

Resilience

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Abstract

Research on resilience is still evolving. For decades, developmental researchers have documented resilient outcomes in children exposed to chronic maltreatment who nonetheless thrived. Relatively more recently the study of resilience has migrated to the investigation of acute and potentially traumatic life events (PTE) in adults. We first consider some of the key differences in the conceptualization of resilience following chronic adversity versus resilience following single-incident traumas, and then describe some of the misunderstandings that have developed about these constructs. We describe the terms *emergent resilience* and *minimal-impact resilience* (Bonanno & Diminich, 2013) to represent trajectories of positive adjustment in these two domains, respectively. In particular, we focus on minimal-impact resilience, and review recent advances in the literature. We then briefly discuss the most widely researched factors (e.g., age, gender, personality) suggested to influence resilient outcomes following exposure to PTEs. In closing, we suggest future areas of research to further expand the study of resilience within the social sciences.

INTRODUCTION

TRAJECTORIES OF PSYCHOLOGICAL RESILIENCE

The term *resilience* has for centuries been widely researched across the social sciences, and over time has undergone multiple conceptual definitions. The central objective in this research has been to identify processes or mechanisms underlying psychological resilient outcomes as well as protective and predisposing factors that might modify the negative effects of adverse circumstances. For decades, research on psychological resilience was focused primarily on behavioral variables. However, this research has more recently moved toward advancing understanding of the biological, neurological, and genetic processes underlying stress responses.

In this essay, we review the emergent body of research on psychological resilience, beginning with a brief historical overview of the construct as it originated in the developmental literature and then moving to its more

recent reconceptualization in the study of adults exposed to isolated and potentially traumatic events (PTEs) (Bonanno, 2004). We consider misunderstandings surrounding the term resilience that have proliferated as the construct migrated across literatures. We then describe emergent resilience and minimal-impact resilience as distinct outcome trajectories of positive adjustment that follow exposure to chronically aversive life circumstances and acute trauma, respectively (Bonanno & Diminich, 2013). We present a brief overview of some of the factors that predict the minimal-impact resilience pattern and we conclude by offering methodological criteria to guide future studies of resilience.

FOUNDATIONAL RESEARCH

The study of psychological resilience has an illustrious history, first gaining currency as a psychological construct in the developmental literature where scientists interested in the etiology of psychopathology, began studying children exposed to chronic adversity (e.g., poverty) who nonetheless evidenced favorable adjustment (Garmezy, 1972; Masten, 2001). Seminal work in developmental research effectively broadened the corpus of developmental theory to encompass positive adaptation and adjustment (Rutter, 1979; Werner, 1995).

The use of the term resilience in the developmental literature came to connote a relatively positive psychological outcome over a broad sweep of time in spite of exposure to chronically aversive circumstances (Rutter, 2006). Chronically stressful experiences tend to lead to enduring changes in a wide-range of psychological and physiological functions (de Kloet *et al.*, 2011; Offidani & Ruini, 2012). As a consequence, favorable outcomes following exposure to chronic stress are typically only apparent after a period of time has passed following the alleviation of the stress. We have referred to this outcome path elsewhere as *emergent resilience* (Bonanno & Diminich, 2013). For example, individuals exposed to the constant stressors of civil war may witness numerous acts of violence, often leading to serious injury or even death, endure physical and psychological deprivations, such as limited food or electricity, and suffer the loss of multiple close friends and relatives. During this time they may struggle with anxious or depressive symptoms, bouts of irritability or aggression, have difficulty in concentrating or sleeping, and experience frequent stress-related physiological symptoms. However, when the war ends, they may find that they gradually feel less anxious, regain the ability to concentrate and experience loving feelings toward others, and regain a sense of optimism about the future.

CUTTING EDGE RESEARCH

Researchers have over the past several decades shifted their attention from studying resilient outcomes in children raised under corrosive circumstances to understanding resilient outcomes in adults in the aftermath of PTEs (Bonanno *et al.*, 2002; Ryff, Singer, & Dienberg-Love, 2004). PTE's are isolated events (e.g., bereavement, natural disasters) occurring in an otherwise non-caustic environment that warrant a wide range of responses, thus the experiences are "potentially" traumatic (Bonanno, 2004). The nature of resilience, within this more acute context, necessarily takes on a different pattern. As opposed to the gradual sweep toward positive outcome with chronic adversity, single incident, acute stressors allow for a more focused and relatively more proscribed coping efforts. As a result, minimal-impact resilience following acute stressor events suggests a relatively stable trajectory of continuous healthy adjustment, with little or no lasting impact on functioning. In one study, for example, resilience was identified in over 50% of high exposure survivors who either witnessed the September 11th terrorist attack or were in the World Trade Center during the attack (Bonanno, Galea, Bucciarelli, & Vlahov, 2006). We have labeled this pattern *minimal-impact resilience*. For instance, someone involved in an automobile accident who sustains a serious injury may initially experience unease, be preoccupied with the accident, and have difficulty sleeping. However, within a relatively short period of time, these symptoms abate and they experience no further disruption in normal functioning. They are able to recall all important aspects of the event itself while maintaining the ability to experience positive emotions toward friends and family. A growing body of research in the trauma and loss literature provides compelling evidence indicating a set of prototypical outcomes of adjustment following PTEs with the minimal-impact resilience trajectory identified as the most common outcome (Bonanno *et al.*, 2010). Prospective and longitudinal research have now consistently identified trajectories of minimal impact resilience in adults exposed to a variety of acute highly stressful events such as bereavement (Bonanno, Moskowitz, Papa, & Folkman, 2005; Mancini *et al.*, 2011), natural disasters, terrorists attacks (Bonanno *et al.*, 2008; Norris, Tracy, & Galea, 2009), traumatic injury (deRoos-Cassini, Mancini, Rusch, & Bonanno, 2010), and military deployment (Bonanno *et al.*, 2012; Dickstein *et al.*, 2010).

PREDICTORS OF MINIMAL-IMPACT RESILIENCE

Although no single predictor exerts a dominant influence on resilient outcomes, research over the past decade has produced a body of evidence for a set of factors that independently predict a minimal impact resilience trajectory. These factors include person-centered variables (e.g., personality),

contextual factors (e.g., social support), resources (e.g., income), exposure, and facets of coping and emotion regulation (for review see, Bonanno, Westphal, & Mancini, 2011). Together this evidence suggests that resilience does not arise as a result of a single factor or even several dominant factors but rather from the additive effects of a variety of independent predictors, with each of these predictors accounting for a relatively small portion of the overall outcome variance. Importantly, as PTEs are by nature unexpected, occurring at any time in the life course, the factors that might predict an individual's response are malleable and tend to vary over time. Although, some (e.g., personality) remain relatively stable over time, other factors (e.g., supportive resources) will fluctuate with changing life circumstances (Hobfoll, 1989). Thus, at any given time, the same individual may be more or less resilient depending both on recent events and the ongoing changes in the context of their lives.

Age has long been assumed to be a risk factor following PTEs (Cook & Elmore, 2009). More recent research suggests, however; that older adults are more likely to evidence a stable pattern of adjustment following an acute stressor compared to younger adults (Bonanno *et al.*, 2007; Bonanno & Kaltman, 1999; Mancini *et al.*, 2011) and to experience relatively lower long-term psychological costs compared to younger adults (Huerta & Horton, 1978; Kato *et al.*, 1996; Knight *et al.*, 2000). Gender has been a consistent predictor of resilience with several studies demonstrating the association between male gender and resilience following exposure to aversive situations even when controlling for potential confounding factors (Hoven *et al.*, 2005; Resnick & Vlahov, 2004; Vernberg, LaGreca, Silverman, & Prinstein, 1996) such as prior trauma and exposure (Bonanno *et al.*, 2010).

The impact of *proximal exposure* or events that occur in consort during the approximate time of the PTE and *distal exposure* (Bonanno *et al.*, 2010), the resulting loss of resources that arise in the aftermath of a PTE are additional risk factors. For example, in the study of adult trauma populations, the link between proximal exposure to PTEs and increased levels of posttraumatic stress has been consistently demonstrated (Bonanno, Rennieke, & Dekel, 2005; Nolen-Hoeksema & Morrow, 1991). These findings indicate that while minimal impact resilience is the most common outcome following exposure to acute traumatic events, proximal exposure may decrease the prevalence of resilient outcomes in adult populations.

Personality traits as we have noted earlier have also been assumed to serve a predictive role in ascertaining resilient outcomes (Bonanno, 2012; Luthar, 2000). Unfortunately, a significant portion of the research on personality factors and resilient outcomes in adults has assessed personality and the outcome measure several months following exposure (Bonanno & Mancini, 2008). Of particular importance is the timing at which these assessments are

conducted. Although personality is relatively more stable in adulthood, it is nonetheless not impermeable to situational and environmental stressors even in adulthood (McCrae *et al.*, 2000). More specifically, assessing personality variables several months after a PTE is likely to obfuscate the direction of association between resilience and personality. Put another way, exposure to a highly stressful event is as likely to have informed the personality variable as much as the other way around (Bonanno & Diminich, 2013).

An impressive and growing body of research addresses this confound by using prospective data in which the personality variable is measured before the PTE. Several studies have demonstrated an association between subsequent adjustment and personality variables such as, trait resilience (Ong, Fuller-Rowell, & Bonanno, 2010), low negative affectivity (Weems *et al.*, 2010), ruminative response style (Nolen-Hoeksema & Morrow, 1991), and self-enhancement (Gupta & Bonanno, 2010). Importantly, the minimal impact resilience trajectory discussed earlier has been inimitably associated with several traits in individuals exposed to a diverse array of PTEs such as, self-enhancement among survivors of the 9/11 terrorist attacks (Bonanno, *et al.*, 2005), trait coping self-efficacy following traumatic injury (deRoon-Cassini *et al.*, 2010) and high positive affectivity in physical traumas and spinal cord injuries (Quale & Schanke, 2010).

The evidence suggesting that personality influences resilient outcomes is intriguing however, as others have argued personality rarely accounts for more than a small portion of the variance in people's behaviors across situations (Bonanno, Brewin, Kaniasty, & LaGreca, 2010; Mischel, 1969). Therefore, we must be cautious in associating personality with resilience (Luthar, 2000) and consider personality as one of many factors that contribute to or impact resilient outcomes.

KEY ISSUES FOR FUTURE RESEARCH

Psychological resilience has through the years and across disciplines undergone multiple definitions and reconceptualizations. In this essay, we reviewed the construct of resilience and its migration from the developmental literature into the adult literature on loss and trauma. We introduced the terms minimal impact resilience and emergent resilience as trajectories of positive adjustment following exposure to chronic (e.g., war) and acute (e.g., natural disasters) situations, respectively. Given the surge of interest in identifying factors that will predict resilient outcomes following PTEs, we reviewed a growing body of evidence supporting the minimal impact resilience trajectory. We close by briefly identifying potential areas for future research that might assist in broadening our perspective on resilient outcomes and the factors that might inform such outcomes.

Highly stressful and acute life events can and most certainly do affect our psychological well-being. Relatedly, studies that have demonstrated minimal-impact resilience have also consistently identified trajectories of chronic dysfunction and recovery (Bonanno, 2004). In the service of advancing the literature, researchers should focus on the emergence of these disparate pathways (Masten, 2011). To that end, Bonanno (2012) proposed a set of methodological criteria to guide future research; specifically that the temporal bounds of the PTE be clearly defined, with measurements obtained across multiple time points with the initial assessment obtained soon after exposure to the PTE, and that minimal-impact resilience is categorized as a stable pattern of healthy adjustment following the PTE and not merely as the absence of pathology.

Recent years have also brought about an interest in programs that build resilience *en mass*. A number of prophylactic interventions of this type have been attempted in response to important social problems such as suicide, and military preparedness. However, data for the efficacy of these interventions is unconvincing and, in fact, some findings suggest that prophylactic interventions may do more harm than good [for reviews see Bonanno, Westphal, & Mancini (2011) and McNally (2012)]. We would argue that one reason for this reputed failure is that research on minimal-impact resilience is nascent, and there is still much that we do not know about the factors that promote such outcomes. What we do know, as we indicated above, is that no single factor or process is likely to account for much of the variance in outcomes, and therefore that resilience building enterprises are not likely to produce a measurable effect unless they target a wide-range of factors.

Finally, another fruitful area for future study is in the neuroscience of resilience (James *et al.*, 2013; Ryff & Singer, 2002). There has been a surge of research in the past decade examining the role of genetics, brain structures, and neuroendocrine response. The potential interaction of how these processes interact with stress and the possible role in both health and pathology is increasingly coming into focus (Chrousos, 2009; Conrad, 2011). For example, specific underlying mechanisms that appear to underlie post traumatic stress disorder (PTSD) and non-dysfunctional responses to PTEs are increasingly well-understood, both at the level of functional neuroscience (Liberzon & Sripada, 2007) and neuroendocrine responding (Yehuda & Ledoux, 2007). Innovative work by de Quervain and colleagues on the role of glucocorticoids in regulating memory for stressful events is particularly compelling (de Quervain, 2006). This work although still in progress, is particularly intriguing as it suggests that cortisol and other aspects of the Hypothalamic pituitary adrenal axis (HPA) axis serve to keep memories of a highly aversive event in check. The implication is that such mechanisms serve somewhat of a protective factor allowing for limited

memory consolidation of the event while restricting the process by which memories are elaborated upon through working memory and with material from long-term memory.

As intriguing as these findings are, describing these advances in neuroscience in terms of resilience *per se* seems to us premature. To further advance our understanding, researchers might move forward utilizing a trajectory approach examining prototypical outcomes following exposure to PTE's and the potential neurological underpinnings. Such research would be instrumental in illuminating the mechanisms that might underlie minimal-impact resilience. Perhaps even more importantly, and to illuminate the conceptual limits of these constructs, future research should focus on relating neuroscience findings with trajectory research, paving the way for new thinking and innovative research.

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Links:

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