sayers, & Bellack, 1994); marital and filial stress (Norris & Uhl, 1993); family conflict (Birman, 2006; Lopez, Campbell, & Watkins, 1988); quality of family relationships, interaction, and communication (Lopez et al., 1988; Summers et al., 2005); parental monitoring and disciplining of children (Kalil & Eccles, 1998); family cohesion (Barber & Buehler, 1996); family problem solving and coping (Birman, 2006; Trute & Hiebert-Murphy, 2002); and overall family functioning (Summers et al., 2005; Trute & Hiebert-Murphy, 2002).

There have been several attempts to develop more elaborate questionnaire measures of family functioning. Gold et al. (2007), for example, obtained self-reports of closeness and flexibility from multiple family members. Epstein et al.'s (1983) Family Assessment Device (FAD) asks multiple family members to record their perceptions of the family along six unique subscales, each capturing a theoretically unique component of adjustment. In a related approach, the Differentiation in Family Scale (S. A. Anderson & Sabatelli, 1992) asks family members questions about reciprocity between specific family dyads. For example, if the primary family unit consisted of a married couple, one maternal grandparent, and two children, each respondent would rate the level of reciprocity between each possible dyad pair. Although still limited by self-report, these approaches nonetheless offer potentially useful methods for testing complex models of family dynamics, as is the case if reciprocal influences between family members are examined across time (Stroebe et al., 2013).

Several more elaborate interview and rater methods have also been developed. For example, Caligiuri, Hyland, Joshi, and Bross (1998) examined both family characteristics and family adjustment and adaptation using detailed interview data obtained from a large group of families that had relocated to another country because of employment reassignment. Lengthy interviews were conducted both with the entire family and with individual family members. Measures coded from the interview included assessments of overall family adjustment, friendships, external supports, and the extent that the family appeared to adapt to the relocation. Similarly, I. W. Miller et al. (2000) developed a family adjustment rating system, the McMaster Clinical Rating Scale, and a structured format for systematic family assessment ratings, the McMaster Structured Interview for Family Functioning. These instruments tap seven dimensions of family adjustment, family problem solving, communication, roles, affective responsiveness, affective involvement, and behavioral control. Although they have promising features and reasonable reliability, these measures suffer important limitations. Some of the subscales are highly correlated, suggesting they are not tapping independent constructs. More important, the distribution of scores on these measures is non-normative and tends to be skewed toward pathology, which limits their applicability to community samples.

In developing the Oregon model of parent management training, Patterson, Forgatch, DeGarmo, and colleagues (e.g., Forgatch, Patterson, Degarmo, & Beldavs, 2009; G. Patterson, DeGarmo, & Forgatch, 2004) assessed relatively large samples using rich, multimeasure assessments. These assessments included structured interviews; laboratory family observations during both unstructured and structured activities, such as problem solving, discussions of conflicts, a teaching task, and a forbidden toy task; questionnaires completed by family members and high-contact informants (e.g., teachers); and objective indicator data, such as child's peer associations. Using these rich data sources, they created a number of family indices regarding effective parenting practices and parent–child interactions. A serious limitation of this approach, however, is that these methods have been tested and validated almost exclusively using clinical samples (i.e., families with children experiencing serious problems) or samples exclusively composed of atypical family configurations (e.g., single-parent households). Thus, their utility as measures of normative baseline adjustment or as measures of change from a normative baseline in response to aversive events is not obvious.

The most promising measure for the study of resilient outcomes may be the Beavers Interactional Competence Scale (BICS; Beavers & Hampson, 1990). The BICS is a robust and relatively easy-to-use rater method that assesses 13 dimensions of family competence: overt power, parental coalitions, closeness, mythology, goal-directed negotiation, clarity of expression, responsibility, boundary permeability, range of feelings expressed, mood and tone, unresolvable conflict, empathy, and global level of health. To score the BICS, family members are gathered together and asked to briefly discuss what they would like to see changed in the family. Trained raters then observe these interactions and rate the family along the 13 dimensions. At an "optimal" level of family functioning, family members hold a "systems orientation."

> They realize that many causes interact to produce a given result, and that causes and effects are interchangeable (e.g., harsh discipline leads to aggressive behavior and aggressive behavior invites harsh discipline). Intimacy is sought and generally found. It is a function of frequent, equal-powered transactions along with mutual respect for differing family members' viewpoints. Individual choice and perceptions are respected, allowing for capable negotiations and excellent group problem-solving. Individuation of each person is high evolved and boundaries are clear. There is conflict, but it is usually resolved quickly. (Beavers & Hampton, 2000, p. 130)

By contrast, at the other end of the spectrum, a severely dysfunctional family's

> greatest deficit is in the domain of communication and its greatest need is for communicational coherence. Consequently, this group is most limited in negotiating and adaptive capacity. Family members have little ability to resolve ambivalence and to choose and pursue goals. There is a lack of shared focus of attention in discussion and an emotional distancing that precludes satisfying encounters. Overt power is not clearly held by anyone in the family. Family functioning appears chaotic, since control is carried on by a variety of covert and indirect means. (Beavers & Hampton, 2000, pp. 132–133)

Of importance, although the BICS was developed for a clinical context, data obtained on this measure from nonclinical populations have been normally distributed, with most families scoring in the middle range (Beaver & Hampson, 2000). Data normality, in turn, suggests the scale's utility for assessing normative baseline or relative change from baseline family adjustment.

Family resilient outcomes. If we extend this rich body of theory and measurement to the concept of family resilience, then we could reasonably assume that assessments of family resilient outcomes following aversive circumstances would be referenced against these same global, synergistic qualities of family adjustment. In addition, because families, like individuals, are potentially subject to both acute and chronic stressors, we could also reasonably expect patterns of family resilient outcome to mirror minimal-impact or emergent resilience. Walsh (1996) noted that challenges to family adjustment may range from relatively acute stressor events such as divorce, remarriage, sudden job loss, or the untimely death of a key family member, to relatively more chronic stressors, such as migration or exposure to inner-city violence. When acute stressors occur, those families that manage to maintain a relatively stable, healthy family dynamic even soon after the stressor event could be characterized as showing *minimal-impact family resilience.* More chronic stressors, by contrast, would likely tax family health to a greater extent, just as it does with individuals. Families that are able to flexibly adapt to circumstances and eventually recover their healthy dynamic equilibrium after the chronic stress abated could be characterized as showing *emergent family resilience*.

The available research on family adjustment, just reviewed, provides a good set of methods and measures that could be applied to capture both family adjustment and family resilient outcomes, with perhaps the most promising measure being the BICS. Surprisingly, however, almost no research has specifically applied these methods and measures in this way. Although family theoretical models have focused on family resilience or adaptive change in response to adversity (e.g., M. McCubbin, Balling, Possin, Frierdich, &, Bryne, 2002; G. Patterson et al., 2004), operational definitions of this type of outcome at the family level are relatively rare, and as we discuss later, even when available they are typically not utilized for this purpose. Almost all the studies just reviewed focused on small samples of treatment-seeking families and used these measures primarily to evaluate interventions (Simon et al., 2005). In the few cases when family resilience to particular events was considered, only global measures were examined. The Caligiuri et al. (1998) study, for example, demonstrated that a composite family health variable predicted overall family adaptation to relocation. Unfortunately, they did not separate the family variables or determine which characteristics or outcomes were most informative.

Community Adjustment and Resilient Outcomes

Community psychological adjustment. Studies of psychological resilience in communities have considered a continuum of possible configurations, ranging

from relatively small, self-defined groups to larger institutionally defined units to even larger geo-political structures (Norris et al., 2008). The inductive approach to community has favored bottom-up or self-defining groups linked by social ties, common perspectives or joint action (e.g., MacQueen et al., 2001). Indeed, increasing technologically advanced forms of communication and transportation have arguably freed social bonds from the bounds of specific geographic location (Riger & Lavrakas, 1981). By contrast, from a disaster management perspective, the planning and allocation of resources necessitates more clearly articulated and consensually agreed-upon boundary regions. Yet disaster specialists have also acknowledged the importance of emergent groupings based on patterns of social interaction and economic exchange (Buckle, 1998; Slack, 1998).

In a scientific context, although the choice of group unit depends to some extent on the nature and aim of the investigation, the practical reality of empirical research stresses designations that can be clearly operationally defined and replicated. Aldrich (2012) reasoned that the most appropriate level of analysis for determining community resilience is the governmental designation of ward or neighborhood. In addition to being clearly defined, he suggested that these units hold the advantage of allowing researchers to identify patterns of relationships among variables that might be masked in larger or smaller units. Making a similar argument, Sherrieb, Norris, and Galea (2010) measured community at the level of county, a common political designation in the United States. This approach is not without its limitations, of course. Standardized or top-down definitions may sometimes lump together diverse peoples with divergent or even contradictory interests, customs, or patterns of interaction (MacQueen et al., 2001; Slack, 1998). On the other hand, it is possible to operationalize and measure these kinds of diversity as a characteristic of the community unit itself and to compare diversity across units.

A common axiom among scholars of community resilience is that "the whole is more than the sum of its parts" and by implication that "a collection of resilient individuals does not guarantee a resilient community" (Norris et al., 2008, p. 128). Nonetheless, although they acknowledge this caveat, Norris et al. (2008) and other students of community resilience (e.g., Buckner, 1988) are reconciled to the use of aggregate data to determine the psychological adjustment of communities. Norris et al. (2008) referred to this aggregated measure as "population wellness" (p. 133) and cite three arguments in its defense. First, when the community's population has managed to retain a high level of general wellness, it can be assumed that the community's response to adversity has generally been adaptive. Second, population wellness is measureable and can be used to guide resource allocation. Third, and perhaps most important, population wellness is conceptually and empirically distinct from the factors proposed as predictors of community resilient outcomes.

Community psychological resilient outcomes. The literature on community psychology has yet to develop as robust a set of adjustment measures as are available for the study of individuals and families. The aggregate measure of population wellness, suggested by Norris et al. (2008), is a sensible starting point for advancing the study of community psychological resilient outcomes. However, use of this approach requires three important additional considerations.

First population wellness should not be measured simply as the statistical average (Norris et al., 2008). Average-level data, as we noted earlier, often mask important facets of individual variation (Bonanno et al., 2011). At the level of community, an overall average would hide what would likely be rich variability across community units and across time. As an alternative, advances in hierarchical modeling techniques (Raudenbush & Bryk, 2002) suggest that population measures are best aggregated across smaller, easily operationally defined community units, such as neighborhoods, wards, or school districts. The level of population wellness can then be compared across community units. This kind of analysis would reveal which neighborhoods (or zip codes, or wards, or districts) had higher baseline levels of population wellness than others, for example, but also which neighborhoods changed in response to an adverse event and which remained relatively stable. This modeling approach also provides a method to examine the differential relationships among predictor and outcome variables within and across community units. We return to this important point in our concluding section.

Second, as longitudinal data become available, community studies can also utilize the latent growth modeling approaches (Muthén, 2004), mentioned earlier, to identify trajectories of change across time. Given a sufficiently larger sample size, this type of trajectory approach could be applied to address questions about differences in prospective and longitudinal patterns across community units. Using such an approach, it would be possible to examine whether chronic or resilient outcome trajectories are more or less prevalent in different communities exposed to the same stressor event. In addition, as we discussed in relation to individuals and families, resilient outcomes for communities exposed to acute stressor events would be likely manifest as stable healthy population wellness scores indicative of a minimal-impact trajectory, whereas resilient outcomes for communities exposed to more chronically aversive circumstances would be characterized by greater disruption in population wellness followed by a gradual

return to more normative levels suggestive of an emergent resilience trajectory.

Third, although population wellness is a defensible solution to the problem of assessing complex psychological facets of community adjustment, a broader picture of how communities adapt to aversive events would combine population wellness with other nonpsychological indicator variables. These might include, for example, level of community economic development, disaster management, institutional vitality, and availability and maintenance of resources and assets (Adger, 2000; Cutter et al., 2008; Godschalk, 2003; Norris et al., 2008; Sherrieb et al., 2010).

As was the case for the family literature, to the best of our knowledge, almost no research has yet attempted to measure psychological resilient outcomes across community units. The vast bulk of research that attempts to investigate community resilience has continued to simply examine predictors of individual psychological adjustment (e.g., Paton, Millar, & Johnston, 2001). In one of the few exceptions, Kimhi and Shamai (2004) examined several psychological variables (e.g., stress symptoms, life satisfaction) aggregated separately in different communities exposed to the same stressor (e.g., war). However, their analyses were limited to examining general differences across community units. They did not appear to have examined the relations between predictors and outcomes across units.

Predictors of Resilient Outcomes

A host of resilience-promoting factors are often described or measured as "resilience." However, the relationship of these factors to outcome is often presumptive, derived from theory or clinical observation rather than actual empirical association. This problem is markedly less pronounced in the literature on individual resilience. Research on adversity in individuals has produced a robust body of evidence consistently, and in some cases prospectively, associating various predictors with actual individual resilient outcomes. However, in the literature on adversity in families and communities, no such body of evidence yet exists. The primary reason for this deficit arises because, as reviewed in the previous section, almost no research on families or communities has yet operationalized and measured resilient outcomes. Accordingly, although myriad factors assumed to characterize family or community resilience have been described, these factors have not yet been tested against actual resilient outcomes.

Individuals

Given that the measurement of both individual adjustment and individual resilient outcomes is relatively well established, it is not surprising that empirical study of the predictors of resilient outcomes is also relatively well established. Extensive reviews of the scientific evidence for predictors of individual resilience are available from both the child (Cicchetti & Rogosch, 2012; Fergus & Zimmerman, 2005; Luthar, 2003; Ong, Bergeman, & Boker, 2009; Werner, 1995) and adult literatures (Bonanno, 2004; Bonanno et al., 2011; Reich, Zautra, & Hall, 2010), as well from attempts to integrate these literatures across age groups (Bonanno & Diminich, 2013; Masten & Narayan, 2012). In addition to identifying unique factors empirically associated with resilient outcomes, these reviews have underscored two important points. First, although there are a number of variables that have been consistently associated with individual resilient outcomes, no single predictor variable appears to exert a dominant influence. Rather, resilient outcomes are predicted by an array of unique variables, with each exerting relatively small effects and each independently explaining a relatively small portion of the overall outcome variance (e.g., Bonanno, Galea, Bucciarelli, & Vlahov, 2007; Werner, 1985). Second, the matrix of risk and resilience factors is not static but rather fluid and likely to change over time (Bonanno et al., 2010). Some of the factors that have been associated with resilient outcomes may be relatively more stable (e.g., personality). However, other factors will fluctuate more noticeably as life circumstances change and as personal and situational resources become more or less accessible (Hobfoll, 1989, 2002).

Although some of the evidence for resilient outcomes in individuals is limited to cross-sectional or correlational data, a considerable body of this research has utilized longitudinal and prospective designs that allowed for assessment of each of the temporal elements we have considered, as well as a multimeasure approach that provided a robust means of identifying emergent outcomes (Bonanno et al., 2011; Fergus & Zimmerman, 2005; Luthar et al., 2000). A number of recent studies have also utilized relatively sophisticated growth-modeling techniques to identify the minimal-impact trajectory and the various factors that might predict it (Bonanno et al., 2011). On balance, the body of research on individual resilient outcomes has provided robust evidence for a relatively clear set of predictor variables.

Predicting emergent resilience. Not surprisingly, given the reciprocal processes that characterize human development, developmental scientists interested in emergent resilient outcomes have focused primarily on the qualities of the social environment and on the personal characteristics of the child. In terms of social factors, one important set of predictors pertains to positive qualities in the parent–child relationship. Research has linked emergent resilient

outcomes with, for example, a nurturing parent–child relationship, a stable living situation, and a consistent and constructive parental disciplinary style (Conger & Conger, 1992, 2002; DuMont, Widom, & Czaja, 2007; Masten et al., 1999; Werner, 1993; Wyman et al., 1992). Complementarily, because chronic stressors can often have a caustic impact on parent–child relations, emergent resilience has also been associated with a positive relationship with a substitute caregiver, such as a grandparent or older sibling, or mentoring adult figure from outside the family (Conger & Conger, 2002; Flores, Cicchetti, & Rogosch, 2005; Rutter, 1979; Werner, 1995).

In terms of individual characteristics, an interrelated set of factors commonly associated with emergent resilient outcomes includes intelligence or scholarly competence (Masten et al., 1999; Werner, 1993) and general problem-solving abilities (Dumont & Provost, 1999; Werner, 1995). A complementary set of factors, also linked to emergent resilience, includes self-esteem and positive self-image (Cicchetti & Rogosh, 1997; Dumont & Provost, 1999; Flores et al., 2005; Werner, 1995; Wyman et al., 1992). Finally, children showing emergent resilient outcomes have exhibited greater prevalence of several genetic variations that have been shown to moderate the impact of aversive life events, including the serotonin transporter gene, oxytocin and dopamine receptor genes, and a corticotropin releasing hormone receptor gene (Cicchetti & Rogosh, 2012).

Together, these individual, social, and genetic characteristics suggest an interactive process that fosters a strong, optimistic belief in personal ability or self-efficacy and helps bolster children's capacity to adapt to the challenges of aversive circumstances (Bandura, Barbaranelli, Caprara, & Pastorelli, 1996; Masten, Best, & Garmezy, 1990; Rutter, 1985). In summarizing her longitudinal studies, Werner (1995) observed, for example, that "youngsters who are better able to appraise stressful life events correctly are also better able to figure out strategies for coping with adversity, either through their own efforts or by actively reaching out to other people for help" (p. 82). Given these observations, it is not surprising that optimism, perceived self-efficacy, and support from others tend to covary and to show bidirectional relations to psychological adjustment (Karademas, 2006). Clearly, as we discuss again next, more research on these types of complex relations is needed.

The interaction of individual characteristics and contexts also suggests another variable linked to emergent resilience: flexibility in cognitive operations and in emotion regulation (Cicchetti & Rogosh, 1997; Flores et al., 2005; Qouta, El-Sarraj, & Punamäki, 2001). For example, Qouta et al. (2001) tested Palestinian children exposed to traumatic events during and after the "First Intifada" period of the late 1980s. Consistent with the emergent nature of resilient outcomes in the aftermath of chronic adversity, traumatic exposures were at their highest level during the Intifada, and at that time cognitive flexibility was unrelated to psychological adjustment. However, when researchers followed up on the children 3 years later, after the Intifada ended, cognitive flexibility was found to have buffered the long-term impact of trauma exposure. Children with high levels of trauma exposure and high flexibility had better psychological adjustment at the 3-year follow-up compared to children with high trauma exposure and low flexibility.

Predicting minimal-impact resilience. The research on resilience in adults has focused almost exclusively, as we noted earlier, on acute or potentially traumatic life events and on the minimal-impact outcome pattern. This research has documented links between minimal-impact resilience and a number of contextual variables, including demographic factors, such as older age, male gender, and greater level of education (Bonanno, Galea, et al., 2007; Mancini et al., 2011; Murrell & Norris, 1983), reduced economic loss (Bonanno, Galea, et al., 2006, 2007; Mancini et al., 2011), and reduced current or ongoing stress (Bonanno, Galea et al., 2007). However, similar to what we observed in the developmental literature, there is also considerable research in the adult trauma literature that has focused on the social context and on personal characteristics of the individual.

A significant body of research has linked psychological adjustment in adults with various types of positive social relations, including emotional support, instrumental help with the immediate tasks of daily living, the provision of information that might facilitate coping (Kaniasty & Norris, 2009), and large social networks (Cohen, Gottlieb, & Underwood, 2000). Perceived social support in particular has been empirically associated with the minimal-impact resilience trajectory following the 9/11 terrorist attack in New York City (Bonanno, Galea, et al., 2007), the SARS bio-epidemic (Bonanno et al., 2008), and traumatic injury (Quale & Schanke, 2010). A growing corpus of research has also linked minimal-impact resilience with various individual characteristics. Several personality traits have been associated generally with favorable adjustment in the aftermath of highly aversive events, including a ruminative response style (Nolen-Hoeksema & Morrow, 1991), optimism (Riolli, Savicki, & Cepani, 2002), and trait self-enhancement (Bonanno, Field, Kovacevic, & Kaltman, 2002). Of importance, however, several studies have also explicitly demonstrated links between personality and minimal-impact resilience using prospective data (i.e., the personality variable was measured prior to the occurrence of the stressor event, and thus unconfounded with reactions to the

stressor event). For example, optimism measured years prior the occurrence of a heart attack was found to predict the minimal-impact resilient trajectory in the years after the heart attack (Galatzer-Levy & Bonanno, 2014). Similarly, trait self-enhancement was associated with a minimal-impact resilient trajectory among high-exposure survivors of the 9/11 terrorist attack (Bonanno, Rennicke, & Dekel, 2005) and, in a 4-year prospective study trait self-enhancement measured prior to the onset of stressor events was found to predict the minimal impact of those events on later psychological adjustment (Gupta & Bonanno, 2010).

As we saw in research on emergent resilience in children, these factors again suggest an interactive process that promotes both perceived self-efficacy (Benight & Harper, 2002) and flexibility in coping and emotion regulation (Bonanno et al., 2004; Bonanno & Burton, 2013; Westphal, Seivert, & Bonanno, 2010). Moreover, recent studies have directly linked self-efficacy and flexibility to the minimal-impact resilience trajectory (Bonanno, Pat-Horenczyk, & Noll, 2011; deRoon-Cassini et al., 2010; Burton, Galatzer-Levy, & Bonanno, in press). For example, similar to the Qouta et al. (2001) study with children, Israeli students with high levels of exposure to terrorist violence showed minimal impact of that exposure if they also had high levels of coping flexibility (Bonanno, Pat-Horenczyk, & Noll, 2011). Similarly, hospitalized survivors of traumatic injury who exhibited a minimal-impact trajectory were also more likely to perceive themselves as efficacious copers (deRoon-Cassini et al., 2010). Finally, for hospitalized survivors of spinal cord injury, the minimal-impact trajectory was also associated with the appraisal of the injury as challenge rather than a threat (Bonanno et al., 2012).

An important limitation of this research is that the complex interactions between these variables have yet to be explored. One of the advantages of a sense of self-efficacy is that it buffers the immediate impact of stress. For example, self-efficacy appears to activate endogenous opioids that help minimize perceived pain (Bandura, Cioffi, Taylor, & Brouillard, 1988). The same appears to be true of challenge appraisals. Threat appraisals occur when a person perceives the demands of a stressor as exceeding his or her resources or ability to cope, whereas challenge appraisals occur when a person perceives these demands as within his or her level of resources or ability to cope (Blascovich & Mendes, 2000; Blascovich & Tomaka, 1996). Experimentally induced challenge appraisals have been shown to play an important role in the mobilization of physiological resources to respond to the stressor (Tomaka, Blascovich, Kibler, & Ernst, 1997). Coping with traumatic stressors, such as traumatic injury, however, typically requires more protracted efforts to deal with longer periods of pain and rehabilitation (deRoon-Cassini et al., 2010). Little is known currently about whether or how these different processes might interact over longer periods. Future research to address this question would greatly advance our understanding of the temporal mechanisms behind resilient outcomes.

Can resilience be measured using a single self-report scale? In the context of considering these complex interactions, we might consider a burgeoning assumption in the literature on psychological resilience that people show resilient outcomes largely because of who they are (i.e., there are resilient "types" and these types explain most of the variance in resilient outcomes). This assumption is illustrated, for example, by the growing popularity of self-report "resilience" scales (e.g., Connor & Davidson, 2003; Friborg, Hjemdal, Rosenvinge, & Martinussen, 2003; Wagnild & Young, 1993). We have argued elsewhere (Bonanno, 2012; Bonanno & Mancini, 2008; Bonanno et al., 2011, but also see Luthar et al., 2000) that such measures are simplistic and overestimate the predictive utility of trait scales. Although trait personality variables reliably predict resilient outcomes, the size of these effects is typically small (Bonanno & Mancini, 2008). Moreover, as our preceding review indicated, well-developed measures of individual characteristics (e.g., self-efficacy, optimism, flexibility) appear to interact with each other, and with other more extraneous factors, in complex ways that have not yet been adequately researched. For example, longitudinal studies indicate a complex set of multidimensional, latent pathways between risk factors, resilience-promoting factors, and psychological adjustment that is likely to vary across time, contexts, and participant groups (e.g., O'Donnell, Schwab-Stone, & Muyeed, 2002). Even if these kinds of relations were better understood, given their multifaceted and continually changing nature over time, it would seem highly unlikely that they could be effectively captured in a single self-report measure.

Families

The literature on predictors of resilient outcomes in families is theoretically rooted in a systems perspective that focuses on the family as a whole. Walsh (2006) defined resilience as an "active process of endurance, self-righting and growth in response to crisis and challenge" (p. 4) that comes about through a set of "coping and adaptational processes in the family as a functional unit" (p. 15). H. I. McCubbin and McCubbin (1988) proposed a set of critical family strengths and coping skills required for family resilience, including good communication, family management, general hardiness, use of leisure activities, and supportive networks. Black and Lobo (2008)

described a similar set of resilient family characteristics, including positive outlook, spirituality, good communication and financial management, shared recreation, and support.

What scientific evidence might exist for these factors? As we noted earlier, global dimensions of family functioning have proved extremely difficult to operationally define, and the vast majority of studies on family adjustment have used self-report questionnaires administered primarily to individual respondents. Studies of family resilience have for the most part followed this same pattern. This practice—relying on an individual to report on the functioning of the whole and expecting that the respondent is capable of accurately assessing the family unit—specifically contradicts the systems approach. Indeed, from a methodological standpoint, studies of family resilience and individual resilience are nearly indistinguishable. For example, research on perceived family efficacy (Caprara, Regalia, Scabini, Barbaranelli, & Bandura, 2004), which we discuss in greater detail later, has relied almost exclusively on individual self-report scales to capture the construct. In summarizing a decade of research on "resilience in midwestern families" faced with economic adversity, Conger and Conger (2002) examined both the quality of family relationships and the behaviors of individual members. Although they obtained observer ratings of problem solving in parents and showed that this variable moderated the relationship between marital conflict and marital distress (Conger, Rueter, & Elder, 1999), the primary outcome measured across these studies pertained to individual adjustment rather than family adjustment and competence. Moreover, the findings were not dissimilar to those from studies of individual resilience (e.g., high social support between parents predicted less increase in distress following economic adversity).

Multiple-respondent self-report. There has been some relevant research using multirespondent self-report measures of family adjustment, such as the FAD (Epstein et al., 1983) mentioned earlier. However, the bulk of research using this instrument has focused on clinical samples, where psychopathology is evident in a family member, or on treatment outcome studies (I. W. Miller et al., 2000). Several studies have used the FAD (e.g., Epstein-Lubow, Beevers, Bishop, & Miller, 2009) or more global family ratings (e.g., Max et al., 1998) to assess how families adapt to medical stressors. However, these studies were cross-sectional and measured outcome primarily in terms of psychopathology rather than resilient outcomes. Thus, inferences about causality are highly speculative at best and await more concrete scientific evidence.

Interview assessments. What of studies using more dynamic interview measures of family characteristics and adjustment? We noted earlier that typically these methods have been limited to small numbers of families seeking treatment. One exception, the BICS interview, has been administered to more than 1,800 families. However, in most cases, this approach was also used primarily to assess treatment outcome (Beavers & Hampson, 2000) and has rarely been applied more broadly to assess family resilience to adversity. In one of the few exceptions, Meyers, Varkey, and Aguirre (2002) examined the BICS in the context of child neglect. Unfortunately, these data were cross-sectional and did not allow for prediction of change over time. Moreover, although family competence was lower among families with high levels of stressful life events, this relationship disappeared when other factors (e.g., family income) were statistically controlled. Thus, there was no direct evidence for prediction of resilient outcomes.

The Oregon group (e.g., Forgatch et al., 2010; G. Patterson et al., 2004) mentioned earlier collected a particularly rich body of longitudinal data. However, these data were obtained in the context of a planned intervention and the samples were constrained almost exclusively to clinical or at-risk families. Moreover, although the Oregon studies included robust measures of parenting practices and tracked changes in parenting behavior over time, the primary outcomes in these studies did not address the stability or change in family adjustment but rather focused almost exclusively on individual child mental health and delinquency.

M. McCubbin et al. (2002) identified a number of family resilience factors from one-time interviews of parents of children diagnosed and treated for cancer. Among the most prominent factors they identified were flexible coping and readjustment in response to the challenges of the child's illness and the ability to utilize a variety of supportive resources, including mutual support within the couple as well as support from extended family, the heath care team, and the community. Although these factors are compatible both with the research on psychological resilience in individuals and with family resilience theory, the strength of M. McCubbin et al.'s conclusions are limited in several important ways. Most notably, they did not measure family adjustment independently from the predictor interview and they relied exclusively on their respondents' perceptions of what helped them cope. Thus, these findings could have resulted solely from participants' retrospective attributions, and therefore at best offer only weak correlational support as predictors of resilient outcomes.

The interview study by Caligiuri et al. (1998), discussed earlier, was one of the only studies to systematically assess both global family characteristics and global family adjustment in a nonclinical sample following a stressor event, in this case the family's relocation to a foreign country for employment reasons.

Of importance, they demonstrated that a global variable representing resilient family characteristics, aggregated from indicators of good communication, support, and adaptability, predicted overall family adjustment during the relocation. Unfortunately, Caligiuri et al. did not separately examine family characteristics and did not determine which characteristics were most informative. In addition, despite the availability of prospective data, their study did not examine prerelocation data on family adjustment, and thus could not determine how families functioned prior to the stress of relocation and could not comparatively examine changes in family adjustment from pre- to postrelocation.

Communities

The most commonly evoked predictor of community resilience is social capital. Originally formulated in sociology and political science to explain the links between social organization, experiences, and collective action (Bourdieu, 1986; Putnam, 1995), definitions of social capital are generally broad and encompass "those features of social relationships—such as levels of interpersonal trust and norms of reciprocity and mutual aid—that facilitate collective action for mutual benefit" (Kawachi, 1999, p. 120). Although social capital focuses on the perceptions and experiences of community members, a fundamental assumption is that it involves multiple, interrelated components that tap into a "collective dimension of society external to the individual" (Lochner, Kawachi, & Kennedy, 1999, p. 260). Among the most consistently evoked components of that collective dimension are social networks, civic participation, collective efficacy, and sense of community (Kawachi, 1999; Kawachi, Kennedy, Lochner, & Prothrow-Stith, 1997; Sherrieb et al., 2010). The measurement of these components within communities has been achieved using two common sources: self-report data and more objective data on social indicators aggregated for the community unit (Cutter, Burton, & Emrich, 2010; Kawachi, 1999; Kawachi, Kennedy, Lochner, & Prothrow-Stith, 1997; Lochner et al., 1999; Sherrieb et al., 2010). Of importance, these different types of indices have shown high levels of cross-measure consistency (Kawachi et al., 1997; Sherrieb et al., 2010) and, as we discuss in more detail later, suggest considerable conceptual overlap with predictor variables developed in the literatures on individual and family resilience.

Social networks are typically measured by individual self-reports. The related construct of social support is also typically measured as an individual-level self-report variable but may be measured at the level of social indicator data as well (Sherrieb et al., 2010). Different aspects of support have been assessed, including perceived support and actual support provided. Although these components are related, they also tend to diverge over time (Kaniasty, 2012; Kaniasty & Norris, 2009). A related concept, civic participation, is typically measured at the level of objective indicator data in the form of per capita civic participation in social institutions and informal social organizations, such as art or sports organizations (Cutter et al., 2010; Sherrieb et al., 2010).

Collective efficacy, or the perceived ability of the community to act effectively in the face of social problems, is measured by aggregated self-report questions (Norris et al., 2008; Sampson et al., 1997). In the seminal article on this variable, Sampson et al. (1997) showed that self-reported perceptions of collective efficacy were associated with high socioeconomic status, older age, home ownership, and less mobility. At the level of variations within neighborhoods, collective efficacy was associated with neighborhood residential stability and reduced neighborhood disadvantage and immigrant concentration (Gulasekaram, 2008; Sampson et al., 1997).

The psychological sense of community, and the related concepts of community trust, belongingness, or reciprocity, was originally formulated in the psychological literature to capture the extent that people participated in, felt integrated with, and emotionally connected to a larger community group (Chavis, Hogge, McMillan, & Wandersman, 1986; Hunter, 1975; MacMillan & Chavis, 1986; Sarason, 1974). Related psychological constructs include perceived neighborhood cohesion (Buckner, 1988); neighborhood attachment (Riger & Lavrakas, 1981); social involvement or "neighboring" behavior (Hunter, 1975); and social indicators of community belongingness, such as proportion of long-term residents, homeowners, or relatives living in the community (Brown, Perkins, & Brown, 2003; Cutter et al., 2010).

Predicting social problems. Several components of social capital have been empirically associated with reduced social problems. For example, in a classic study, the collective efficacy component of social capital measured within neighborhoods was strongly negatively related to perceived neighborhood violence, violent victimization, and homicide counts, over and above other social capital factors, such as home ownership or years in the neighborhood (Sampson et al., 1997). Moreover, collective efficacy partially or fully mediated the relationship between the different measures of neighborhood violence and various neighborhood factors typically associated with violence, such as residential instability and immigrant concentration.

Predicting individual health and well-being. Social capital has also been linked to general health and well-being at the individual level. For example,

Kawachi et al. (1997) examined differences in U.S. states along three indicators of social capital, per capita membership in voluntary groups as a proxy indicator of civic participation, and self-reported measures of reciprocity and trust in others. Strikingly, with household poverty statistically controlled, all three social capital indicators were strongly, inversely related to mortality. From a more psychological perspective, Fowler, Wareham-Fowler, and Barnes (2013) reported that the sense of community belongingness predicted the duration and severity of depression independently from the effects of perceived social support.

Predicting community resilient outcomes. Despite the considerable theory research on the components of social capital as potentially important predictors of community resilient outcomes, this rich body of work has not yet progressed to the operational stage (Buckner & Waters, 2011; Chandra et al., 2010; Cutter et al., 2008). In other words, there is effectively no research that has actually examined relationships between these presumed predictor variables and actual community psychological resilient outcomes (e.g., data on population wellness aggregated by community unit). The Kimhi and Shamai (2004) study, discussed earlier, did aggregate psychological variables (e.g., stress symptoms, life satisfaction) separately in different communities that had been exposed to the same stressor (e.g., war) and did measure a global variable related to social capital (e.g., willingness to remain in the community, perceptions of social relationships within the community, satisfaction with community leadership). However, in analyzing these variables, they considered only the overall relationship among variables, effectively examining predictors of individual psychological adjustment, and did not analyze how that relationship may have varied across community units.

Several recent studies have, however, made important inroads by creating instruments that might be easily applied to address this question in future research. In an impressively systematic study, Sherrieb et al. (2010) condensed 88 candidate indicators of social capital and economic development using various data reduction procedures to produce a coherent index of predictor variables for community resilience. Their final, condensed list included economic indicators of resources level, resource equity, and resource diversity, and social capital variables representing social support, social participation, and community bonds. Leykin, Lahad, Cohen, Goldberg, and Aharonson-Daniel (2013) likewise assessed a number of variables from the theoretical literature that might potentially support a "community's ability to withstand crises or disruptions" (p. 314) and produced a comparable set of predictors. They used data from a large Israeli sample and then subjected those data to exploratory and confirmatory factor analyses. The results of these analyses revealed three psychological factors similar to those just reviewed—collective efficacy, place attachment, and social trust—and two factors representing community disaster readiness: leadership and preparedness. In addition, a composite of these factors was highly correlated with a single-item measuring perception of community resilience, and with global perceptions of national resilience (Kimhi, Goroshit, & Eshel, 2013). However, the relationship of these factors to actual community resilient outcomes has yet to be demonstrated.

Moving Forward: An Optimistic Agenda for Future Research

We conceptualized psychological resilience in terms of four basic temporal elements: baseline or preadversity adjustment, the actual aversive circumstances themselves, postadversity adjustment or resilient outcomes, and predictors of resilient outcomes (see Figure 2). Although many researchers and theorists acknowledge these temporal elements, the extant research is inconsistent and often incomplete. The most comprehensive scientific evidence on each element emerged from the research on individual adults and children. By contrast, we found the literature on family and community resilience surprisingly fragmented. Although adequate operational definitions of normal family and community adjustment are available, they have not yet been fully developed for the study of resilience following aversive events. Numerous authors have proposed factors that might predict resilience. Yet there is surprisingly little scientific evidence to support this speculation.

Most of the available family research focused on clinical contexts. The few studies that used families from community samples were limited to cross-sectional data or single-respondent outcomes, and thus only weakly supported the hypothesized associations. It seems clear, however, that many of the measures that have been developed for studies of clinical or at-risk families could be applied to the study of normal family resilience to aversive events. To our knowledge, this has not yet been attempted, or at least has not yet been reported in the scholarly literature.

Similarly, although solid progress has been made in identifying potentially informative predictors of community resilience (e.g., components of social capital) that might be measured prior to a disaster or other crisis event, crucially these variables have yet to be empirically associated with actual community resilience outcomes. The Sherrieb et al. (2010) study, for example, provided what the authors described as a vital "first step in identifying existing capacities for community resilience" (p. 227). However, as they also noted, they did not test the relationship of these

capacities to actual community resilience outcomes, and as a result the most they could conclude was that the capacities they had identified "*may* [emphasis added] predict a community's ability to 'bounce back' from disasters" (p. 227).

The knowledge gap on community resilience outcomes was poignantly illustrated recently in an intriguing analysis of theoretical perspectives in the context of disaster (Norris et al., 2008). A clear majority of the articles on psychological resilience to disaster (68%) focused on sets of capacities and characteristics. By contrast, a considerably smaller minority of articles, only 18%, focused on demonstrable resilient outcomes. Unfortunately, research and theory that targets predictors, in isolation from actual measured outcomes says little about how these elements might fit into the overall temporal process. Indeed, the case can be made that when a particular element is studied in isolation, whatever empirical evidence might exist for that particular element will have no real conceptual or practical use.

Despite these complexities, there is nonetheless room for optimism. Our review of the literature suggested that future research steps are both apparent and plausible. We envision these next steps unfolding in a sequential progression, beginning initially with basic research aimed at filling in knowledge gaps, identifying the most relevant variables across levels, examining these variables using newly developed data analytic methods, and finally moving toward a broader research agenda that will address more complex questions about the dynamic interplay among elements. In this final section, we elaborate on each of these four sequential steps.

Step 1: Filling in the Missing Temporal Elements

An imperative next step will be to broaden existing family and community research approaches so as to systematically address the missing evidence in the temporal sequence. This research should be basic, using as a springboard the considerable progress already made in these areas. In the family literature, for example, relatively few studies have attempted to operationally define robust measures of family health and dynamics, and by extension family resilient outcomes. However, there are prominent exceptions; most notably, the interview-based BICS (Beavers & Hampson, 2000) the interviewer coding reported by Caligiuri et al. (1998), and in particular the extensive multimeasurement approach of the Oregon group (e.g., Forgatch et al., 2009; G. Patterson et al., 2004). Extending these methods to longitudinal, or ideally prospective, designs that could track changes in representative families from before to after highly aversive events would add important new evidence on the temporal elements of family resilience. Such designs would make it possible to operationalize both minimal-impact resilience and emergent adaptive outcomes in terms of the measured stability or change in global, dynamic aspects of family health and adjustment. Such designs would also allow for rigorous testing of the hypothesized predictors of those outcomes.

Similarly, although the literature on various facets of social capital suggests well-defined predictors for community resilient outcomes, evidence of the relationship of these facets to actual community outcomes has yet to be established. As our review and a number of community researchers (e.g., Buckner, 1988; Cutter et al., 2008, 2010; Norris et al., 2008) have suggested, plausible methods that might address this issue already exist. For example, Norris et al. (2008) provided a solid rationale for the use of aggregate data on population wellness as a measure of community adjustment and adaptation. There is also an established literature on various objective indicators of community health that might be examined before and after large-scale aversive events in a more exploratory fashion. These include community economic development, information and communication infrastructure, and material resources (Carpiano, 2006; Lochner et al., 1999; Norris et al., 2008). In terms of predictors, recent studies by Sherrieb et al. (2010) and Leykin et al. (2013) have systematically condensed and ordered possible predictors of community resilience into a workable set. As a logical and important next step, then, prospective and longitudinal research that examines these predictors in relation to variations in pre- and postadversity population wellness or other indicators of community adjustment certainly seems well within reach.

Step 2: Identifying Predictor Variables Across Levels

Because of the large number of potentially useful predictor variables, a subsequent step will be to identify key predictor variables that are likely to manifest across each level (i.e., hypothesized resilience-promoting factors that are apparent in individuals, families, and communities). Although the specifics of measurement are likely to vary at each level, identifying similar types of resilience-promoting variables across levels would provide important avenues for future research. This kind of cross-level analysis would also do much to integrate and guide future research toward common mechanisms. Of importance, our review of the existing literature indicated a number of variables already appear to fit this bill. Here we describe two categories of such variables: inherent characteristics and social capital.

Inherent characteristics. A number of similar factors have been described in the literature as inherent

characteristics of individuals, families, and communities that adapt well to adversity. Among the most salient of these characteristics are the perception of efficacy, optimism about the future, and the capacity for flexibility. As we saw earlier, in research on individuals, the measurement of perceived self-efficacy is well developed and, importantly, has been directly, empirically linked to individual-level resilient outcomes. Family researchers have tended to describe efficacy more broadly as a set of related skills or aspects of adjustment (e.g., Kao, Lupiya, & Clemen-Stone, 2014), such as parent's sense of mastery (Elder, 1995; Patterson et al., 2004). However, family researchers have also measured *perceived* family efficacy, albeit primarily in the form of self-reports from individual family members (Caprara et al., 2004; Nolan et al., 2009). The perception of efficacy at the community level, known as collective efficacy, is also well developed but again has been measured almost exclusively by individual self-report.

Although the reliance on individual self-report to measure perceived efficacy contradicts the central tenet of family and community systems theory that emphasizes the whole over the sum of the parts, these scales have nonetheless generated interesting findings. Measures of perceived family efficacy scales have proved useful, for example, in determining the degree of consensus or lack of consensus among family members (Bandura, Caprara, Barbaranelli, Regalia, & Scabini, 2011). Self-reported collective efficacy, as reviewed earlier, differentiates important variations in the quality of neighborhoods (Gulasekaram, 2008; Sampson et al., 1997). To cite a particularly impressive example, self-reported collective efficacy has shown strong, inverse correlations with neighborhood social and physical disorder when the latter were measured using a rigorous, block-by-block coding scheme (Sampson & Raudenbush, 1999). Finally, the use of self-report measures allows for relatively straightforward comparisons across levels.

Flexibility is another key characteristic that has been described at each level of analysis. As reviewed earlier, there is abundant research on flexibility in cognitive operations and coping and emotion regulation at the individual level, and some of this research has directly linked flexibility to individual resilient outcomes. Flexibility is also a key variable in family systems theory (Olson, 2000; Walsh, 1996). Although family flexibility has sometimes been measured as an individual self-report variable, researchers have also obtained flexibility ratings from multiple family members (Gold et al., 2007; Olson, 2000) or assessed the construct from interviews (M. McCubbin et al., 2002) and standardized observational ratings (Olson, 2000). In a particularly comprehensive study, Thomas and Olson (1993) tested predictions about flexibility and family adjustment (see Olson, 2000) using a standardized, reliable coding scheme to capture the way family members interacted in a series of structured tasks. Flexibility in this approach was defined using a circumplex model to capture the optimal balance between family adaptability, cohesion, and communication. Across multiple analyses, families with healthier levels of adjustment showed greater flexibility in their interactions with each other than did families currently in treatment or that included a child suffering from emotional difficulties. Flexibility at the community level is typically evoked to describe the process of adapting to changing circumstances (Barnes & Hayter, 1992; Ganor & Ben-Lavy, 2003; Gillespie & Murty, 1994; Norris et al., 2008). However, to our knowledge, standardized measures of community flexibility have yet to be developed.

Finally, another potentially fruitful cross-level characteristic is optimism or hopefulness about future outcomes. At the individual level, optimism is easily measured by self-report; has shown good validity when compared against neuroscience data (Sharot, Riccardi, Raio, & Phelps, 2007); and has emerged as a clear, prospective predictor of resilient outcomes following adversity (e.g., Galatzer-Levy & Bonanno, 2014). Family researchers have championed the importance of developing a shared hopefulness or optimism as a means of bolstering the family's ability to manage adversity (Walsh, 2006), such as severe illness (e.g., Mailick, 1980; Northouse et al., 2002), and have proposed links between optimism and other family characteristics, such as member differentiation (Sahin, Nalbone, Wetchler, & Bercik, 2010). However, research on this characteristic had been restricted largely to individual self-report (Auerbach et al., 2005; Sahin et al., 2010), or in some cases thematic interpretations of interview data (e.g., Bland & Darlington, 2002). Theories of community resilience often emphasize the importance of shared hope or optimism, particularly in disadvantaged communities (e.g., Ahmed, Seedat, Van Niekerk, & Bulbulia, 2004; Ganor & Ben-Lavy, 2003; Norris et al., 2008; Ungar, 2008). However, to our knowledge a standardized measure of community optimism has not yet been developed.

Despite these gaps, the clear role these characteristics are hypothesized to play at each level suggests it would be well worth the effort to fill in the missing measures, particularly with regard to community. The far bigger problem is that research specifically linking these characteristics to family or community resilient outcomes does not appear to have been conducted. Future research that might address that gap would greatly enhance the possibility of cross-level analyses on the psychological elements of resilience.

Social capital. Theoretical formulations about resilience have championed the important role of

positive social relations and social capital at each level of analysis. There is considerable research, as we reviewed earlier for example, linking emergent resilient outcomes in children with positive qualities in the caregiver–child relationship or with a mentoring adult figure. We also reviewed similar research linking minimal-impact resilient outcomes in adults with various types of positive social resources, including instrumental and emotional support, and an extensive social network.

Family theorists have typically included positive social relations among the various factors hypothesized to promote resilience (Walsh, 2006). Most commonly evoked types of social relations are social networks size, and support from extended family and friends, health care providers, and the broader community (Armstrong, Birnie-Lefcovitch, & Ungar, 2005; Black & Lobo, 2008; Hawley & DeHaan, 1996; H. I. McCubbin & McCubbin, 1988; M. McCubbin et al., 2002). The measurement of social network size and social support is essentially the same as used to capture these variables in individuals. However, an important question, which according to our knowledge has not yet been addressed, is how these measures can be aggregated to create indices of support or social network size that characterize the entire family unit.

The idea of broader forms of supportive community relations bridges the individual, family, and community literature through the concept of social capital. Early theoretical formulations of social capital focused primarily on individuals and families (Portes, 2000). For example, Bourdieu (1980, 1986) used the construct to describe the ways that individuals and families build resources through social connections. In this view, larger social relations are important insofar as they benefit individuals. Extending this reasoning, researchers have argued for the relevance of measuring social capital in terms of a varied array of individual-level variables including, for example, involvement in civic groups and organizations, interpersonal trust, and confidence in government (Brehm & Rahn, 1997).

As the construct of social capital evolved, it gradually came to refer to an attribute of the community itself (Kawachi, 1999; Lochner et al., 1999; Putnam, 1995). Family theorists have also conceptualized family relations and resources as a form of social capital (e.g., Sanders & Nee, 1996). Within this expanded framework, social capital can be measured and compared at multiple levels simultaneously. As discussed earlier, there are several ways to achieve this. For example, individual-level data can be aggregated at the family or community level. It is also possible to use indicator data to capture behavioral propensities across broader community or family units (Cutter et al., 2010; Sherrieb et al., 2010).

Especially compelling are recent studies suggesting that social capital may be enhanced through the use of technology and social media. Some of the early research on social capital showed it was possible to code relevant neighborhood characteristics from block-by-block video data (e.g., Sampson & Raudenbush, 1999). Extending this approach, Odgers, Caspi, Bates, Sampson, and Moffitt (2012) recently coded social indicators from a remarkably large number of neighborhoods spanning a wide geographic area by using online data available from Google Street View. Researchers have also recently examined the use of social media as a form of virtual social capital. Early writings on the subject tended to view online social behavior as detracting from face-to-face interactions and thus as having a negative impact on social capital (e.g., Nie, 2001; Putnam, 2000). More recent research, however, suggests that social media, such as Facebook, tends to offer means to enhance social capital. Although these analyses were limited to individual-level variables, they nonetheless revealed positive associations between Facebook use and different indices of social capital (Ellison, Steinfeld, & Lampe, 2007; Valenzuela, Park, & Kee, 2009). Moreover, in one study these effects were moderated by self-esteem and life satisfaction, suggesting that Facebook use was particularly advantageous as a social capital builder among students low in self-esteem and life satisfaction (Ellison et al., 2007). Complementarily, preliminary research has also suggested that social media, such as Facebook and Twitter, may increase levels of oxytocin, a hormone associated with attachment and social bonding (Penenberg, 2011).

A related aspect of social capital, the social sharing of useful knowledge and information, also appears to be fostered by technology, and in particular through virtual Internet communities. In one study (Chiu, Hsu, & Wang, 2006), various facets of social capital, such as norms of reciprocity and trust, were found to predict both the amount and the quality of knowledge shared in the virtual communities. In a related study (Wasko & Faraj, 2005), knowledge sharing was linked to structural social capital, operationally defined in this case as sharing individuals who were more central to the virtual community and who had a greater number of connections to other community members. Of importance, in each study, virtual sharing was associated both with expectations of personal gain and with expectations of broader community gain, even when reciprocity was not likely. Finally, although empirical research in this area is limited, the rapid sharing of information through Twitter and other Internet vehicles has been reported to facilitate community responsiveness to emergency situations, such as Superstorm Sandy, which recently struck the New York City area (Southwick, Bonanno, Masten, Panter-Brick, & Yehuda, 2014).

Step 3: Applying New Data Analytic Methods

The rich, multilevel nature of these data begs the question of how they might best be analyzed. Fortunately, a number of sophisticated data analysis approaches are already available that might be applied in novel ways to address these questions. One such approach, suggested earlier, would involve hierarchical modeling of various types of data within and across units of analysis. For families, the obvious unit of analysis would be the family itself, whereas for communities data could be aggregated across small but operationally definable units, such as neighborhoods, districts, or wards. It would also be possible however to include top-down data, such as social or economic indicator data, that characterize the community unit as a whole. Of significance, not only does a hierarchical approach make it possible to observe important variations across the different levels of analysis, it also provides a method to examine the differential relationships among variables nested at different levels of analysis. Hierarchical modeling might reveal, for example, how an individual-level variable (e.g., health or well-being) is associated with other individual-level variables (e.g., perceived coping efficacy), with aggregated unit variables (e.g., level of collective efficacy in the neighborhood), and with itself or with similar variables at different at levels of analysis (e.g., individual coping efficacy, aggregated individual coping efficacy within the community, and perceptions of collective efficacy in the community).

As one example of this approach, encompassing two levels, Kim and Kawachi (2006) assessed various self-report and indicator measures of social capital on 24,835 individuals nested within 40 different communities. They examined the unique and combined effects for both the individual-level scores and the aggregated community-level scores as predictors of self-rated health. Not surprisingly, individual-level social capital consistently predicted better self-rated health. However, with demographic variations statistically controlled, community-level social capital also emerged as a consistent predictor of self-rated health. Moreover, including individual-level social capital in the same model at community-level social capital attenuated but did not erase the community-level effects. Of importance, Kim and Kawachi also observed a significant interaction between individual- and community-related scores for the specific dimension of interpersonal trust. This finding, consistent with similar findings from other research (e.g., Subramanian, Kim, & Kawachi, 2002), suggested that whether social capital is beneficial at the individual level depended in part on the level of social capital in the community.

To cite another recent example, Bernburg, Thorlindsson, and Sigfusdottir (2009) simultaneously examined three levels in a study of family disruption, peer behaviors, and neighborhood quality on adolescent substance use. They obtained population data on individuals within neighborhoods, in this case well-defined and stable public school district boundaries, and also indicator data on the neighborhoods. Family disruption processes were measured from a series of questions about social ties and coercive interactions between parents and children within each family. Substance use was measured individually, whereas peer substance use was measured round robin style by asking each adolescent respondent to rate the substance use of several of his or her friends. Finally, a neighborhood disadvantage index was created based on indicator data, such as neighborhood income, number of single-parent households, portion of immigrants in the neighborhood population, and other sociodemographic factors.

Analyses of these data at the level of the individual, family, and family-nested-within-neighborhood revealed a number of interesting findings. For example, disrupted family processes, aggregated at the neighborhood level, influenced adolescent substance use, over and above the individual-level relations among these variables. In other words, adolescents from disrupted families were more likely to engage in substance use, but adolescents were also more likely to engage in substance use if they lived in neighborhoods with a high level of family disruption, and the impact of these two factors was independent and therefore potentially additive. In addition, several intriguing mediating effects also emerged that cut across levels of analysis. Adolescents from neighborhoods with greater family disruption were more likely to associate with other substance users, and this association partially mediated the relationship between aggregated neighborhood family disruption and individual-level substance use. From another angle, adolescents from disadvantaged neighborhoods were found to engage in more substance use, but neighborhood disadvantage was also linked to greater aggregated neighborhood family disruption and, in this case, aggregated neighborhood family disruption was found to mediate the relationship between substance use and neighborhood disadvantage.

It would be relatively straightforward to apply this same kind of hierarchical approach to examine the elements of psychological resilience. Baseline or preexisting conditions can be included in these models as covariates, for example, to control or adjust the outcome data. However, to more directly capture change, time can be included in the model as a predictor variable (Snijders, 1996). In the latter case, the type of nested effects discussed earlier would still be possible. But it would also be possible and extremely interesting to examine how time might alter such effects. We might ask, for instance, whether the

relationship between community-level variables, such as collective efficacy and population wellness, would interact with time (i.e., whether their relationship would differ before and after the aversive event).

It is important to note, however, that a crucial limitation of the hierarchical approach for understanding pre- and postadversity outcome patterns is that such outcomes are rarely linear. Rather, as we discussed earlier, outcome patterns following aversive events typically describe a heterogeneous array of trajectories. Hierarchical modeling does not easily capture this kind of longitudinal heterogeneity (Lovaglio & Mezzanzanica, 2013). However, other analytic methods we discussed earlier, such as latent growth modeling, are explicitly suited for this purpose. An optimal approach, therefore, would be to employ a combination of hierarchical and latent growth modeling to the study of resilient outcomes. For example, such an approach might involve first identifying the various outcome trajectories and then including these patterns as an independent factor in the hierarchical modeling.

Step 4: Examining More Complex Relations Within and Between Elements

Scholars of resilience have consistently emphasized the complexity of these phenomena (Eggerman & Panter-Brick, 2010; Masten, 2007; Ungar, 2008; Waller, 2001). We have argued here that attempts to examine that complexity from an empirical standpoint must proceed in a stepwise manner that involves first filling in the gaps in our understanding of the temporal elements of family and community resilience, then targeting key variables across levels and examining how these variables might relate to each other and to different patterns of outcome. We are optimistic that these admittedly ambitious steps might be achieved because, as we noted, many of the pieces are already in place. However, even with these achievements, there will be more to do. More specifically, once the empirical map of the elements of resilience has been fleshed out, it will be possible for subsequent research to consider even broader questions about the complex relations within and between elements and across contexts.

One such question, for example, pertains to the dynamic interaction of family and community (Jaffee, Caspi, Moffitt, Polo-Tomás, & Taylor, 2007) and the possibility that their mutual influence might change over time. Many investigators have assumed that family and community dynamics are relatively constant and slow to change. Aldrich (2012) observed, for example, that changes in social capital that might occur in response to disaster are typically short-lived, usually lasting "less than a month" (p. 52). In other words, Aldrich concluded, postdisaster social capital will "tightly mirror pre-disaster conditions" (p. 53). From this perspective, family and community dynamics would be stable predictors of outcome and could be assessed with reasonable confidence at any point prior to or following the aversive circumstances. Only a handful of prospective studies are available from the literature on disaster from which to examine this issue. However, these studies consistently suggest that the dynamics of family–community relations are in fact *not* likely to remain stable. More precisely, it appears that community-wide disasters tend to enhance bonding and interaction within families and weaken bonding and interactions within the broader community and that these changes may persist for a considerable period (for a review, see Bonanno et al., 2012).

Another important question for future research pertains to the possibility that some aspects of family and community health may *improve* as a result of highly aversive events. This may occur, for example, when aversive events produce new understandings, foster greater sense of family or community bond (Walsh, 2013), provide a learning opportunity for the development of adaptive behaviors to boost future resilience (Weine, Levin, Hakizimana, & Dahnweih, 2013), or enhance economic resources or opportunities (G. Miller, 2005). It will be important to examine these phenomena further, as well as the possibility that improvements in some areas may be time-limited or countered by deficits in other areas. For instance, the latter was observed when disaster survivors were relocated to regions with better housing and schools but as a result suffered the loss of social networks they had previously relied upon (Bonanno et al., 2010; Wilson & Stein, 2006).

Extending this agenda even further, it will be crucial to examine how resilient outcomes and the predictors of those outcomes might vary across culturally diverse families and communities, or across broader levels of analysis (e.g., issues of sustainability and environmental integrity). Research on individuals suggests multiple, independent risk and resilience factors, and consequently that there are myriad routes that might lead toward or away from resilient outcomes (Bonanno et al., 2011; Masten & Narayan, 2012). Given the marked variability in family and community size, dynamics, and cultural attributes, it seems even more likely that families and communities would weather or adapt to adversity through different and perhaps unique combinations of resilience-promoting factors and that the combinations of these factors will tend to vary across different socioeconomic and cultural contexts (Eggerman & Panter-Brick, 2010; Fazel et al., 2012; Tol et al., 2013; Ungar et al., 2013; Utsey, Bolden, Lanier, & Williams, 2007).

Conclusion

To guide our review, we focused on a simple set of four temporal elements—baseline or preadversity functioning, the actual aversive circumstances, post-adversity adjustment, and predictors of resilient outcomes—as a heuristic framework from which to examine the existing empirical evidence and to illuminate steps for future research. Although there is no shortage of rich theoretical writing on resilience, this approach revealed surprisingly abundant gaps in the empirical evidence. We found the largest holes in the literatures on family and community resilience. Although there is considerable research on each of the four temporal elements in relation to individual-level psychological resilience, the comparable research on families and communities is fragmented. These literatures have developed measures of normal family and community adjustment, for example, but they have not yet utilized these measures for the study of resilient outcomes following aversive events. By extension, although many resilience-promoting factors have been described in relation to families and communities, there is little scientific evidence to support this speculation.

Despite the magnitude of missing evidence, we are nonetheless optimistic about the potential for future research. Extending the measures and methods that are already available, we suggested that future research might progress in a series of stages, first filling in the most obvious areas of missing evidence, then examining variables that appear to manifest across individual, family, and community levels and utilizing newly develop data analytic strategies, and finally moving toward a broader research agenda that might begin to address the dynamic interplay among elements and across levels of analysis. We accept that this is an ambitious agenda. However, as Figure 1 attests, the construct of psychological resilience has come of age. The construct touches upon crucial questions about modern life. Individuals, families, and communities weather the myriad adversities that come their way with a natural equanimity, but to what extent? And how do such resilient outcomes come about? In what ways are the factors that inform resilient outcomes different or the same in individuals, families, and communities, and how do these factors interact or influence one another across levels? Can we enhance these factors? If so, how? These are seminal questions, and crucial targets for further research. As we gather new data that might address these complex questions we will move that much closer to a truer and more encompassing picture of psychological resilience and the temporal elements that inform it. It is our hope that our review will provide a structure to foster that movement.

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